

Services Sector Price Indices (SSPI)

Methodology

**Subdirectorato-General for Services Statistics
September 2009**

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Services Sector Price Indices

1. Introduction

The main objective of the statistical operation of the Services Sector Price Indices is to put together indices of the evolution in price of the services provided by the companies operating in the Services Sector in Spain from the perspective of the producer. The prices collected correspond to the services provided to companies (business sector).

This operation fulfils Regulation (CE) no. 1158/2005 of the European Parliament and Council of 6 July 2005 regarding short-term business statistics, which includes, in annex D "Other services", the collection of a new variable, producer prices for the services whose clients are companies.

The aforementioned Regulation amends Regulation (CE) No. 1165/1998 in fields of particular importance for monetary policy and the study of the short-term trend. The European Central Bank (ECB), in order to implement monetary policy, requires greater development of short-term statistics and, in particular, appropriate, reliable and suitable groups for the Eurozone. Thus, the Statistical Programme Committee of the European Communities, established by Decision 89/382/CEE, Euratom of the Council, highlighted some Principal European Economic Indicators (PEEI) which go beyond the field of application of Regulation (CE) No. 1165/98, the Services Sector Prices Indicators among them.

The aforementioned Regulation (CE) No. 1158/2005 compels all Member states to transmit, on a quarterly basis, the producer price index for some of the activities in sections I and K of the CNAE-93 Rev.1, broken down to 3 or 4 digits in some cases.

On 13 April 2007, Classification of Economic Activities 2009 was passed by Royal Decree 475/2007, this being the national version of the European Classification of Economic Activities passed by Regulation (EC) no. 1893/2006 of the European Parliament and Council of 20 December 2006.

The adaptation to the new classification has caused changes in the Services Sector Price Index survey. In some activities, the new classification has only implied a change in code and not in content; in other cases, however, some activities have been integrated into different branches or sectors.

On 29 May 2008, Commission Regulation (EC) no. 472/2008 was passed, regarding the transfer of short-term statistics in NACE Rev. 2, where the European guidelines are established for the dissemination of results in the new classification. Pursuant to this Regulation, beginning with reference month January 2009, the indices in the new classification, CNAE-2009 have been published. In addition, in order to guarantee comparability of the information over time, the INE publishes in INEbase the retrospective series in this new classification. For the calculation of the retrospective series, the micro- focus has been used (calculation of the indices from the microdata of the companies classified in CNAE-2009).

The list of activities for which a price indicator must be calculated is as follows:

CNAE-2009	Description of the activity
49.4	Freight transport by road
50.1 + 50.2	Sea transport

51	Scheduled air transport
52.1	Cargo handling
52.24	Storage and warehousing
53.1	Postalactivities subject to the obligation of universal service
53.2	Other postaland courier activities
61	Telecommunications
62	IT programming and consultancy
63	Information services
69.1 + 69.2 + 70.2	Legal activities; accounting, book-keeping, auditing and tax consultancy activities; business management consultancy activities
71	Technical architectural and engineering services; technical trials and analyses
73	Advertising and market studies
78	Employment-related activities
80	Investigation and security activities
81.2	Cleaning activities

This list of activities, included in the Regulation, is the outcome of the work of a joint Task Force between OECD and EUROSTAT, and are activities for which the available deflators (Consumer Price Index or Volume indices) are not deemed acceptable, either because they are not available, or due to being consumed chiefly by companies, rather than by households.

When carrying out a project, the directives and definitions of Regulation (CE) No. 1158/2005 of the European Parliament and Council of 6 July 2005 and the methodology manual for building Services Sector Price Indices carried out by the Voorburg group and jointly published by the OECD and EUROSTAT are taken into account.

In addition, in order to lessen the burden of the informant units, the freight transport by road price index is issued by the Ministry of Development, taking information obtained in the Permanent Survey on Goods Transport by Road (PSGTR).

2. Indicator definition

The main objective of the Services Sector Price Indices, which are published quarterly, is to provide Services Sector Price Indices provided by companies operating in the services sector in Spain from the point of view of the producer.

In order to ascertain the evolution of the real activity of a sector must have the price indicators which can be used as deflators of nominal variables. In the case of activities covered in Regulation (CE) No. 1158/2005, the Consumer Price Index may be used as a deflator in some of them (telecommunications services, legal activities,...) which are services consumed (although not exclusively so) by homes. Nevertheless, in no case may the CPI be used as a deflator for services consumed largely by companies. In view of this, this type of indicator has a two-fold objective:

- To provide a short-term indicator of the evolution of prices paid to service suppliers (thus, they are defined as price indices from the supply perspective, that of the producer).
- To provide a suitable deflator for monetary variables used both in structural and short-term base statistics, and in Spanish National Accounts in the services branches.

3. Indicator scope

3.1. TEMPORAL SCOPE

3.1.1 Base period

The base period, or reference period, of the index is that for which all indices are made equal to 100. In this indicator, the index reference period, compulsory under the Regulation, is the year 2006. This means to say that all indices published will refer to this year.

3.1.2 Reference period of weightings

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

Two sources have been used in order to calculate the weightings, in order to weight the different products, information has been used on the turnover generated by each of them, collected in the questionnaire referring to base year 2006, whereas the weightings both of companies, and of CNAE-2009 activities, have been calculated taking services sector structural information provided by Annual Services Survey 2006.

Thus, the reference period for weightings is the year 2006, except for the telecommunications index, where due to the rapid development of the sector, it is necessary to make more frequent updates of the weightings, and therefore they are updated every two years.

3.2. POPULATION SCOPE

The population studied is composed of companies whose main activity belongs to the one of the sectors covered in Regulation (CE) No. 1158/2005 of the European Parliament and Council of 6 July 2005.

3.3. GEOGRAPHICAL SCOPE

The geographical scope of the research is comprised of the whole of Spain.

4. Sample design

4.1. SELECTING OF COMPANIES

In general, the sectors covered by this statistical operation are fairly concentrated, in other words, few companies represent a high percentage of the turnover of the aforementioned sectors.

For this reason, for most of the activities, information is acquired by taking a sample designed using the cut-off method until a minimum of 70% of the market share of each of the sectors studied is reached.

Below is included a table with the sample sizes in each sector included in the Regulation.

CNAE-2009	Description of the activity	Sample size
49.4	Freight transport by road	(1)
50.1 + 50.2	Sea transport	19
51	Scheduled air transport	5
52.1	Storage and warehousing	48
52.24	Cargo handling	19
53.1	Postal activities subject to the obligation of universal service	1
53.2	Other postal and courier activities	27
61	Telecommunications	9
62	IT activities	38
63	Information services	33
69.1+69.2+70.2	Legal and economic advisory	164
71	Technical architecture and engineering services; technical trails and analyses	83
73	Advertising and market studies	31 ⁽²⁾
78	Employment-related activities	25
80	Investigation and security services	18
81.2	Cleaning services	51

(1) The Freight transport by road Price Index is issued the Ministry of Development.

(2) The Advertising and market studies index consists of two subindices. The advertising subindex is created with the data provided by the company, Infoadex, while the market studies part has a sample of 31 companies.

4.2. SELECTING OF PRODUCTS

The issuing of an index requires the making of a series of decisions, regarding which representative "products" are the most suitable for taking their prices or which price should be taken.

In the case of the Services Sector Price Indices, due to their intrinsic features, these issues are made more complicated since, in many cases, services are only provided once, or else they are provided and consumed at the same time, or it is difficult to identify a simple "product" because a number of services are provided as part of a package.

With these difficulties still present, in order to prepare simple indices, for each activity service products included in the Classification of Products by Activity should be taken, and for each of them basic "items" (types of services) which fulfil the following conditions should be selected:

- they should be services most frequently provided (representative)

- maintain the same characteristics over time (homogeneous)
- the evolution of their prices should be similar to the remaining services that they represent within the product
- remain in the market
- be easily observed

As regards the manner in which the price of these types of services are measured, there is a range of criteria which may be used, and the one chosen should be that which is most appropriate to the type of services for which the price index is being prepared.

In cases where it is possible to observe the price of the specific service, one of the following alternatives may be used:

- Contract prices: Service providers choose one or more specific service contracts, which are repeated over time.
- Prices of services repeated over time: Prices are taken from actual transactions or from price lists.
- Unit values: Where services are homogeneous, the total value of invoicing for the service may be divided by the amount carried out by this.
- Component prices: The service is divided into a series of key components and the price is taken of each one separately.
- Prices in percentages: The price is estimated by multiplying the percentage charged for the value of the service with which that percentage is associated.

There may be instances of the price not being directly observed where the service is clearly specified, in which case the method used is as follows:

- Model prices: The price is taken of a fictional service or model, set by the INE and the company.

Lastly, where the service is not clearly specified, costs necessary to prepare it are resorted to, with the Price named based on the Cost:

- Prices based on hourly costs: The price is taken of a standard amount of work (for example, an hour) of the different employment categories in the company.

For activities in which contract or model prices are used, in the questionnaire referring to base year 2006, specification of the aforementioned contracts or models is requested, such that in subsequent quarterly questionnaires, these contracts appear as already printed, and we are only asked to provide their average price in the reference quarter.

Below a percentage distribution of the types of methodology taking prices used in each of the activities for which indices are prepared and disseminated in this first phase is specified.

CNAE-2009	Description of the activity	Price taking methods						
		Distribution of prices by methodology used (percentage)						
		Repeat service prices	Contract prices	Unit values	Component prices	Percentage prices	Model prices	Hourly cost
49.4	Freight transport by road (*)	100						
50.1 + 50.2	Sea transport	40	60					
51	Scheduled air transport	100						
52.1	Storage and warehousing		100					
52.24	Cargo handling	50			25			25
53	Postal and courier activities			100				
61	Telecommunications			100				
62	IT programming and consultancy	25	25					50
63	Information services	80	20					
69.1+69.2+70.2	Legal and economic advisory							
	69.1 Legal activities	75						25
	69.2 Accounting, bookkeeping, auditing and tax advisory activities		50					50
	70.2 Business management consultancy activities							100
71	Technical architecture and engineering services; technical trials and analyses							
	71.1 Technical architecture and engineering services					5	10	85
	71.2 Technical trials and analyses	50	50					
73	Advertising and market studies							
78	Employment-related activities							
80	Security and investigation activities							
81.2	Cleaning activities							

(*) The Freight transport by road Price Index is issued the Ministry of Development.

4.3. NUMBER OF OBSERVATIONS

The number of observations used for the calculation of the index depends on the type of article in question, as well as on the establishments that have been selected in each of the activities in this first phase.

The number of prices processed each quarter is in the region of 5700 prices.

CNAE-2009	Description of the activity	Number of observations
49.4	Freight transport by road	(1)
50.1 + 50.2	Sea transport	29
51	Scheduled air transport	130
52.1	Storage and warehousing	127
52.24	Cargo handling	100
53.1	Postal activities subject to the obligation of universal service	24
53.2	Other postal and courier activities	300
61	Telecommunications	558
62	IT activities	600
63	Information services	300
69.1+69.2+70.2	Legal and economic advisory	1130
71	Technical architecture and engineering services; technical trials and analyses	500
73	Advertising and market studies	869
78	Employment-related activities	500
80	Security and investigation activities	190
81.2	Cleaning activities	300

(1) The Freight transport by road Price Index is issued the Ministry of Development.

5. General calculation method

Indices are constructed at the following level of activity:

50.1 (Sea freight transport)

51 (Scheduled air transport)

52.1 (Storage and warehousing)

52.24 (Cargo handling)

53 (Postal and courier activities)

Which comprises:

53.1 (Postal activities subject to the obligation of universal service)

- 53.2 (Other postal and courier activities)
- 61 (Telecommunications)
- 62 (IT programming and consultancy)
- 63 (Information services)
 - Which comprises:
 - 63.1 (Data processing, hosting and related activities; websites)
 - 63.2 (Other information services)
- 69.1+69.2+70.2 (Legal and economic advisory)
 - Which comprises:
 - 69.1 (Legal advisory)
 - 69.2 (Accounting, bookkeeping, auditing and tax advisory activities)
 - 70.2 (Business management consultancy activities)
- 71 (Technical architecture and engineering services; technical trials and analyses)
 - Which comprises:
 - 71.1 (Technical architecture and engineering services)
 - 71.2 (Technical trials and analyses)
- 73 (Advertising and market studies)
 - Which comprises:
 - 73.1 (Advertising)
 - 73.2 (Market studies and public opinion polls)
- 78 (Employment-related activities)
- 80 (Security and investigation activities)
- 81.2 (Cleaning activities)

The general calculation formula is a fixed-base Laspeyres index.

The overall index corresponding to period t is mathematically expressed as follows:

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

$$I_i^t = \frac{p_i^t}{p_i^0} = \frac{p_i^t}{p_i^{t-1}} I_i^{t-1}$$

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

p_i^t and p_i^0 are the prices in the current period and in the base period, respectively.
 q_i^0 are the quantities sold in the base period

In the case of telecommunications and advertising and market studies, since these are sectors with very rapid development, the decision has been made to change the weightings more frequently, and thus, a linked Laspeyres index is calculated, and its formulation is as follows:

$$I_0^t = \prod_{k=1}^t \frac{\sum_i p_i^k q_i^{k-1}}{\sum_i p_i^{k-1} q_i^{k-1}} = \prod_{k=1}^t \sum_i I_i^k W_i^{k-1} = I_0^{t-1} \sum_i I_i^t W_i^{t-1}$$

$${}_{k-1}I_i^k = \frac{p_i^k}{p_i^{k-1}}$$

$$W_i^{k-1} = \frac{p_i^{k-1} q_i^{k-1}}{\sum_i p_i^{k-1} q_i^{k-1}}$$

p_i^t is the price during period t.

q_i^{k-1} are the amounts sold during reference period k-1.

In our case, as the weightings for telecommunications are updated every two years, hence, the reference period is the last quarter of 2006 (for the 2007 and 2008 indices) and the last quarter of 2008 (for the two subsequent years). In the case of advertising and market studies, the weightings are changed annually, and therefore, the reference period is the last quarter of the previous year.

5.1. BASIC INDICES

When products are homogeneous within an activity, for example in postal activities, telecommunications and air transport, the basic indices I_i^t are calculated by product.

In this case, the prices included in the index are average prices of the aforementioned products or services:

$$\bar{p}_i^t = \sum_j p_{i,j}^t \beta_{i,j}^t$$

$p_{i,j}^t$ is the price of product i taken in company j from the sample in period t

$\beta_{i,j}^t$ is the weighting of company j in product i in period t

In the remainder of activities, what usually occurs is that some products or services are supplied by a few highly specialised companies, or that products supplied by the companies in the sample show a high degree of heterogeneity among themselves. In this case, the basic indices are calculated by company.

Once the indices have been calculated by company, they are aggregated using their turnover information, supplied by the Annual Services Survey 2006.

5.2. WEIGHTINGS

Two sources have been used in order to calculate the weightings:

- In order to weight the different products, information has been used on the volume of business generate by each of them, collected in the questionnaire referring to the base year 2006.

$$W_i = \frac{\sum_j \text{Turnover generated by company } j \text{ for product } i \text{ in year } 2006}{\text{Turnover of all products in year } 2006}$$

- In order to weight both companies, and CNAE-2009 activities, weightings have been calculated using turnover information provided by Annual Services Survey 2006.

The updates of the weightings will be made with every base change, except in telecommunications, where, due to the rapid development of the sector, a more frequent updating of the weightings is necessary. Said updating is carried out every two years, and the weightings are obtained from the corresponding questionnaires.

5.3. AGGREGATE INDICES

$$I^t = \sum_i I_i^t W_i$$

In the case of basic indices by product, their aggregation is carried out by means of a weighted arithmetic average (except in air transport, which uses a weighted geometric average) using the weightings of the products explained above.

In the case of basic indices by company, their aggregation is carried out by means of a weighted arithmetic average, using as weightings the turnover of companies provided by the Annual Services Survey 2006.

Postalactivities subject to the obligation of universal service (53.1 CNAE-2009) and Other Postal and courier services (53.2 CNAE-2009) are aggregated in order to calculate the Postal and courier activity index (53 CNAE-2009), the turnover figures of said activities (of services provided to companies) are used as weightings according to Annual Services Survey 2006.

The same occurs with Information services (63 CNAE-2009), and said index is calculated as the aggregate of the indices of the following activities: 63.1 (Data processing, hosting and related activities; websites) and 63.9 (Other information services), with the index for legal and economic advisory (69.1+69.2+70.2 CNAE-2009), with the index for technical architecture and engineering services; technical trials and analyses (71 CNAE-2009), as well as with that for advertising and market studies (73 CNAE-2009), which is calculated as an aggregate of the advertising index (73.1 CNAE-2009) and the market studies index (73.2 CNAE-2009). As very different activities, a separate sample is used for each of them, with its own questionnaire. For the aggregation of these activities, the weightings from the turnover data from Annual Services Survey 2006 are also used.

5.4. CALCULATION OF VARIATION RATES

5.4.1 Quarterly Variation Rate

The quarterly variation rate of an index in period t is calculated as a quotient between the index of the current quarter t and the index of the previous quarter t-1, according to the following formula:

$$V^{t/(t-1)} = \left(\frac{{}_{06}I^t}{{}_{06}I^{t-1}} - 1 \right) \times 100$$

where:

$V^{t/(t-1)}$ is the quarterly variation rate, in quarter t.

${}_{06}I^t$ is the index, in base 2006, in quarter t.

5.4.2 Annual Variation Rate

The annual variation rate is calculated as the quotient between the index of the current quarter t and the index of the same quarter from the previous year a-1, according to the following formula:

$$V^{ta/t(a-1)} = \left(\frac{{}_{06}I^{ta}}{{}_{06}I^{t(a-1)}} - 1 \right) \times 100$$

where:

$V^{ta/t(a-1)}$ is the annual variation rate, in quarter t of year a.

${}_{06}I^{ta}$ is the index, in base 2006, in quarter t of year a.

6. Price collection

Price collection for products is carried out in Central services by means of postal mail, fax or email on a quarterly basis.

Collection is carried out by means of a personalised questionnaire for each company in the sample.

The collected prices show the following features:

- All technical and commercial criteria determining prices (quality, quantity, type of buyer or client...) should remain fixed over time.
- All discounts, reductions, recharges, etc., occasionally received by clients must be taken into account.
- Since the price reflects the income received by the producer, taxes encumbered by products must be excluded, and occasional product subsidies received by the producer should be added.
- Actual sales that are the source of effective prices are taken into account. Transactions within the same company which only give rise to accounting prices are not taken into account.
- Domestic and foreign market services are monitored.
- The price must be recorded under the date of provision of the service.

The data used for the calculation of the advertising price index (73.1 CNAE-2009) are provided by the company, INFOADEX, which carries out the control and analysis of the advertising in Spain.

6.1. CALENDAR AND COLLECTION FREQUENCY

In general, the price collection period approximately covers the whole quarter following the reference quarter. Except in telecommunications and air transport, where collection is carried out monthly.

7. Dissemination

Informative previews of the data are offered quarterly, through the media, to which the information is sent in accordance with the Availability Calendar of INE Short-Term Statistics.

In addition, they have been published on the INE website since the first quarter of 2007:

www.ine.es:

INEbase/Servicios/Encuestas globales del Sector Servicios