

# **Retail Trade Index Base 2005**

## **Methodological Manual**

**January 2012**

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## 1. Introduction

The short-term Retail Trade Indices survey is a part of the action plan for the Development of the Statistical System regarding Trade compiled by Eurostat, pursuant to Regulation (EC) No. 1165/98 of the Council, of 19 May 1998 regarding short-term statistics, modified by Regulation (EC) no. 1158/2005 of the European Parliament and Council, of 6 July 2005. The Retail Trade Index is also one of the Principal European Economic Indicators (PEEI), whose purpose is to provide information rapidly to the European Central Bank, and is included in 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 2005, and the first data published in the new base is January 2006. In order to avoid a break in the series, a backward link has been established for all of those published.

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## 2. Survey scope

The scope of the survey is defined with respect to the population researched, time, and space.

### 2.1 Population scope

The target population of the Short Term Retail Trade Survey, base 2005, 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), which includes the following groups:

#### **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 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.

As a result, this excludes those goods that are not usually included in retail trade, such as grains, minerals, machinery and industrial equipment, etc. 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 trade carried out by intermediaries, and the activities of companies that perform retail auctions.

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 manufacture 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 effects to the general public

#### **47.1 Retail sale in non-specialized establishments**

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

#### **47.2 Retail sale of 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, fish, other 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 includes:*

- The retail trade of fuel for motor vehicles and motorcycles, lubricants and refrigerants for motor vehicles.

*This does not include:*

- The retail trade of fuel, retail trade of liquid gas from oil tankers for cooking or heating.

#### **47.4 Retail trade of IT equipment and communications in specialised establishments**

*This includes:*

The retail trade of equipment related to information technologies and communications (ITC), such as computers, peripherals, telecommunications equipment and electronic products, in specialised establishments.

#### **47.5. Other retail trade of new articles 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 sale, in specialised establishments, of cultural and recreational items, such as books, newspapers, musical and video recordings, sporting equipment, 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 at stands and 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 or 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 2005, they have been published monthly.

## **2.3 Geographical scope**

All statistical units located within Spain are under study.

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## **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, given that because it is perfectly defined and located, and accounting and employment data is available, the response is facilitated and homogeneous information is obtained.

The company is the smallest combination of legal units that constitutes an organisational unit that produces goods or services, and which has a certain degree of decision-making autonomy, especially in relation to the allocation of their current resources. A company may carry out one or more activities in one or several local units.

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## **4. Concepts and definitions**

### **4.1 Company classification variables**

Companies may be classified according to three criteria:

- a. Main activity, according to the codes of the National Classification of Economic Activities of 2009 (CNAE-2009).
- b. Size of the company, by number of employees.
- c. Geographical distribution, by Autonomous Community.

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

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, that which employs the greatest number of persons.

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

#### **b) Size of the company**

The size of the companies is one of the most important variables when it comes to determining company 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 sample is representative by Autonomous Community.

### **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 covers 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 exercise 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 on sales. Not deducted are cash discounts, nor discounts for prompt payment.

This covers all amounts invoiced by the unit (company) during the reference period, which includes all commercial sales of goods and services supplied to third parties that are the object of the company's traffic.

With the aim of classifying revenues, goods under transaction are grouped according to CPI classification group.

**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...) etc

**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, etc.

## b) Employment variables.

### 1. Employed 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

This consists of persons who direct or actively participate in company work without receiving fixed remuneration or a salary. Included are owners, autonomous partners who are active within the company and family assistance. 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:

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 contract or labour relationship) and *temporary personnel* (with a fixed-term contract).

Remunerated owners, students with formal commitments in exchange for remuneration or education and domestic workers are also considered employees.

## d) Specific trade variables.

### a- Premises

Any structurally separated and independent building that is not dedicated exclusively to family housing, and in which economic activities dependent on a company are carried out, and in which one or more persons work for the company.

### 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. Sales area is defined as any area that is accessible to the public and where sales transactions take place; it includes shop windows, display cabinets, shelves and hallways within the establishment.

### **c.- Large chain store**

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

### **d.- Small chain store**

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 turnover of a single type of product, considering as such those that are included in a single class of CNAE-2009, is greater than 50 percent, and is carried out by the companies that trade in fewer than five types of product, considering that their main activity is that corresponding to the product with the greatest turnover.

### **h.- Non-specialised trade**

That trade which is carried out by companies that sell more than five types of product, none of which has turnover exceeding 50 per cent of the total.

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## **5. Sampling plan and Sample design**

### **5.1 Survey framework**

The Central Companies Directory (CCD) has been used as the framework for the survey, which contains information on the main economic activity and on the number of employees in companies, enabling their stratification according to these concepts. Also featured in this directory is data on the identification and localisation of the statistical units, which is necessary for a correct collection of the information.

The data contained in the CCD is obtained from administrative sources, mainly from the State Tax Agency and Social Security, and it is completed with information from INE statistical operations.

### **5.2 Sample design**

Stratified sampling has been used. The division of the sample between different strata is carried out using the Neyman allocation. A random selection is made in each stratum, except with companies with more than 49 employees, as they all form part of the sample. Retail trade companies (division 47 of the CNAE) have been used from the reference population. The companies selected have been classified based on 3 variables: main activity, size and Autonomous Community.

The size of the sample has been calculated in order to provide indicators on the turnover and employment variables, which are representative of the following populations.

On a national level:

- 1- 4711 (Retail sale in non-specialized stores with food, beverages and tobacco predominating)
- 2- 47.19 (Other retail trade in non-specialised establishments)
- 3- 47.2 (Retail trade in food, beverages and tobacco in specialised establishments)
- 4- 47.3 (Retail trade of fuel for automotion in specialised establishments)
- 5- 47.51+47.71+47.72 (Retail trade of textiles, of garments and footwear and leather items)
- 6- 4743+4752+4754+4759+4763 (Retail trade of audio and video equipment; hardware goods, paint and glass; household appliances; furniture, lighting equipment and other household items)
- 7- 4741+4742+4753+4761+4762+4764+4765+4776+4777+4778 (Retail trade of computers, peripherals and software; telecommunications equipment; rugs, carpets and wallpapers and floor coverings; books; newspapers and stationery; sports items; games and toys; flowers, plants, seeds, fertilisers, pets and food for pets; clocks and jewellery; other retail sale in specialised establishments)
- 8- 4773+4774+4775 (Retail trade of pharmaceutical products; medical and orthopaedic goods; cosmetic and hygienic products in specialised establishments)
- 9- 4791 (Retail trade by correspondence or the Internet)
- 10- 4779+4781+4782+4799 (Retail trade of second-hand goods in establishments; via stalls and markets; other retail trade not carried out in stores)

On an Autonomous Community level (17, plus Ceuta and Melilla separately)

- 1- 4711+4719 (Non-specialised trade)
- 2- Rest of groups

On an Autonomous Community level (17, plus Ceuta and Melilla separately)

- 1- 4711+472 (Food)
- 2- Rest of groups

Companies have been classified according to size in four strata:

- 1- Fewer than 3 employees
- 2- 3 to 9 employees
- 3- 10 to 49 employees
- 4- 50 or more employees

The last stratum is exhaustive. For the rest of the strata, an annual rotation of 25% is carried out.

### **5.3 Information collection**

The information collection is carried out through the INE Provincial Delegations, with companies completing a monthly questionnaire. The data collection procedure employed has been by post, with telephone and fax support.

The information collection at the INE provincial delegations is done in line with the following calendar:

- End of the reference month (T): the questionnaires are sent to the companies.
- T+7: 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.

### **5.4 Rotation of sampling units**

Within the retail trade sector, every year both new company registrations and company de-listings take place. Moreover, and although European Regulations establish that base changes must be carried out every 5 years, with smaller companies, it is necessary to rotate within a shorter time frame, to avoid inconveniencing the informant units.

In view of the above, annual rotations are carried out, using the criterion of replacing companies that have been cooperating in the calculation of the Index approximately 5 years, and all those that have been delistings, unreachable, included by mistake and merged or taken over.

The annual rotations are carried out during each month of January. The objective of the process is to determine a new selection of units so that the informant units are renewed and a re-weighting of said units carried out in such a manner that the sampling data can be transferred to population data.

The percentages are presented for the common sample between the years 2011 and 2012, in the sample strata, in the following chart.

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## **6. Base year**

The base year of an index indicates the period to which the comparisons of different situations carried out refer. This means that generally, a base year relatively close to the current period is usually chosen, given that comparisons lose meaning when the comparison periods become spread apart. For this reason, it is advisable to periodically update the information relating to the base year, in other words, to change the base year so that the index does not become obsolete and lose meaning.

The base year of the index is 2005. The index previously had 1994 and 2001 as base years. In base year 2001, the study of companies dedicated to the sale of pharmaceutical products and medical articles, mobile units or those without permanent facilities and trading in second-hand objects was included, and the level of index breakdown was increased, as indices by Autonomous Community began to be produced.

The index from January 2006 was the first to be published in base 2005.

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## 7. CNAE Change

The European Parliament and Council passed the new classification of economic activities for statistical purposes within the European Union, known as NACE Rev.2, on 20 December 2006, via Regulation (EC) no. 1893/2006; this Regulation also stipulates the use of the new classification in the statistics of the community scope, for the purpose of ensuring the harmonised implementation of the same. Among these statistics are the short-term statistics, which include the Retail Trade Indices.

The adaptation to the new European classification (NACE Rev.2) and to the national version of the same (CNAE-2009) has caused changes in the Retail Trade Indices survey. For some activities, the new classification has only caused a change in code, and not in content; in other cases, however, they have changed to different branches or sectors. In the retail sector, the main difference is the introduction, into this sector, of the companies whose main activity is the retail trade of fuel for automotion in specialised establishments (service stations).

The introduction of this new activity within division 47 (Retail trade) has led to changes in the indices that have been published to date. As of January 2009, the following indicators will be disseminated within the Retail Trade Indices statistics, for the national total:

- General Retail Trade Index. Shows the evolution of both sales (at current prices, constant prices and prices adjusted for calendar effect) and employment, in the total of division 47.
- Service Station Index. Shows the evolution of both sales (at current prices, constant prices and prices adjusted for calendar effect) and employment, in group 47.3., retail trade of fuel for automotion in specialised establishments.
- General Index without Service Stations. Shows the evolution of both sales (at current prices, constant prices and prices adjusted for calendar effect) and employment, of division 47, except group 47.3., and is comparable with the previous General Index that was published until January 2009.

In addition, the breakdown of the current General Index without Service Stations is being published, by product: Food and Non-Food Products (distinguishing Personal equipment, Household equipment and Other goods) and according to form of trade distribution: Single retail stores, Small chain stores, Large chain stores and Department stores. These indices, by product and by form of trade distribution, correspond with those that were published until January 2009.

The General Retail Trade Indices and the General Employment Indices are disseminated by Autonomous Community, measuring the evolution of sales and employment of the total of division 47 (including service stations) in each Autonomous Community.

On 29 May 2008, Commission (EC) Regulation no. 472/2008 was passed on the transfer in NACE Rev.2 of short-term statistics, establishing the European guidelines for the dissemination of results in the new classification. Pursuant to this Regulation, beginning with reference month January 2009, the indices will begin to be published in the new classification, CNAE-2009.

Likewise, in order to guarantee the comparability of the information over time, the INE will publish the retrospective series in this new classification in INEBASE.

## 8. Formulation of the Retail Trade Index

The year 2005 will be considered as the base year for the development of the Retail Trade Indices. During this year, the companies that will form part of the sample will be determined, and average invoicing necessary for the calculation of both the index and the weightings will be calculated.

### 8.1 Sales Volume Index

An index linked at the Autonomous Community level will be used, as well as a weighted index at the national level. This is a monthly index.

The first index to be calculated will be for January 2006.

The calculation of this first month for each Autonomous Community will be carried out according to the following formula:

$$I_{\text{enero2006}}^{CA} = \frac{\sum_k F^{CA}_{\text{enero2006}k} * w_k}{F^{CA}}$$

Where:

CA: is the Autonomous Community for which we are calculating the index.

k: is the company.

$F_{\text{January2006}k}^{CA}$ : is the invoicing of company k, in January 2006, in Community CA (CA being the code of the Autonomous Community).

$w_k$ : is the weighting of the company within the Autonomous Community to which it belongs.

$F^{CA}$ : Average invoicing, which is calculated as:

$$F^{CA} = \frac{\sum_k \sum_{2001} F^{CA}_{2005,k} * w_k}{12}$$

where: -  $F_{2005,k}^{CA}$  is the invoicing of year 2005, the base year, for a specific variable in a specific Autonomous Community.

For the remaining months, that is, February 2006 onwards, the index will be calculated as:

$$I_j^{CA} = I_{j-1}^{CA} * V_{j,j-1}^{CA}$$

$$V_{j,j-1}^{CA} = \frac{\sum_k F_{jk}^{CA} * w_k}{\sum_k F_{j-1,k}^{CA} * w_k}$$

where:

j: is the month for which the index is calculated

$F_{jk}^{CA}$  is the invoicing of companies corresponding to an Autonomous Community in month j

$F_{j-1,k}^{CA}$  is the invoicing of companies corresponding to an Autonomous Community in the month j-1

Once the base index has been calculated for each Community the rest will be weighted sums

#### *General Index without Service Stations for an Autonomous Community*

$$I_{Gral\ sin\ E.S.}^{CA} = I_{Alimentacion}^{CA} \times Pond^{CA}_{Alimentacion / Gral\ sin\ E.S.} + I_{Re\ sto}^{CA} \times Pond^{CA}_{Re\ sto / Gral\ sin\ E.S.}$$

The general index without service stations of an Autonomous Community is the weighted sum of the indices of Food and Non-Food Products of said Community.

#### *National Food Index*

$$I_{Alimentacion}^{Nal} = \sum_{CA} I_{Alimentacion}^{CA} \times Pond^{Alimentacion}_{CA / Nacional}$$

The national food index is the weighted sum of the food indices of all of the Autonomous Communities.

#### *National Index for Non-Food Products*

$$I_{Re\ sto}^{Nal} = \sum_{CA} I_{Re\ sto}^{CA} \times Pond^{Re\ sto}_{CA / Nacional}$$

The national index for non-food products is the weighted sum of the remaining indices of all of the Autonomous Communities.

#### *General Retail Index for an Autonomous Community*

$$I_{Gral\ de\ com.\ min.}^{CA} = I_{Gral\ sin\ E.S.}^{CA} \times Pond^{CA}_{Gral\ sin\ E.S. / Gral\ de\ com.\ min.} + I_{E.\ de\ Servicio}^{CA} \times Pond^{CA}_{E.\ de\ Servicio / Gral\ de\ com.\ min.}$$

The general retail index of an Autonomous Community is the weighted sum of the General Indices without Service Stations and the Service Station Indices.

### *General National Index without Service Stations*

The general national index without services stations is obtained as the weighted sum of the general indices without service stations of the Autonomous Communities:

$$I^{Nal}_{Gral\ sin\ E.S.} = \sum_{CA} I^{CA}_{Gral\ sin\ E.S.} \times Pond^{Gral\ sin\ E.S.}_{CA/Nal}$$

### *General National Retail Trade Index*

The general national retail trade index can also be calculated as the weighted sum of the general retail trade indices of Autonomous Communities.

$$I^{Nal}_{Gral\ com.\ min.} = \sum_{CA} I^{CA}_{Gral\ com.\ min.} \times Pond^{Gral\ com.\ min.}_{CA/Nal}$$

**Note:** It should be borne in mind that, with both the national indices and the indices by Autonomous Community, the difference between the rates of the general retail trade indices and the rates of the general indices without service stations does not correspond to the rate of the service station indices.

## **8.2 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 invoicing, using a linked index at an Autonomous Community level, that is:

$$I^{ECA}_j = I^{ECA}_{j-1} * V^{ECA}_{j,j-1}$$

$$V^{ECA}_{j,j-1} = \frac{\sum_j E^{CA}_{jk} * w_k}{\sum_j E^{CA}_{j-1,k} * w_k}$$

Once the employment indices of the different Autonomous Communities have been calculated, the national employment index will be calculated as a weighted sum of the former. Its formulation would be:

$$I^{ENal}_j = \sum_{CA} I^{ECA}_j \times Pond^E_{CA/Nacional}$$

Up until December 2004, the employment index was issued on a quarterly basis, published solely in the months of March, June, September and December.

In employment, general retail trade indices and general indices without service stations are published.

**Note:** It should be borne in mind that, for both national and Autonomous Community indices, the difference between the rates of the general retail trade employment indices and the rates of the general employment indices without service stations does not correspond to the rate of the employment indices of the service stations.

### 8.3 Department Store Index

The Department Stores Indices are calculated with a restricted group of companies, which have premises with a sales surface area of more than 2500 metres square, using in the calculation of the index only that invoicing or employment that corresponds to said premises, instead of the total invoicing or employment of the company.

The index is calculated in the same way as the indices for the entire retail sector; we are dealing with a linked index calculated solely on a national level.

### 8.4 Indices by distribution class

As of January 2006, indices are available regarding the characteristics of the companies in terms of the number of premises or establishments, through which the retail sales are carried out. The objective is to be able to study, through those indicators, the evolution of the different trade distribution classes. Thus, indices are calculated for Large Chains, Small Chains and Single Retail Stores, for both turnover and employed personnel.

The methodology applied for the calculation of these indices is the same used for the rest of the indicators of the retail sector, and has been compiled in such a way that it fulfils the following condition:

$$I_{Gral\ sin\ E.S.}^{Nal} = I_{GrandesCadenas}^{Nal} \times POND_{GrandesCadenas}^{Nal} + I_{PequeñasCadenas}^{Nal} \times POND_{PequeñasCadenas}^{Nal} + I_{E.Unilocalizadas}^{Nal} \times POND_{E.Unilocalizadas}^{Nal} + I_{GrandesSuperficies}^{Nal} \times POND_{GrandesSuperficies}^{Nal}$$

### 8.5 Linked series

The base change in a short-term indicator implies a break in the series, due to both the updating of the weighting system used in the calculation of the indices, and the modifications to distribution of the sample units, adapting these elements to the new population structure.

On the other hand, the base change has been used in the Retail Trade Indices to substitute companies that have been answering the survey for several years, because they have not left the sample in the annual rotations, for the purpose of avoiding inconveniencing the informant units.

In order to avoid the break that said base change implies in the series, link coefficients have been calculated for the different indices published, so that the variation rates remain, and we are able to calculate variation rates between the indices for the new base and the previous periods.

The series link consists of multiplying the series in the previous base (2001) by the link coefficient obtained for each of them.

### 8.5.1. Link coefficients.

The link coefficient used is the coefficient that ensures that the base year, in this case 2005, of the linked series, has an index average of 100, and this is called the structural coefficient.

The structural coefficient is obtained as the coefficient between the average index for the year 2005, in base 2005, and the average index for the same year in base 2001.

This is expressed as:

$\bar{I}_{2005}^{Base\ 2001}$  : Indices for the year 2005 in base 2001

$\bar{I}_{2005}^{Base\ 2005}$  : Indices for the year 2005 in base 2005

$$K = \frac{\bar{I}_{2005}^{Base\ 2005}}{\bar{I}_{2005}^{Base\ 2001}} = \frac{\frac{\sum_{m=1}^{12} I_{m,05}^{Base\ 2005}}{12}}{\frac{\sum_{m=1}^{12} I_{m,05}^{Base\ 2001}}{12}}$$

where:

m: months of the year

In terms of construction, the average of year 2005 indices in base 2005 is equal to 100, meaning that it can be simplified:

$$K = \frac{\frac{\sum_{m=1}^{12} I_{m,05}^{Base\ 2005}}{12}}{\frac{\sum_{m=1}^{12} I_{m,05}^{Base\ 2001}}{12}} = \frac{100}{\frac{\sum_{m=1}^{12} I_{m,05}^{Base\ 2001}}{12}} = \frac{1200}{\sum_{m=1}^{12} I_{m,05}^{Base\ 2001}}$$

These coefficients have been calculated independently for each series, meaning that in periods previous to the link, that is, previous to January 2006, no series is a weighted grouping of its components.

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## 9. Adjusted indices

### 9.1 Indices adjusted for prices' 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 2002, and deflated indices are published on a national level, an Autonomous Community level and for the different distribution classes. In January 2010, the deflators are reviewed in order for them to better adapt to products containing the indicators, the series are reviewed from the start.

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

- General Retail Trade Index: General CPI excluding services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance.
- General Index without Service Stations: General CPI excluding services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance; and fuels and lubricants for personal transport equipment.
- Service Station Index: CPI Fuels and Lubricants
- Food Index (national and Department Stores): CPI Food, beverages and tobacco
- Index for Non-food products (national and Department Stores): General CPI excluding food, beverages and tobacco; and services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance; or fuels and lubricants for personal transport equipment.
- Personal Equipment Index: CPI for clothing and footwear
- Household Equipment Index: CPI for furniture and household equipment
- Index of Other Goods: General CPI excluding food, beverages and tobacco; and services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance; and fuels and lubricants for personal transport equipment.
- The general indices by the different distribution classes (Department stores, Large chain stores, Small chain stores and Single retail stores): General CPI excluding services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance.

By Autonomous Community:

- General Retail Trade Index: General CPI excluding services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance by Autonomous Community.
- General Index without Service Stations: General CPI excluding services and rentals; and motor vehicles, other vehicles, spare parts and accessories for maintenance; and fuels and lubricants for personal transport equipment by Autonomous Community.

## 9.2 Indices adjusted for calendar effect

The calendar effect determines the differences that arise in a variable due to the different structure of the months (in terms of both the number of days and the make up of working days and public holidays), when the remaining factors that influence said variable are constant.

The European Regulation on short-term statistics, whose objective is to harmonise all the indicators developed by the different countries of the European Union so that their level of comparability is as high as possible, requests that indices be provided in net terms, that is, eliminating, amongst others, the calendar effect.

Retail trade indices are affected by a series of calendar factors that differ from one country to another, and even within the same country between the different Autonomous Communities. These effects can be classified into three groups:

- a) The working-day effect
- b) The Holy Week effect
- c) The leap-year effect

The method used is based on regression models. The TRAMO-SEATS program has been used, following the recommendations of Eurostat. This computer application covers these three general effects, selected specifically for the Retail Trade Index.

- 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.

This variable is created starting with the labour calendars published in the Official State Gazette since the year 1995, and is compiled following the same structure used by the TRAMO-SEATS program for the creation of the Trading Day series. With the objective of including all public holidays, both national and those corresponding to the Autonomous Communities, the latter are weighted pursuant to the weight that each Autonomous Community has within the index.

- b) The Holy Week effect.

The intervention variable used to develop the model for the Holy Week effect has been created with a series that assigns 1 to the month of March or April, specifically the month when Holy Week takes place, and 0 to the remaining months.

In the event that Holy Week is divided between the months of March and April, the series presents the proportional value of the public holidays present in each month. This has considered that the different Communities celebrate either Holy Thursday, or Easter Monday, or both, weighting these days according to the weight that each Autonomous Community carried in the Retail Trade Index.

c) The leap-year effect.

The intervention variable that models the affects the Leap Year has on retail trade is a series formed by 0 and 1; the first value is assigned to all the months and the second to the months of February that have 29 days.

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. Thus, this implies that the series adjusted for calendar effects are provisional, with the complete series being revised annually.

The indices that are published adjusted for the calendar effect are the General Retail Trade Index, General Index without Service Stations, Service Station Index and General Department Store Index, on a national level, in terms of both current and constant prices.