Retail Trade Index
Base 2021

Methodological Manual

Index

INE. National Statistics Institute

1 Introduction

The short-term Retail Indices survey forms part of the action plan for the development of the retail statistics system created by Eurostat and is governed by the stipulations of Regulation (EU) no. 1165/98 of the Council on short-term statistics, amended, among others by Regulation (EU) no. 1158/2005 of the European Parliament and the Council of 6 July 2005, and subsequently by Regulation (EU) no 2019/2152 of the European Parliament and the Council of 27 November 2019 regarding European business statistics, which repeals ten legal acts in the field of business statistics and the Implementing Regulation (EU) 2020/1197 of the Commission of 30 July 2020, which establish technical specifications and modalities with regard to Regulation (EU) no 2019/2152 of the European Parliament and the Council on European business statistics, which repeals ten legal acts in the field of business statistics. The Retail Trade Index is also one of the Principal European Economic Indicators (PEEIs), the objective of which is to rapidly provide information to the European Central Bank and falls within the so-called EMU Action Plan.

The purpose of the Retail Trade Indices is to determine the fundamental characteristics of the companies dedicated to the retail trade in Spain, providing for the measurement of the short-term development of the sector's activity.

The base year of the indices is 2021, the first data published in this base is January 2024. To avoid a break in the series, a backward link has been provided in all the published series.

2 Scope of the survey

The scope of the survey is defined in relation to the population investigated, time and space.

2.1 POPULATION SCOPE

The population studied in the Retail Trade Index. Base 2021 is formed by companies whose principal activity is registered under Division 47, Section G, of the National Classification of Economic Activities (CNAE-2009).

The activities in this division and the subgroups it comprises are described below.

47. Retail trade, except 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 household consumption or utilisation, by shops, department stores, stalls, mail-order houses, door-to-door sales persons, street sellers, consumer cooperatives, etc.

The goods sold in this division are limited to goods usually referred to as consumer goods or retail merchandise.

Therefore goods not normally entering the retail trade, such as cereal grains, ores, industrial machinery etc. are excluded. This division also includes units engaged

primarily in selling to the general public, from displayed merchandise, products such as personal computers, stationery, paint or timber, although these products may not be for personal or household use. Handling that is customary in trade does not affect the basic nature of the merchandise and may include, for example, sorting, separating, mixing and packaging.

This division also includes the retail sale by commission agents and activities of retail auctioning houses.

This division excludes:

– The sale of agricultural products by farmers.
– The manufacture and sale of goods, which is generally classified as manufacturing in divisions 10-32.
– The sale of motor vehicles, motorcycles and their parts.
– The sale of cereal crops, ores, crude petroleum, industrial chemicals, iron and steel and industrial machinery and equipment.
– The sale of food and beverages for consumption on the premises and sale of takeaway food.
– The rental of personal and household goods to the general public.

47.1 Retail trade in non-specialised establishments

This group includes the retail sale of a variety of product lines in the same unit (non-specialised establishments), such as supermarkets or department stores.

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

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

47.3 Retail trade of automotive fuel in specialised establishments

This group includes the retail sale of fuel for motor vehicles and motorcycles, and the lubricants and coolants for motor vehicles.

This group does not include the wholesale trade of fuel, nor the retail trade of liquefied petroleum gases for cooking or heating.

47.4 Retail trade of information and communication equipment in specialised stores

This group includes the retail sale of equipment related to information and communications technology (ICT), such as computers and peripheral equipment, telecommunications devices and consumer electronics, in specialised establishments.

47.5 Retail trade of other household items in specialised establishments

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

47.6 Retail trade of cultural and recreation items in specialised establishments

This group includes the retail sale in specialised establishments of cultural and recreation items, such as books, newspapers, music and video recordings, sporting equipment, games and toys.

47.7 Retail trade of other items in specialised establishments

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

47.8 Retail trade in stalls and markets

This group includes the retail sale of any kind of new or second-hand product carried out in movable stands, either along a public road or at a fixed marketplace.

47.9 Retail trade carried out neither in establishments nor stalls or markets

This group includes retail sale activities by mail order houses, over the Internet, door-to-door sales, vending machines etc.

2.2   TIME SCOPE

Invoicing or gross sales indices are compiled monthly. Employment indices until December 2004 were compiled on a quarterly basis; 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 of the index, or reference period, is the one in which all indices are adjusted to be equal to 100. Normally this consists of an annual period. In the new system, the arithmetic average of the twelve monthly indices published in the year 2021, in base 2021, are adjusted to 100; therefore, the index reference period is the year 2021 (in other words, the base is 2021). This means that all indices published will refer to this year.

2.2.2 Variable reference period

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

In the calculation formula used for the RTI base 2021—linked Laspeyres—the reference period of the variables changes each year, and it is the month of December of the year immediately prior to the year considered.

2.2.3 Weightings reference period

The weightings reference period is the ones that the weightings used to structure the system refer to.

The weightings reference period varies each year and it is month of December of the year immediately prior to the year considered.

The weighting are calculation according to the data coming from the Retail Trade Index survey, as its sample size provides for weightings which are sufficiently representative of the sector and ensure their reviews is as up-to-date as possible.

2.3 GEOGRAPHICAL SCOPE

All statistical units located within Spain are subject of the study.

3 Statistical unit

The company which carries out one of the activities included within the population scope as its main economic activity, is used as a statistical unit. The company is also the reporting unit, as the response is facilitated due to it being perfectly defined and located and having accounting and employment data, and homogeneous information is obtained.

The company forms an organisational unit producing goods or services that enjoys certain decision-making autonomy, particularly when using the resources available to it. The company exercises one or more activities in one or various places.

4 Concepts and definitions

4.1 COMPANY CLASSIFICATION VARIABLES

Companies can 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 or City.

a) Company activity

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

Each statistical unit studied (companies) frequently carries out different activities that should be classified as types other than those of the National Classification of Economic

Activities. In general, the activities carried out by an economic unit may be one of three types: primary, secondary and auxiliary activities. The primary activity is different from secondary ones as it is the one generating greater added value; as for auxiliary activities, these are ones that generate services which are not traded in the market and are only used by the unit which so requires them (administration, transport services or warehousing).

Faced with the occasional difficulty for companies in calculating the added value when they carry out several activities, the primary activity is considered to be the one that generates the largest sales volume or, failing that, the one employing the greatest number of people.

Finally, the information requested from the reporting units refers not only to the activity considered as the primary activity, but also to all the secondary and auxiliary activities that are carried out.

b) Company size

A company's size is one of the most important variables when determining a company's behaviour. This size can be established in terms of the magnitude of its turnover or production value, or considering the number of people that make up its workforce. In these statistics, the latter option has been chosen to determine the size of the companies.

c) Geographic distribution

The sample collects information from the 17 autonomous communities and the 2 autonomous cities.

4.2 VARIABLES STUDIED

The variables studied may be classified into three types:

a) Economic variables

b) Employment variables

c) Specific variables of the trade

a) Economic variables

This block includes information collected on the company revenue during the reference month.

Turnover

Includes the amounts, without sales tax, invoiced by the company during the reference month pertaining to the sale of goods and the provision of services that are traded by the company, both from their primary 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 trade revenue, the goods traded have been grouped according to their classification in the CPI:

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

Other products: consisting of the following categories:

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

– **Household items:** Furniture (except office furniture), lighting, non-electric household utensils, cutlery, dinnerware, glassware, pottery and sanitary ware, curtains and blinds, 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, flat glass, 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, contact lenses...), etc.

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

– **Other goods:** Clocks, jewellery and silverware, wallpaper and floor coverings (rugs, fitted carpets, etc.), non-automobile fuels (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 ones of second hand, gifts and smoking items, communication material (telephones, faxes,…), leather or imitation leather travel articles, lubricants, oils, etc.

b) Employment variables

1. Employed personnel

The total number of people who work in the observation unit, which includes owners who work in the unit, working partners and unpaid family employees.

2. Unpaid personnel

Comprised of persons who direct 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 personnel

Consists of those employees bound to the company by a labour contract and who are paid fixed or periodic amounts in the form of a wage, salary, commission, paid piecework or payments in kind. A distinction is made between *permanent staff* (with an indefinite contract or labour relationship) and *temporary staff* (with a fixed-term contract).

Owners, paid family members, students with formal commitment in exchange for remuneration, homeworkers, part-time workers, seasonal workers, temps, etc. are also considered employees.

c) Specific trade variables

a.- Premises dedicated to sales

Refers to any structurally separate and independent premises accessible to the public where commercial activities (sales) are carried out or can be carried out, which are 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 square metres. The sales area is understood to be the area accessible to the public and where sales transactions are performed; this includes shop windows, display cases, shelves and aisles within the establishment.

c.- E-commerce

Sales via e-commerce, a website or mobile application are those made using the Internet, taking into account that the payment or delivery of the product can be completed online or in any offline channel.

d.- Large chain

Large chains are considered to be any company with 25 or more premises, and 50 or more employees.

e.- Small chain

Small chains are considered to be any company with more than one premises, except those with 25 or more premises and 50 or more employees.

f.- Single retail stores

Single retail stores are considered to be ones that carry out their commercial activity through a single premises.

g.- Service stations

Those companies whose main activity is the sale of automotive fuel.

h.- Specialised trade

Carried out by companies whose added value, or failing that, volume of turnover from a single type of product, considered as those included in a single class of CNAE-2009, is above 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 their total income

for retail sales, considering that their main activity is that corresponding to the product with the greatest added value (or turnover).

i.- Non-specialised trade

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, volume of turnover 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**: Depending on the activity to which the company belongs, it will be broken down into Food and Other Goods.

The indices by the distribution modes Large chain, Small chain, Single-location companies, E-commerce and Department 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, including within this classification special calculation groups.

The publication of the 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 Business Directory (CBD), a list of companies that is updated annually from administrative sources, mainly tax and Social Security sources. It is also updated with information from the statistical operations of INE.

The CBD contains information on the 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 proper information collection.

5.2 SAMPLE DESIGN

Stratified random sampling is applied. In each stratum, a random sample is obtained, except the one formed by companies with 50 or more employees, in which all form part of the sample, as well as those companies with high annual turnover. In certain Autonomous Communities and Cities and activity groups, smaller strata are also

comprehensive, due to having a small population. For the calculation of the sample size, optimal allocation is applied. The main stages of the design are outlined below:

5.2.1 Stratification

Each stratum is formed by crossing autonomous community or city (19) × main economic activity group (11) × size group (4), measured in the number of wage earners.

The main economic activity groups are as follows:

Activity groups	CNAE-2009 codes
A	4711
B	4719
2	472
3	473
4	474
5	475
6	476
7	477
8	478
9	4791
C	4799

The size groups are:

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

In addition to stratum 4 (50 or more wage earners) and companies with high turnover, the groups and strata listed in the table below are comprehensive:

Autonomous Community and City	Group	Stratum
Aragón	8	3
	B	3
Principado de Asturias	8	3
	9	2
	9	3
	B	3

Autonomous Community and City	Group	Stratum
Illes Balears	9	3
Canarias	9	3
Cantabria	4	3
	9	3
	C	3
Extremadura	6	3
	9	3
	B	3
Comunidad Foral de Navarra	4	3
	B	3
País Vasco	8	3
La Rioja	2	3
	4	3
	6	3
	8	2
	A	3
	C	3
Ceuta	2	3
	3	2
	5	3
	8	2
	B	2
	B	3
Melilla	2	3
	4	2
	8	2
	A	3
	B	2

5.2.2 Sample size

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

– At the national level: for activity groups.

– At the Autonomous Community or City level:

   1. Non-specialised trade (4711 + 4719)

2. Remaining groups

– At the Autonomous Community or City level:

3. Food (4711 + 472)

4. Remaining groups

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

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

   – At the national level, below 0.5%

   – At the Autonomous Community and City, below 5%

2. The relative error of the estimator of the total wage earners by activity groups does not exceed 1.5% at the national level.

3. The relative error of the estimator of the total wage earners by type of trade (food and other, non-specialised and other) is below 5% per Autonomous Community and City.

5.3 ROTATION OF SAMPLING UNITS

European Regulations require base changes every 5 years. At such times, the sample is renewed in order to reflect the new population distribution.

However, each 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.

This annual renewal consists of a rotation of between 20 and 25% of the sampling units, in the strata that are not comprehensive. The criterion used is to replace 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 turnover and total employee variables. The general expression of the estimated relative error, assuming negligible bias, is given by:

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

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

$\hat{R}$ is the estimator of the ratio, given by the quotient of the estimate of the total from 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, $\hat{Y}_{t-1}$.

The method used to calculate the variance estimator is Taylor linearisation. 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. Companies complete a monthly questionnaire and the data collection procedure is carried out via the web, by post, telephone or fax.

The schedule for collection is as follows:

- 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: Receptions of the questionnaires recorded in Central Services. Filtering and calculation of the indices.

- T+30: Publication of results.

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6   Base year

Pursuant to Regulation no. 1165/98, 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 the new base year.

Since 2024, the base year is 2021, which is an exception set out in Regulation 2019/2152.

Base changes are used to update the indices, so that they may adapt to the changes that have taken place in the retail sector in recent years and their evolution can be measured more precisely.

January 2024 is the first month published in the new 2021 base. In this change the years 2021, 2022 and 2023 have been recalculated due to an update of the sample, and the series have been linked to achieve a comparable series from its beginning.

Series linking

Series linking is done from December 2020 until the start, thus maintaining the variation rates published in base 2015 in all years, except of the recalculated years, that is, except in 2021, 2022 and 2023.

The structural link is used, which sets the average for the year 2021 to 100. The values of each month until December 2021 for each series published in base 2015 are divided by the average in the year 2021 for those indices in base 2015. Alternatively, they are multiplied by the structural link coefficient in order to pass them to base 2021:

$$Coeficiente\ de\ enlace = \frac{1200}{\sum_{m=1}^{12} {}_{15}I^{m,21}}$$

Being:

${}_{15}I^{m,21}$ the index for month m for the year 2021 in base 2015.

Thus, the linked index in base 2021 for month m in year t is:

$$_{21}IE^{m,t} = {}_{15}I^{m,t} * \frac{1200}{\sum_{m=1}^{12} {}_{15}I^{m,21}}$$

7 Formulation of Retail Trade Indices

Retail Trade Indices are calculated according to a chain-linked Laspeyres index based on the year 2021. A chain-linked index measures accumulative index movements 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 base 2021 RTI, 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 using fixed base indexes or chain-linked indexes, the fact of performing an annual rotation of between 20% and 25% of the sample units means that these linked indexes are considered as methodologically more suitable.

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

Below is the calculation method for the turnover variable, which is analogous to the one used for calculating employment indices.

7.1 NON-PUBLISHABLE INDICES (BASED ON DECEMBER T-1)

Basic indices

Basic indices (non-publishable) are constructed by products from the 17 Autonomous Communities and the 2 Autonomous Cities (AC) and the 5 distribution modes (MD) referenced to the month of December of the previous year:

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

where $\hat{F}^{mt}_{CA,MD}$ and $\hat{F}^{dic(t-1)}_{CA,MD}$ 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 been rotated).

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 replied throughout the year t-1 and serves to calculate the index for December t-1 and another that will be used as a reference month for the calculation of the indices in year t.

Aggregate indices

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

Weightings

The weighting involved in the calculation of the aggregate indices are obtained directly from the survey data itself, since the sample size of the RTI can yield weighting that is sufficiently representative of the sector, which ensures the current accuracy in the revision of the same data, since the weighting for the current year is obtained with data referring to December of the previous year.

The weighting reference period (which the weighting itself refers to) varies each year and it is month of December of the year immediately prior to the year considered.

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

where:

$\hat{F}^{dic(t-1)}_{CA,MD}$: 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 the 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

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

where:

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

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

$$_{dic(t-1)}W_{CA,MD} = \frac{facturación\,(cifra\,de\,negocios)\,estimada\,de\,comunidad\,CA\,o\,mod\,o\,de\,distribución\,MD}{facturacion\,(cifra\,de\,negocios)\,estimada\,de\,la\,agregación\,S}$$

7.2 PUBLISHABLE INDICES

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

$$_{Base\,21}IP_{CA,MD}^{m} = {}_{Base\,21}IP_{CA,MD}^{m-1} \times \frac{_{dic\,(t-1)}INP_{CA,MD}^{m,t}}{_{dic\,(t-1)}INP_{CA,MD}^{m-1,t}} = {}_{Base\,21}IP_{CA,MD}^{dic(t-1)} \times \frac{_{dic\,(t-1)}INP_{CA,MD}^{m,t}}{100}$$

7.3 EMPLOYMENT INDICES

Since January 2005, the employment index has been published monthly.

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 in the retail trade and the rates of the general indices of turnover or employment without service stations do not correspond to the rates of turnover or employment rates of service stations.

8 Adjusted indices

8.1 INDICES CORRECTED FOR PRICE EFFECT

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 (I47):** General RTI without VAT, nor services nor rentals; nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance.

- **Service Station Index (I473):** RTI without VAT, fuel and lubricants for personal vehicles.

- **Index under activity code I47 without I473 and CNAE 47.1, 47.8, 47.9, 47.91, 47_X_47.3.:** General RTI without VAT, nor services nor rentals, nor fuel and lubricants, nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance, nor water distribution, nor electricity, nor gas.

- **Indices under activity code I4711, I472 and Food Index:** Special group 26. – Food, beverages and tobacco without VAT.

- **Index under activity code I4719 and remaining:** General RTI without VAT, nor services nor rentals, nor fuel and lubricants, nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance, nor water distribution, nor electricity, nor gas, nor food, beverage and tobacco.

- **Special group - Personal equipment (4751+4771+4772):** ECOICOP 03 Group within VAT Clothes and footwear, without dry-cleaning, repair and clothes rental, nor footwear repair and rental.

- **Special group - Home equipment (4743+4752+4754+4759+4763) :** CPI without VAT Material for home maintenance and repair, large household appliances (electrical or otherwise), small appliances, home and garden tools and equipment, audiovisual reception, recording and reproduction equipment, and audiovisual and data media.

- **Special group - Health (4773+4774+4775):** CPI without VAT Medicines and other pharmaceutical products, therapeutic material and personal care items.

- **Index I474:** CPI without VAT Telephone equipment, audiovisual equipment, computer equipment.

- **Index I475:** CPI without VAT Home maintenance materials, and Household group without appliance repair, nor household cleaning items, nor domestic services and other household services.

- **Index I476:** CPI without VAT Audiovisual recording media, Recreational and sports items, Books, press and stationery.

- **Index I477:** CPI without VAT Clothes and footwear without dry-cleaning and repair, nor shoe repair, CPI without VAT personal care items, CPI without VAT personal items, CPI without VAT floristry and pets, CPI without VAT Medicines, other pharmaceutical products and therapeutic material, CPI without VAT Household cleaning items, CPI without VAT Photography and film equipment, CPI without VAT Other fuels.

The deflators for **Autonomous Communities and Cities** are:

- **General Retail Trade Index:** General RTI without services or rentals, nor fuel and lubricants, nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance is replaced by General RTI without VAT, nor services nor rentals, nor fuel and lubricants, nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance, nor water distribution, nor electricity, nor gas, depending on the autonomous community or city.

- **General index without service stations**: General RTI without VAT, nor services nor rentals, nor fuel and lubricants, nor automobiles, nor other vehicles, nor spare parts and accessories for maintenance, nor water distribution, nor electricity, nor gas, depending on the autonomous community or city.

8.2 INDICES ADJUSTED FOR SEASONAL AND CALENDAR EFFECTS

National Retail Trade Indices are published adjusted for seasonal and calendar effects in base 2021.

These indices are published adjusted for calendar effects since base 2005 and starting from 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*.

The series adjusted for calendar effects and the series adjusted for seasonal and calendar effects are obtained using the JDemetra+ software (version 2.2.2)[2], starting with the publication of data in base 2015. JDemetra+ has been 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.

8.2.1 Indices adjusted for calendar effects

The European Regulation regarding short-term business statistics, for the purpose of harmonising all of the indicators compiled by the different European Union countries and achieving the greatest comparability possible, requests that the indices are 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 months (or quarters) have in the different years (in both length and composition), even if other factors influencing said variable remain constant.

[1] http://www.ine.es/clasifi/estandar_efectos_estacionales.pdf
[2] https://github.com/jdemetra/jdemetra-app/releases/tag/v2.2.2
[3] https://ec.europa.eu/eurostat/cros/system/files/Jdemetra_%20release.pdf

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 a month's duration component must be removed in 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 is done using the default "Trading Days" regressors calculated in JDemetra+, taking into account national holidays. These regressors account for the different composition of working days in the month, as each day of the week may behave differently.

b) The Holy Week effect

With regard to changeable holidays, the most important in Europe is Holy Week. The Holy Week regressor used is also calculated by JDemetra+ by default. It is worth noting that this regressor considers Easter Monday as a holiday.

c) Leap-year effect

The intervention variable that covers the effect of the leap year distinguishes which months of February have 29 days from those that do not.

8.2.2 Indices adjusted 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).