INSTITUTO NACIONAL DE ESTADÍSTICA

Retail Trade Indices. Base 2015

Methodological manual

January 2021

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1. Introduction

The Retail Indices short-term survey forms part of the action plan for the development of the statistical system on trade developed by Eurostat and is governed by what is set out in Council Regulation (EC) No. 1165/98 dated 19th May 1998 on short-term statistics and modified by European Parliament and Council Regulation (EC) No.1158/2005 dated 6th July 2005. Moreover, the Retail Trade Indices are one of the Main European Economic Indicators (MEEI), the objective of which is to rapidly provide information to the European Central Bank, falling within the so-called EMU Action Plan.

The purpose of the Retail Trade Indices is to ascertain the fundamental characteristics of the companies dedicated to retail trade in Spain, which allows for measuring, on the short term, the evolution of the activity of the sector.

The base year of the indices is 2015, and the first data published in this base is January 2018. In order to avoid a break in the series, a backward link has been established for all of those published.

2. Survey scope

The survey scope is defined relating to the population researched, time, and space.

2.1 POPULATION SCOPE

The target population of the Retail Trade Indices, base 2015, is made up of the companies whose main activity is registered in division 47 of Section G of the National Classification of Economic Activities (CNAE-2009).

The activities included within this division and the groups that compose it are described below.

47. Retail trade, except of motor vehicles and motorcycles

This division includes the resale (sale without transformation) of new and used goods, mainly to the general public for personal or domestic consumption or use, in stores, department stores, stands, mail-order companies, home delivery salespersons, travelling salespersons, company stores, etc.

The goods sold in this division are limited to those named in general consumer goods or retail merchandise.

Consequently, goods not normally included in the retail trade, such as cereals, minerals, industrial machinery and equipment, etc., are excluded. This division also includes those units that are fundamentally dedicated to sale to the general public, from the exhibition of the merchandise, of products such as personal computers, desk material, paint or wood, although such sales may not be for

personal or domestic use. The manipulation that is usually performed linked to trade activity, does not affect the basic nature of the products, and may include, for example, classification, separation, mixing and packaging.

This division also includes the retail sale made by intermediaries and the activities of retail auction companies.

This division excludes:

- The sale of agricultural products by the manager of the farm.
- The manufacture and sale of merchandise, which is classified, in general, as manufacturing in divisions 10-32.
- The sale of motor vehicles, motorcycles and spare parts.
- The trade of grains, minerals, crude oil, industrial chemical products, iron and steel and industrial machinery and equipment.
- -The sale of food and beverages for consumption in the same locale, and the sale of food to go.
- The rental of personal and domestic articles to the general public.

47.1 Retail trade in non-specialised establishments

This group includes the retail trade of different lines of products in the same unit (non-specialised establishments), such as supermarkets and department stores.

47.2 Retail trade in food, beverages and tobacco in specialised establishments

This group includes the retail trade, in specialised establishments, of fresh fruits and vegetables, prepared or preserved fruits and vegetables, meat and meat products (including birds), fish, shellfish and derivatives, bread, bakery products and sweets, alcoholic and non-alcoholic beverages for consumption outside of the locale, tobacco and tobacco products, dairy products and eggs and other food products n.e.c.

47.3 Retail trade of fuel for automotion in specialised establishments

This group includes the retail trade of fuel for motor vehicles and motorcycles, and the lubricants and refrigerants for motor vehicles.

This group does not include the retail trade of fuel, retail trade of liquid gas from oil tankers for cooking or heating.

47.4 The retail trade of information and communications technologies (ICT) equipment in specialised establishments

This group includes the retail trade of equipment related to information and communications technologies (ICT), such as computers, peripherals, telecommunications equipment and consumer electronic products, in specialised establishments.

47.5 Retail trade of other household use items in specialised establishments

This group includes the retail sale of household items such as textiles, hardware, rugs, electrical appliances or furniture in specialised establishments.

47.6 Retail trade of cultural and recreational items in specialised establishments

This group includes the retail trade, in specialised establishments, of cultural and recreational items, such as books, newspapers, musical and video recordings, sporting goods, games and toys.

47.7 Retail trade of other articles in specialised establishments

This group includes the retail trade, in specialised establishments, of a certain group of products not included in other parts of the classification, such as clothing, footwear and leather items, pharmaceutical products and medical items, watches, souvenirs, cleaning items, weapons, flowers, pets and others. This also includes the retail sale of second-hand goods in specialised establishments.

47.8 Retail trade in stalls and in markets

This groups includes the retail trade of any type of new or second-hand products in travelling stands located either on the street or in markets created for that purpose.

47.9 Retail trade not carried out in establishments, nor in stands nor markets

This group includes retail trade activities carried out via correspondence, the Internet, home delivery, vending machines, etc.

2.2 TIME SCOPE

Invoicing or gross sales indices are compiled monthly. Employment indices were compiled on a quarterly basis until December 2004; since January 2004, they have been published monthly.

Three periods can be distinguished within the time scope:

2.2.1 Base period

The base period, or reference period, of the index is that for which all indices are made equal to100. This is normally an annual period. In the new system, the arithmetic average of the twelve monthly indices published from the year 2015, based on 2015, are made equal to 100, and therefore, the reference period of the index is the year 2015 (in other words, the base is 2015). This means that all indices published will refer to this year.

2.2.2 Variable reference period

This is the period with whose values the variables are compared (turnover and employed personnel) for the reference month. In other words, the period chosen for calculating the elementary indices.

With the calculation formula used for ICM base 2015 - linked Laspeyres - the reference period of the variables varies each year, and is the month of December of the year immediately prior to the year considered.

2.2.3 Weightings reference period

The reference period of the weightings is that to which the weightings serving as the structure of the System refer.

The reference period for weightings varies each year, and is the month of December of the year immediately prior to the one being considered.

The calculation of the weights is based on data from the Retail Trade Indices survey itself, since its sample size allows for weights that are sufficiently representative of the sector, and maximum currency is guaranteed in the review of the weights.

2.3 GEOGRAPHICAL SCOPE

All statistical units located in the Spanish territory are the object of the research.

3. Statistical unit

Those companies which carry out any of the activities included within the population scope as their main economic activity, are used as statistical units. The company is also the informant unit, because as it is perfectly defined and located, and since it has the accounting and employment data available, the response is provided and homogeneous information is obtained.

The company constitutes an organisational unit that produces goods or services, and which has a certain degree of decision-making autonomy, especially with regard to use their current resources available. The company exercises one or more activities in one or more places.

4. Concepts and definitions

4.1 COMPANY CLASSIFICATION VARIABLES

Companies may be classified by three criteria:

a. Main activity according to the National Classification of Economic Activity Codes 2009 (CNAE-2009).

b. Size of the company by number of employees.

c. Geographical distribution by Autonomous Community and City

a) Company activity

The economic activity carried out by a company is defined as the creation of added value by means of the production of goods and services.

Each of the statistical units studied (companies) frequently carries out different activities that should be classified as separate types from that of the National Classification of Economic Activities. In general, the activities carried out by an economic unit may be one of three types: main, secondary and auxiliary activities. The main activity is different from secondary as it is the one that generates the greater added value; in turn, auxiliary activities are those which generate services that are not sold on the market and which only serve the unit on which they depend (administration department, transport or storage services).

Due to the difficulties faced by companies in calculating added value when various activities are carried out, the activity which generates the greatest volume of business is considered the main activity or, failing that, the activity which employs the greatest number of people.

Finally, the information that is requested from the informant units refers not only to the activity considered the main activity, but also to all the secondary and auxiliary activities which are carried out.

b) Company size

The size of the companies is one of the most important variables when it comes to determining their performance. This size may be established in terms of the magnitude of turnover or production value, or by considering the number of persons on the company payroll. In these statistics, this latter option has been chosen to determine the size of the companies.

c) Geographical distribution

The survey collects information from 17 Autonomous Communities and 2 Autonomous Cities.

4.2 VARIABLES STUDIED

The variables studied may be classified into three types:

a) Economic variables.

b) Employment variables.

c) Specific trade variables.

a) Economic variables

This block includes information on company revenues during the reference month.

Turnover

This includes the amounts invoiced by the company during the reference month pertaining to the sale of goods and the provision of services that are the object of company traffic, both in the performance of their main activity, and with regard to any other secondary activity carried out by the company.

They are recorded in net terms after deducting sales refunds, as well as volume discounts over sales. Not deducted are cash discounts, nor discounts for prompt payment.

In order to classify retail sales income, the goods traded have been grouped according to a classification according to the RTI.

Food, beverages and tobacco: Fruits and vegetables, meat, poultry and game, delicatessen products and cold meats, fish and shellfish, bread and bakery products, confectionery and pastries, alcoholic and non-alcoholic beverages, tobacco products, dairy products, eggs, fruit, vegetable, meat and fish preserves, etc.

Non-food products:

Fabric, clothing and footwear. Personal goods: Fabrics, wool for knitting, raw material for the manufacture of rugs, carpets or embroidery, sheets, tablecloths, towels, haberdashery articles, clothing, furriery items, clothing accessories such as gloves, ties, braces, hats, umbrellas, walking sticks, …footwear, leather items, cosmetics and dressing table items, etc.

Household equipment: Furniture (except office furniture), lighting, non-electric domestic equipment, cutlery, dinner service, glassware, pottery and china, curtains and lace curtains, wood, cork and wicker items. Household appliances (including sewing machines), radio and television apparatus and other audiovisual equipment, musical instruments and scores, hardware articles, lawnmowers, DIY material and equipment, paints, varnishes and enamel, construction materials such as bricks, wood and bathroom fittings, computers, photographic and precision equipment, etc.

Health: Pharmaceutical products, medicine for veterinary use, medical and orthopaedic items, herbal products, optical products (glasses, lenses...)

Leisure: Books, newspapers and stationery, toys and sports items, video games, seeds, flowers, plants, fertilisers, pets, food for pets, computer programs. Records, CDs and audio and video tapes (recorded and blank), artificial flowers and plants, etc.

Other goods: Clocks, jewellery and silverware, small household goods, wallpaper and floor coverings (rugs, fitted carpets,), fuels except for automobiles (liquid fuel, liquid gas bottles, coal and wood, for heating and domestic use, ...), commercial art galleries, office material and equipment including furniture, mementos, craft goods, religious articles and costume jewellery, stamps and coins including second hand articles, gifts and smoking items, communication material (telephones, faxes,.), leather or imitation leather travel articles, lubricants, oils etc.

b) Employment variables

1. Personnel

The total number of people who work in the observation unit, also including owners who work in the unit, working partners and unpaid family employment.

2. Non-remunerated personnel

Comprising persons who directly or actively participate in company work without receiving fixed remuneration or wages. Included are the owners, autonomous partners who are active within the company and unpaid family helpers. Not included are partners that solely provide capital, nor family members of the owner who do not actively participate in the company.

3. Paid staff

This consists of those employees linked to the company by a labour contract and whom are paid fixed or periodic amounts in the form of a wage, salary, commission, efficiency wage or payments in kind. A distinction is made between fixed personnel (with an indefinite/permanent contract or labour relationship) and temporary personnel (with a fixed-term contract).

Students with formal commitment in exchange for remuneration, homeworkers, part-time workers and temporary workers are also considered employees to the owners and paid family members.

c) Specific trade variables

a. - Premises dedicated to sales

This refers to any premises accessible to the public, structurally separate and independent, where commercial activities (sales) are carried out or can be carried out, dependent on a company and in which one or more persons of that company work.

b.- Department store

A department store is defined as any establishment that has a sales and exhibition area greater than or equal to 2500 metres square. The sales area is understood to be the area that is accessible to the public and where sales operations are carried out; it includes shop windows, display cases, shelves and aisles within the establishment.

c.- Large chain

A Large chain store is considered to be any company with 25 or more premises, and 50 or more employees.

d.- Small chain

A Small chain store is considered to be any company with more than one premises, except those with 25 or more premises and 50 or more employees.

e.- Single retail stores

A Single retail store is considered to be that which carries out its commercial activity through a single premises.

f.- Service stations

Those companies whose main activity is the sale of fuel for automotion.

g.- Specialised trade

That carried out by companies in which the added value, or failing that, the turnover volume of a single type of product, considered as those that are included in a single class of CNAE-2009, is greater than 50%, and is carried out by the companies that trade in fewer than five types of product, whose added value (or turnover) represents at least 5% of total income for retail sales, considering that their main activity is that corresponding to the product with the greatest added value (or turnover)

h.- Non-specialised trade

That carried out by companies who sell five or more types of products, considered as those products that are included in a single class of the CNAE-2009, whose added value, or failing that, turnover volume represents at least 5% of total income for retail sales but none of these products has an added value (or turnover) greater than 50%.

4.3 INDICES BY PRODUCT AND BY ACTIVITY

An index number is defined as a statistical measure to compare a magnitude or variable in two different situations, one of which is considered a base or reference.

The indices can be calculated:

- By product: Food, Personal Equipment, Home Equipment and Other goods, which includes the sales of said products for all the companies that are part of the sample, whatever their main activity.

The indices by the distribution modes Large chain, Small chain, Single-location companies and Large stores are calculated as indices per product. These indicators include the entire turnover of companies meeting the requirements to be integrated into each of the distribution modes, regardless of what their main activity is.

- By activity according to the CNAE classification, these indices include all the products of companies that have a certain main activity.

In the publication of Retail Trade Indices includes indices calculated by product and by activity.

5. Sample design and Information collection

5.1 SAMPLING FRAME

The sampling frame is the Central Companies Directory (CCD), a list of companies that is updated once a year with administrative sources, primarily of a tax and social security nature. It is also updated with information from the statistical operations of INE.

The CDD contains information on companies' main economic activity and on the number of employees, variables that are used in the sample design, and on identification and location data, which are necessary for correct information collection.

5.2 SAMPLE DESIGN

Stratified random sampling is used. In each stratum a random sample is obtained, with the exception of the one formed by companies with 50 or more employees, in which all companies form part of the sample. As well as companies that have a high annual turnover. In certain Autonomous Communities and Cities and activity groups, smaller strata are also comprehensive, due to having a small population. For calculation of the sample size an optimal allocation is applied. The main stages of the design are then developed:

5.2.1 Stratification

The strata are formed by the crossing of Autonomous Community or City (19) x main economic activity group (11) x size group (4), measured by number of employees.

The main economic activity groups are the following

Activity groups	CNAE-2009 divisions
1	4711
2	472
3	4751,4771,4772
4	4743, 4752, 4754, 4759, 4763
5	4741 , 4742 , 4753 , 4761 , 4762 , 4764 , 4765 , 4776 , 4777 , 4778
6	4719
7	4773,4774,4775
8	4779, 478
9	4791
10	473
11	4799

The size groups are:

Size groups	Number of employees
1	0 to 2
2	3 to 9
3	From 10 to 49
4	50 or more employees

From 50 employees upwards the strata are comprehensive, that is they investigate all of the companies.

5.2.2 Sample size:

The size of the sample is calculated in order to provide indicators on the turnover and employment variables, for the following populations:

- At the national level, for activity groups.

- At the level of Autonomous Cities and Communities

  1 - Non-specialised trade (4711 + 4719)

  2 -Remaining groups

- At the level of Autonomous Cities and Communities

  1 - Food (4711 + 472)

  2 -Remaining groups

Optimal allocation is applied in order to calculate the sample sizes nh so that the overall sample size (n) is minimal, subject to:

1. The error related to the estimator of the total employees does not exceed certain predetermined errors, according to the considered aggregation:

- At the national level, lower than 0.5%

- At the level of Autonomous Communities or Cities, lower than 5%

2. The error related to the estimator of the total employees by activity groups does not exceed 1.5% at the national level.

3. The error related to the estimator of the total employees by type of trade (food and remaining, non-specialised and remaining) is lower than 5% for Autonomous Community or City.

5.3 ROTATION OF SAMPLING UNITS

The European Regulation requires basic changes every 5 years. At such times, the sample is renewed in order to reflect the new population distribution.

However, each year in January, a part of the sample is renewed. The objective of this annual rotation is, firstly, to avoid the tedium of the reporting units and

secondly, to renew the sample in a way that reflects the changes that occur in the population of retail companies.

Within this annual renewal there is a rotation of between 20 and 25% of the sampling units, in the strata that are not comprehensive. The criterion that is used is replacing companies that have been cooperating in the calculation of the Index approximately 5 years, and all those that have been de-listed, untraceable, included by mistake and merged or taken over.

5.4 ESTIMATORS AND SAMPLING ERRORS

To obtain a measure of the quality of the indices, an approximate relative sampling error is calculated for the inter-annual variation rates of the variables turnover and total employees. The general expression of the estimated relative error, assuming negligible bias, is given by:

$$C\hat{V}(\hat{R}) = 100 \times \frac{\sqrt{V(\hat{R})}}{\hat{R}}$$

$$where \quad \hat{R} = \frac{\hat{Y}_t}{\hat{Y}_{t-1}}$$

$\hat{R}$ is the estimator of the ratio, given by the quotient of the estimate of the total of the variable Y (turnover or total employed) in month m of year t, $\hat{Y}_t$, and the estimate of Y obtained in the same month m of year t-1, $\hat{Y}_{t-1}$. e

The method used to calculate the variance estimator is Taylor linearization. The variance estimator is expressed as:

$$\hat{V}(\hat{R}) = \frac{1}{\hat{Y}_{t-1}^2}[\hat{V}(\hat{Y}_t) + \hat{R}^2\hat{V}(\hat{Y}_{t-1}) - 2\hat{R}Co\hat{v}(\hat{Y}_t, \hat{Y}_{t-1})]$$

Where $\hat{V}(\hat{Y}_t)$ indicates the variance estimator of $\hat{Y}_t$, $\hat{V}(\hat{Y}_{t-1})$ indicates the variance estimator of $\hat{Y}_{t-1}$ and $Co\hat{v}(\hat{Y}_t, \hat{Y}_{t-1})$ indicates the covariance estimator between $\hat{Y}_t$ y $\hat{Y}_{t-1}$. .

5.5 INFORMATION COLLECTION

Information collection is carried out through the INE provincial delegations. The companies complete a monthly questionnaire and the data collection procedure is carried out via the web, by mail, telephone or fax.

The schedule of the information collection is the following:

- End of the reference month (T): sending of questionnaires to companies.
- From the beginning of the month following the reference month: The questionnaires arrive at the delegation. Recording and filtering processes.
- T+18: Reception of the questionnaires recorded in Central Services. Filtering and calculation of the indices.
- T+30: Publication of results.

6. Base year

Pursuant to Regulation no. 1165/98, the indices must change base every five years, in the years ending in 0 and 5. All indices must be adapted to the new base year within three years from the end of said new base year.

In order to comply with this Regulation, A base change has been made, from 2010 to 2015. In addition, the base changes are used to update the indices, so that they are adapted to the changes that have taken place in the retail sector in recent years and their evolution is measured more precisely.

January 2018 is the first month published in the new 2015 base. In this change the years 2015, 2016 and 2017 have been recalculated due to an update of the sample, and the series have been linked to achieve a comparable series since the beginning.

Series linking

The series linking is carried out from December 2015 until the beginning, thus maintaining the variation rates published in base 2010 in all years, except for the recalculated years, that is, except in 2015, 2016 and 2017.

The structural link, which makes the average for the year 2015 100, is used. The values of each month until December 2015 for each of the series published In base 2010 are divided by the average in the year 2015 for those indices in base 2010. Alternatively, they are multiplied by the structural link coefficient in order to pass them to base 2015:

$$Linking\ \ coefficient = \frac{1200}{\sum_{m=1}^{12} {}_{10}I^{m15}}$$

Being:

${}_{10}I^{m,15}$ the index for month m for year 2015 in base 2010.

Thus, the linked index in base 2015 for month m in year t is:

$$ {}_{15}IE^{m,t} = {}_{10}I^{m,t} * \frac{1200}{\sum_{m=1}^{12} {}_{10}I^{m,15}} $$

7. Formulation of the Retail Trade Index

Retail Trade Indices are calculated according to a chain-linked Laspeyres index based on the year 2015. A chain-linked index measures accumulative movements of indices in the short term in different base periods. In other words, it establishes comparisons between the current period (t) and the base period (0) albeit taking into account intermediate situations (k). In the ICM indices with base 2015, the intermediate situations considered correspond to the months of December for all years.

A chain-linked index is used because, although this is a value index, where it is equivalent to use fixed base indexes or chain-linked indexes, the fact of carrying out an annual rotation of between 20% and 25% of the sample units means that these linked indexes are considered to be methodologically more appropriate.

To get the indexes that are chained and are the publishable indexes, we must first calculate the indexes that we call non-publishable.

Detailed below is the calculation method for the turnover variable, which is similar to the one used for calculating the employment indices.

7.1 UNPUBLISHABLE INDICES (BASED ON DECEMBER T-1)

Basic indices

Basic indices (non-publishable) are constructed by products of the 17 Autonomous Communities and the 2 Autonomous Cities (CA) and the 4 distribution modes (MD) referenced to the month of December of the previous year:

$$ {}_{dec(t-1)}INP^{mt}_{CA,MD} = \frac{\hat{F}^{mt}_{CA,MD}}{\hat{F}^{dec(t-1)}_{CA,MD}} \times 100 $$

Where $\hat{F}^{mt}_{CA,MD}$ and $\hat{F}^{dec(t-1)}_{CA,MD}$ refer to estimated invoicing (or turnover) for one month m in year t and for December for the year (t-1), respectively, and they have been calculated with the same set of companies (having carried out rotation).

It should be noted that the rotation of units in January implies having two sets of companies in the months of December, one referring to the sample of companies that have been answering throughout the year t-1 and serves to calculate the Index

of December t-1 and another that will be used as reference month for the calculation of the indexes in year t.

Aggregate indices

Once the basic indices are calculated, the aggregate indices are obtained as weighted sums of the elementary indices.

Weights

The weights involved in the calculation of the aggregate indices are obtained directly from the survey data itself, since the sample size of the ICM allows for obtaining weights that are sufficiently representative of the sector, and this guarantees maximum currency in the revision of the same data, since the weights for the current year are obtained with data referring to December of the previous year.

The reference period for the weightings (to which the weightings refer) varies each year, and is the month of December of the year immediately prior to the one being considered.

$$ {}_{dec(t-1)}W_{CA,MD} = \frac{\hat{F}^{dec(t-1)}_{CA,MD}}{\sum_{\forall CA,MD \in S} \hat{F}^{dec(t-1)}_{CA,MD}} $$

where:

$\hat{F}^{dec(t-1)}_{CA,MD}$: Is the estimated turnover of the month of December of the previous year referred to the group of companies that are used to calculate the indices of year t

Aggregation

The basic indices and the weightings used for calculating aggregates refer to December of the previous year, whereby consistency is maintained with the reference variables. The general national index can be obtained by aggregating by Autonomous Community and City or by modes of distribution

$$ {}_{dic(t-1)}INP^{mt}_{S} = \sum_{\forall CA,MD \in S} {}_{dic(t-1)}INP^{mt}_{CA,MD} \times {}_{dic(t-1)}W_{CA,MD} $$

where:

${}_{dec(t-1)}INP^{m,t}_{CA,MD}$: is the non-publishable basic index, referred to December of t-1, of a Autonomous Community or City or a mode of distribution, in month m of year t.

${}_{dec(t-1)}W_{CA,MD}$: Is the weighting (as one), referred to December of t-1, of the Autonomous Community or City (CA) or the mode of distribution MD, within the aggregation S, i.e.:

$$_{Dec(t-1)}W_{AC,MD} = \frac{turnover\ of\ AC\ or\ \text{mode}\ of\ distribution\ (MD)}{turnover\ of\ S aggregation}$$

7.2 PUBLISHABLE INDICES

Once the non-publishable indexes are calculated, they must be chained and we obtain publishable indices, which follow the same formulation for both basic indices and for aggregate indices

$$_{Base10}IP^{m}_{CA,MD} = {}_{Base10}IP^{m-1}_{CA,MD} \times \frac{_{dic(t-1)}INP^{m,t}_{CA,MD}}{_{dic(t-1)}INP^{m-1,t}_{CA,MD}} = {}_{Base10}IP^{dic(t-1)}_{CA,MD} \times \frac{_{dic(t-1)}INP^{m,t}_{CA,MD}}{100}$$

7.3 EMPLOYMENT INDEX

Since January of 2005, the employment index is a monthly index.

The formulation for employment is calculated in the same manner as for turnover, using a chain-linked index Laspeyres index.

> Note: It should be noted that, in both the national indices and the indices for Autonomous Communities and Cities, the difference between the rates of the general indices of turnover or employment of the retail trade and the rates of the general index indices of turnover or employment without service stations do not correspond to the rates of turnover or employment rates of the service stations.

8. Adjusted índices

8.1 PRICE EFFECT CORRECTED INDICES

The retail trade indices at constant prices show the evolution of sales within the retail sector, once the effect that prices have on the aforementioned sales have been eliminated. These indices were published for the first time in January 2003, and deflated indices are published on a national level, at the level of Autonomous Communities and Cities and for the different modes of distribution.

The deflators that are used in the different national indices are:

– General Retail Trade Index. General RTI without services or rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance.

- General Index without Service Stations: General RTI without services or rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance; nor fuel and lubricants.
- Service Station Index: RTI Fuels and Lubricants for Personal Vehicles
- Food Index (national and Department Stores): RTI Food, beverages and tobacco
- Index for Non-food products (national and Department Stores): General RTI without food, beverages and tobacco; nor services nor rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance; nor fuel and lubricants.
- Personal equipment index: RTI clothing and footwear
- Home equipment Index: RTI kitchenware
- Other Goods Index: General RTI without food, beverages and tobacco; nor services nor rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance; nor fuel and lubricants.
- The general indices according to the different modes of distribution (Department stores, Large chain stores, Small chain stores and Single retail stores): General RTI without services or rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance.
- Index by activity 4791 'Retail trade by mail and internet': General RTI without food, beverages and tobacco; nor services nor rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance; nor fuel and lubricants.

For Autonomous Cities and Community:

- General Retail Trade Index. General RTI without services or rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance by Autonomous Community or City.
- General Index without Service Stations: General RTI without services or rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance; nor fuel and lubricants by Autonomous Community or City.

8.2 INDICES CORRECTED FOR SEASONAL AND CALENDAR EFFECTS

National Retail Trade Indices are published adjusted for seasonal and calendar effects in base 2015.

These indices are published from the base 2005 adjusted for calendar effects and from the base 2010 they are also published adjusted for seasonal effects.

The seasonal adjustment of these indicators is carried out in accordance with the *INE Standard*[1] *for the correction of seasonal and calendar effects in short-term series* that is available in INEbase. This standard follows the European Union recommendations contained in the *ESS guidelines on seasonal adjustment*.

[1] http://www.ine.es/clasifi/estandar_efectos_estacionales.pdf

The series adjusted for calendar effects and the series adjusted for seasonal and calendar effects are obtained with the JDemetra+ software (version 2.2.0)[2] from the publication of data in base 2015. JDemetra+ is officially recommended by Eurostat since February 2015 for performing seasonal and calendar adjustments in the official statistics of the European Union[3].

The time series analysis methodology recommends a periodic review of models to incorporate the most current information. This means that the series adjusted for seasonal effects and for seasonal and calendar effects are always provisional.

In the series for which data are available prior to December 1999, the data are kept fixed in each base and the models and series are estimated from January 2000 or since the beginning of the series, if it is later than 2000.

8.2.1 Indices corrected for calendar effects

The European Regulation regarding short-term statistics, for the purpose of harmonising all of the indicators compiled by the different European Union countries and achieving the greatest comparability possible, requires the indices to be provided in net terms, that is, eliminating the calendar effect, among others.

The calendar effect is defined as the impact produced in the time series of a variable, due to the different structure that the months (or quarters) present in the different years (in both length and composition), even if the remaining factors influencing said variable remain constant.

The length of the month is not completely absorbed by the seasonal component, as the number of days in February is not the same each year. This non-seasonal portion of the duration component of the month must be eliminated in the series adjusted for calendar effect.

On the other hand, the composition of the month refers to variations in retail trade caused by the different number of public holidays in the same month in subsequent years.

The method used for the adjustment of calendar effects is based on INE standards and in accordance with Eurostat recommendations, on RegARIMA models (regression models with stationary ARIMA errors). Four centred intervention variables have been constructed to capture the following three effects:

a) The working-day effect

b) The Holy Week effect

c) The leap-year effect

a) The working-day effect

The adjustment of the working-day effect has been carried out by designing an intervention variable, based on the characteristics of retail trade in Spain.

[2] https://github.com/jdemetra/jdemetra-app/releases/tag/v2.2.0

[3] https://ec.europa.eu/eurostat/cros/system/files/Jdemetra_%20release.pdf

This variable is created from the work schedules published in the BOE since 1994 and is constructed following the same structure that appears in the INE standard for the working days regressor. With the objective of including all public holidays, both national and those corresponding to the Autonomous Cities and Communities, the latter are weighted according to the weight that each Autonomous Community and City has within the index.

b) The Holy Week effect

The intervention variables to cover the effect of the Easter holiday represent the public holidays and working days, respectively, of the Easter holiday.

This has considered that the different Autonomous Cities and Communities celebrate either Holy Thursday, or Easter Monday, or both, weighting these days according to the weight that each Autonomous City or Community carries in the Retail Trade Index.

c) Leap year effect.

The intervention variable that covers the effect of the leap year distinguishes those months of February that have 29 days from the remaining months of February.

8.2.2 Indices corrected for seasonal and calendar effects

Once the calendar effects are adjusted, a further step is taken and the indices of seasonal effects are adjusted. Seasonal fluctuations are movements that occur with a similar intensity each month, each quarter or each season of the year, and which are expected to continue occurring.

Seasonally adjusted series, that is, those that are adjusted for seasonal and calendar effects, provide an estimate of what is "new" in a series (change in the trend, the cycle and the irregular component).

The methodology for the analysis of time series recommends a periodic revision of the models, so as to include the most up-to-date information, thereby making the corrected series of calendar effects and seasonal effects and calendar always provisional. Although the data until December 1999 has been left fixed, estimating the models and series since January 2000, or since the beginning of the series, if this start is after the year 2000.