Services Sector Activity Indicators Base 2005

Methodological note

INSTITUTO NACIONAL DE ESTADISTICA

April 2011

The Services Sector Activity Indicators (SSAI) measure the short-term evolution of the activity of companies that are operative in the services sector in Spain. The objective of this operation is to fulfil Regulation no. 1158/2005 of the European Parliament and Council, of 6 July 2005, modifying Regulation no. 1165/98 of the European Union Council dated 19 May 1998, on short-term statistics, although the latter remains in force. These Regulations aim to create a common framework for the production of Community statistics on the short-term evolution of supply, demand, production factors and prices.

These indicators reflect the evolution of the most important sector in the Spanish economy, via two variables: turnover and employment. Turnover comprises the amounts invoiced by the company for rendering services and selling goods (which are the object of the company's business). These amounts are considered, including the taxes that are levied on the goods and services, and excluding the VAT paid by the client. Employed personnel is comprised of unpaid workers (owners who work actively in the company) and paid workers, both permanent and temporary workers.

The operation considers activities included in the sectors of Trade and Other services. Within Trade, in the subsectors of Sale and repair of motor vehicles and motorcycles, Wholesale trade and intermediaries and Retail trade. And within Other Services, in the subsectors of Transport and storage, Accommodation, Information and Communications, Professional, scientific and technical activities and Administrative and support service activities. In order to obtain this information, a continuous survey is conducted every month to investigate approximately 27,000 companies operating in these sectors. The data for retail trade are obtained from the Retail Trade Index Survey. Results are presented as indices so as to measure variations compared to base year 2005.

The indices provide data regarding the national total[1] for the set of non-financial market services, for each of the sectors and for the set of activities detailed below. Some changes to dissemination of these indicators were introduced from the January 2010 publication in order to standardise national dissemination with that carried out by Eurostat. It is published with the following level of detail:

TRADE:

- Sale and repair of motor vehicles and motorcycles
  - Sale of motor vehicles, motorcycles and spare parts
  - Maintenance and repair of vehicles
- Wholesale trade and trade intermediaries
  - Trade intermediaries
  - Agricultural raw materials and live animals
  - Food, Beverages and Tobacco Products
  - Articles for domestic use
  - IT equipment
  - Other machinery, equipment and supplies
  - Fuels, metals and others
  - Non-specialised wholesale trade
- Retail trade

[1] For the Autonomous Cities of Ceuta and Melilla, only Retail trade information is collected.

OTHER SERVICES:

Tourism:
- Accommodation services
- Food and beverage services
- Travel agency and tour operators

Transport:
- Land transport
- Sea transport
- Air transport
- Storage and activities connected to transport
- Postal and courier activities

Information Technologies:
- Publishing
- Cinematographic activities and music publishing
- Radio and television programming and broadcasting
- Telecommunications
- Computer programming and consultancy
- Information services

Company services:
- Legal and economic consultancy
- Architecture and engineering technical services
- Advertising and market studies
- Employment-related activities
- Investigation and security activities
- Cleaning activities
- Office management activities
- Other professional activities

Information by Autonomous Community

As of January 2006, the INE disseminates information on the turnover and employment variables for each of the Autonomous Communities, for the whole of the non-financial market services sector. The sample by Autonomous Community is representative to a more detailed level, for the large sectors, whose results the Central Statistical Bodies of the Autonomous Communities may disseminate, if they wish to do so, taking data from this survey provided to them by the INE. This agreement was reached in the framework of collaboration between the INE and these bodies.

National Classification of Economic Activities 2009 (CNAE-2009)

On 13 April 2007, Royal Decree 475/2007 passed the 2009 Classification of Economic Activities, which is 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 Activity Indicators* survey. For some activities, the new classification has only caused a change in code, and not in content; in other cases, however, some activities have changed to belong to different branches or sectors. Thus, to quote

an example, Publishing has moved from the Industry sector to the Services sector; therefore, in this survey, this activity is included within the sector of Information Technologies. On the other hand, with the new classification, the Services sector gains more relevance; the number of activities disseminated from this indicator thus increases.

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**.

For the calculation of the retrospective series, the micro focus has been used, from January 2005 onwards, and the macro focus from said date backwards, to the beginning of the time series in January 2002.

The micro focus (calculation of the indices from the micro-data of the companies classified in CNAE-2009) has been used since January 2005, because the register of companies has been available in the new classification from that year onwards, and because the SSAI sample increased from that date onwards, for the purpose of providing regional data.

Calculation of the retrospective series in CNAE-2009

Since January 2005 (micro focus):
Simple indices are compiled for each activity and for each Autonomous Community; they are created by grouping national indices by sector and for the overall total. The general indices by Autonomous Community are also created by grouping.

The simple index for the first period is:

$$I_1^{A,C} = \frac{X_{1/05}^{A,C}}{XM_{2005}^{A,C}}$$

where:

$X_{1/05}^{A,C}$ is the value of the variable (turnover or employment) for the first period corresponding to activity A and to Autonomous Community C.

$XM_{2005}^{A,C}$ is the average value of the variable (turnover or employment) in base year 2005.

The index, in the following periods, is created as a chained-linked index:

$$I_t^{A,C} = I_{t-1}^{A,C} * V_{t,t-1}^{A,C} = I_{t-1}^{A,C} * \frac{X_t^{A,C}}{X_{t-1}^{A,C}}$$

For the calculation of the grouped indices, Laspeyres-type formulas are used with fixed weightings in base year 2005. The weightings have been calculated using structural information for the services sector taken from the Annual Services Survey that researches over 120,000 companies in the sector.

Functional aggregation within an Autonomous Community

The turnover index for Autonomous Community C for group of activities S in period t is obtained as an aggregation of the basic indices of activities belonging to that aggregate:

$$I_t^{S,C} = \sum_{A \in S} w_0^{A,C} * I_t^{A,C}$$

$I_t^{A,C}$ is the elementary index in period t corresponding to activity A for Autonomous Community C.

$W_0^{A,C}$ is the weighting of activity A in region C with respect to group of activities S within the same Autonomous Community. These weights are obtained from the previously mentioned structural survey, and are calculated as:

$$W_0^{A,C} = \frac{X_{2005}^{A,C}}{\sum_{A \in S} X_{2005}^{A,C}}$$

where,

$X_{2005}^{A,C}$ is the value of the variable (turnover or employment) for activity A in Autonomous Community C.

Geographical aggregation of a functional aggregate

After carrying out the grouping by activity within an Autonomous Community, the next step is to perform the grouping by region, in order to obtain national indices. Consequently, the national index for group of activities S is:

$$I_t^{S} = \sum_{C \in N} w_0^{S,C} * I_t^{S,C}$$

where,

$I_t^{S,C}$ is the index grouped by activity in period t corresponding to Autonomous Community C.

$W_0^{S,C}$ is the weighting of group of activities S in region C with respect to the national total for that group of activities. These weights are calculated using:

$$W_0^{S,C} = \frac{X_{2005}^{S,C}}{\sum_{C \in N} X_{2005}^{S,C}}$$

where,

$X_{2005}^{S,C}$ is the value of the variable (turnover or employment) for group of activities S in Autonomous Community C. S may be the sectors of Trade, Tourism, Transport, Information Technologies and Company services or General.

From January 2002 to December 2004 (macro focus):

Conversion of index numbers. Standard focus

Beginning with the conversion matrix of the totals (turnover or employed personnel) of CNAE-2009 (B) in terms of CNAE-93 (A):

$$X^{B,y} = \beta_1 * X^{A,k} + \beta_2 * X^{A,l} + ... + \beta_a * X^{A,a}$$

The total for turnover or employment, indicated by X, of activity "y" of new classification B is based on the totals of activities "k", "l", ... and "a" of old classification A. A fixed-coefficient matrix, not dependent on time, obtained from the structural survey on services for 2005 in the two classifications.

The index of new classification B ($I_t^{B,y}$) depends on the indices of old classification A ($I_t^{A,k}\ I_t^{A,l}\ ...\ I_t^{A,a}$), of the conversion matrix coefficients ($\beta_1, \beta_2 ... \beta_a$) and of some ratios of totals in the base year in old classification A. That is:

$$I_t^{B,y} = \frac{\beta_1 * \sum_{t=1}^{12} X_t^{A,k}}{\sum_{t=1}^{12}\left[\beta_1 * X_t^{A,k} + \beta_2 * X_t^{A,l} + ... + \beta_a * X_t^{A,a}\right]} * I_t^{A,k} +$$

$$\frac{\beta_2 * \sum_{t=1}^{12} X_t^{A,l}}{\sum_{t=1}^{12}\left[\beta_1 * X_t^{A,k} + \beta_2 * X_t^{A,l} + ... + \beta_a * X_t^{A,a}\right]} * I_t^{A,l} + ...$$

$$... + \frac{\beta_a * \sum_{t=1}^{12} X_t^{A,a}}{\sum_{t=1}^{12}\left[\beta_1 * X_t^{A,k} + \beta_2 * X_t^{A,l} + ... + \beta_a * X_t^{A,a}\right]} * I_t^{A,a}$$

Indices adjusted for the calendar effect

Beginning with reference month January 2009, the indices are published adjusted for the calendar effect for the general index of turnover and of the five large sectors: Trade, Other Services, Sale and repair of motor vehicles and motorcycles, Wholesale trade and intermediaries, Retail trade.

The calendar effect determines the differences that occur in a variable, due to the different structure that the months present (both in the number of days and in the composition of working days as opposed to holidays), if the rest of the factors that influence said variable remain constant.

The turnover indices of the services sector may be affected by the following calendar factors: working days, Easter week and leap years.

The method used is based on regression models. The Tramo-Seats program has been used, following the recommendations of Eurostat, but three intervention variables have been introduced to collect the three aforementioned effects, bearing in mind the working calendars on a national level and for each Autonomous Community and the weight over turnover of the Services sector of the Autonomous Communities in which each of the days is a public holiday.

A periodical revision of the models is carried out in order to include the most current information; hence the provisional nature of the series adjusted for the calendar effect, carrying out an annual revision of the entire series.

Calculation of changes

The **annual variation rate** is calculated as the quotient between the difference in the index for month t and the index for the same month of the previous year and the latter:

$$V_{anual} = \frac{I^t - I^{t-12}}{I^{t-12}} * 100 = (\frac{I^t}{I^{t-12}} - 1) * 100$$

where t refers to month I, to the turnover index or the employment index.

The **variation rate of the year-to-date average** is calculated as the quotient between the difference in the average of the indices from January until the current month and the average of the indices corresponding to the same period the previous year and the latter:

$$V_t = \frac{\sum_{j=enero}^{t} I_j^{año\ a} - \sum_{j=enero}^{t} I_j^{año\ anterior}}{\sum_{j=enero}^{t} I_j^{año\ anterior}} * 100 = (\frac{\sum_{j=enero}^{t} I_j^{año\ a}}{\sum_{j=enero}^{t} I_j^{año\ anterior}} - 1) * 100$$

Annual effects

The annual effect of an activity or sector i ($R_i^{t/t-12}$) on the general index is defined as part of the variation of the general index corresponding to that activity or sector. Therefore, the sum of the annual effects of all activities or sectors that it comprises is equal to the annual rate of the general index.

It is calculated as follows:

$$R_i^{t/t-12} = \frac{I_i^t - I_i^{t-12}}{I^{t-12}} * W_i * 100$$

Developing the previous formula, we obtain an alternative way of calculating the contributions through the variation rates:

$$R_i^{t/t-12} = \frac{I_i^t - I_i^{t-12}}{I^{t-12}} * \frac{I_i^{t-12}}{I_i^{t-12}} * W_i * 100 = \Delta_i^{t/t-12} * \frac{I_i^{t-12}}{I^{t-12}} * W_i$$

where:

$\Delta_i^{t/t-12}$ it is the annual variation rate (as a percentage) of the activity or sector i.

$\frac{I_i^{t-12}}{I^{t-12}}$ it is the quotient between the activity index or sector i and the overall index referring to the previous year (t-12).

W_i is the weighting (so much per one) of the activity or sector i in the overall index of the Services sector.

Therefore, the annual effect of an activity or sector i in the overall index of the services sector is the outcome of its annual variation rate by the quotient between the activity index or sector and the overall index for the previous year and by its weighting.