

## Methodological note on *services sector activity indicators*

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. This operation is also performed to comply with EU Council Regulation no. 1165/98 dated 19 May 1998 on short-term statistics. This Regulation aims to create a common framework for the production of Community statistics on the short-term evolution of the supply, demand, production factors and prices.

For the first time, as of January of 2006, the INE will disseminate information on the variables turnover and employment for each of the autonomous communities for the total of the market services sector. This has caused a variation in the methodology in terms of the creation of national indices. Moreover, the Information and Communication Technologies sector is completed as of January 2006 with the inclusion of Audiovisual Activities.

Said Regulation obliges Member States to alter the base year every five years, more specifically in years ending in zero and five. The Services Sector Activity Indicators alter their base year and will be calculated taking the year 2005 as the base as of January 2006.

These indicators reflect the evolution of the most important sector in the Spanish economy via two variables: turnover and employment; providing information on the market activities of the services sector which, according to data from the Spanish National Accounts, represent 50% of the GDP and 43% of the employed persons. The sectors analysed represent almost 70% of the added value generated by market services.

The 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. The employed personnel is composed by 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, Tourism, Transport, Information and Communication Technology and Companies services. In order to obtain this information, a continuous survey is performed to investigate about 25,000 companies operating in these sectors every month. The data for retail trade are obtained from the *Retail Trade Indices* Survey. Results are presented as indices so as to measure variations compared to the 2005 base year.

Indices provide data referring to the national total for each of the five sectors and for the ensemble of market services and by autonomous communities only for the total of the market services sector.

Each of the five sectors is composed by the following activities.

Trade:

- Sale and repair of motor vehicles; trade of automotive fuel
- Wholesale commerce and intermediaries
- Retail trade

Tourism:

- Accommodation (hotels, restaurants and bars)
- Travel agencies

Transport:

- Land transport (passengers and goods)
- Maritime Transport (passengers and goods)
- Air transport (passengers and goods)
- Activities annexed to transport
- Postal activities

Information and Communication Technologies:

- Telecommunications
- IT activities
- Audiovisual activities

Company's services:

- Legal and economic advice
- Technical services
- Advertising
- Labour recruitment and provision of personnel
- Security services
- Industrial cleaning
- Miscellaneous business activities

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.

On a national level, the sample is representative for the activities included in the sectors and, on a regional level, for each of the five sectors.

Simple indexes are compiled for each activity and for each autonomous community; they are created by grouping national indices by sectors and for the general 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 indices are used with fixed weightings in the base year 2005.

Initially carrying out the grouping procedure by activity in the same autonomous community, the index for the turnover of the autonomous community C for the ensemble of the activities S in period t is:

$$I_t^{S,C} = \sum_{A \in S} W_0^{A,C} * I_t^{A,C}$$

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

$W_0^{A,C}$  is the weighting of activity A in region C with respect to the ensemble of activities S in the same autonomous community. These weights are obtained from the structural survey and are calculated using:

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

where,

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

After carrying out the grouping by activity in an autonomous community, the next step is to perform the grouping by region to obtain national indices. Consequently, the national index for the ensemble 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 the ensemble of activities S in region C with respect to the national total for that ensemble 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 the ensemble of activities  $S$  in autonomous community  $C$ .  $S$  can be the sectors Trade, Tourism, Transport, Information and Communication Technologies or Companies services.

The denominator includes the value of the variable (turnover or employment) of the national total in year 2005.

## Change of base year

Council Regulation (EC) no. 1165/98 dated 19 May 1998 on short-term statistics obliges member states to alter the base year every 5 years, more specifically in years ending in 0 and 5. In order to fulfil this request and taking advantage of the variation of the methodology given the dissemination of regional information, the indices for the Services Sector Activity Indicators alter their base year and will now be calculated taking the year 2005 as the base.

The base year for an index refers to the period for which comparisons are made for the different situations; therefore, the closer the base year as regards the current period, the more coherent the comparisons.

The five years between two base year changes can result in variations in both the population structure, as well as a sector's economic structure. Base year changes are therefore used to adapt indices to the new reality, altering sample designs to fit with the new population and updating the weighting structures used to calculate the grouped indices, in accordance with each subsector's or product's new weighting.

The base year alteration implies a series break, which means that the indices created as of January 2006 are not comparable with previous ones. In order to save this break and allow temporal comparisons between indices, all series published up to December 2005 have been linked using a coefficient for each one.

### Link coefficient

The operation uses the structural link coefficient which is defined as the quotient between the average of the 2005 indices in base 2005 and the average of the 2005 indices in base 2000:

$$e = \frac{\bar{I}_{2005}^{Base\ 2005}}{\bar{I}_{2005}^{Base\ 2000}} = \frac{1200}{\sum_{t=1}^{12} I_{t,05}^{Base\ 2000}}$$

where,

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

is the average of 2005 indices in base 2005, which is

equal to 100 in construction.

$$\bar{I}_{2005}^{Base\ 2000} = \frac{\sum_{t=1}^{12} I_{t,05}^{Base\ 2000}}{12}$$

is the average of 2005 indices in base 2000.

This link coefficient uses information from the whole base year and the average of the linked indices in the base year is 100.

### Linked series

The linked series are obtained by multiplying each of the indices in base 2000 by the corresponding link coefficient. This is a scale change in order to achieve data comparability and therefore variation rates are maintained.

$$I_{t,a}^{(enlazada) Base 2005} = I_{t,a}^{Base 2000} * e$$

where  $I_{t,a}^{(enlazada) Base 2005}$  is the linked series of the index for period (month)  $t$  of year  $a$  ( $\forall a \leq 2005$ ).

Link coefficients are calculated independently for each series; therefore, linked series lose additivity. In other words, grouped indices are no longer the weighted sum of their components. This may mean that during 2006, the variation rates of a grouped index remain outside the interval marked by its components.