

*ECONOMIC AND SHORT-TERM INDICES DIVISION*  
*RETAIL PRICES AND PRICE INDICES SECTION*

**INFORMATION NOTE**

on the revision of the Turnover Indices in the Services Sector

BASE YEAR 2010 = 100.0

***Piraeus, June 2016***

## **REVISION OF THE TURNOVER INDICES IN THE SERVICES SECTOR**

**(2010=100.0)**

### **General**

The Turnover Indices in the Services Sector are quarterly indices and they were published for the first time in Greece in 2006 with base year 2005=100.0.

The Turnover Indices in the Services Sector are compiled in the framework of Council Regulation (EC) No 1165/1998 concerning “short-term statistics” and in compliance with the requirements of Regulation (EC) No 1158/2005 of the European Parliament and of the Council amending Council Regulation (EC) No 1165/1998.

### **Revision**

The Turnover Indices in Services are revised every five years, in compliance with Council Regulation 1165/1998, according to which the short-term indices are revised every 5 years, with base year ending in 0 or 5.

### **Purpose of the Indices-definitions**

The Turnover Indices in the Services Sector are business cycle indicators and depict the evolution of the services market.

The purpose of these indices is to measure the market activity of the surveyed services divisions in value terms. Turnover is calculated without VAT and it comprises the totals invoiced by the observation unit during the reference period (quarter).

The definitions used in accordance with Council Regulation (EC) 1503/2006 implementing Council Regulation (EC) No 1165/1998 concerning “short-term statistics” are as follows:

Turnover comprises the totals invoiced by the observation unit during the reference period (quarter), corresponding to market sales of goods or services supplied to third parties. Turnover also includes all other charges (transport, packaging, etc.) passed on to the customer, even if these charges are listed separately on the invoice.

Turnover excludes VAT and other similar deductible taxes directly linked to turnover, as well as all duties and taxes on the goods or services invoiced by the enterprise.

Reduction in prices, rebates and discounts, as well as the value of returned packing must be deducted. Price reductions, rebates and bonuses conceded later to clients, for example at the end of the year, are not taken into account.

Income classified as other operating income, financial income and extraordinary income in company accounts is excluded from turnover. According to this definition, the items generally included in turnover are:

- sales of manufactured products,
- sales of products manufactured by subcontractors,
- sales of goods purchased for resale in the same condition as received,

- invoiced services provided,
- sales of by-products,
- invoiced charges for packaging and transport,
- invoiced hours worked to third parties for labour-only subcontracting,
- invoiced mounting, installations and repairs,
- invoiced installments (stage payments),
- invoiced development of software and software licenses,
- sales of supplied electric power, gas, heat, steam and water,
- sales of waste and scrap materials,
- subsidies on products.

Subject to the treatment of income classified as “other operating income, financial income and extraordinary income” in company accounts, the items generally excluded are:

- VAT and other similar deductible taxes directly linked to turnover all duties and taxes on the goods or services invoiced by the unit
- commissions,
- leases and rentals,
- leases for own production units and machines if used by third parties,
- leases of company-owned dwellings,
- receipts for license-fees,
- receipts from staff facilities (for example from a factory canteen),
- the supply of products and services within the observation unit,
- sales of own land and fixed assets,
- sales or leases of own properties,
- sales of shares,
- interest receipts and dividends,
- other extraordinary income.

### **Geographical coverage**

The Index covers the whole country.

### **Statistical Classification**

Eurostat statistical classification of economic activities, NACE Rev.2, is used (Regulation 1893/2006 of the European Parliament and Council).

## **Coverage of economic activities**

The indices cover the following Divisions of Nace Rev. 2:

### **SECTION H — TRANSPORTATION AND STORAGE (part)**

#### ◆ Division 53: Postal and courier activities

- a. Postal activities under universal service obligation
- b. Other postal and courier activities

### **SECTION J — INFORMATION AND COMMUNICATION (part)**

#### ◆ Division 58: Publishing activities

- a. Publishing of books, periodicals and other publishing activities
- b. Software publishing

#### ◆ Division 61: Telecommunications

- a. Wired telecommunications activities
- b. Wireless telecommunications activities
- c. Satellite telecommunications activities
- d. Other telecommunications activities

#### ◆ Division 62: Computer programming, consultancy and related activities

- a. Computer programming, consultancy and related activities

#### ◆ Division 63: Information service activities

- a. Data processing, hosting and related activities; web portals
- b. Other information service activities
- c. News agency activities

### **SECTION M — PROFESSIONAL, SCIENTIFIC AND TECHNICAL ACTIVITIES (part)**

#### ◆ Division 69: Legal and accounting activities

- a. Legal activities
- b. Accounting, bookkeeping and auditing activities; tax consultancy

#### ◆ Division 70.2: Management consultancy activities

- a. Public relations and communication activities
- b. Business and other management consultancy activities

#### ◆ Division 71: Architectural and engineering activities; technical testing and analysis

- a. Architectural and engineering activities and related technical consultancy
- b. Technical testing and analysis

#### ◆ Division 73: Advertising and market research

- a. Advertising

- b. Market research and public opinion polling
  - ◆ Division 74: Other professional, scientific and technical activities
- a. Specialized design activities
- b. Photographic activities
- c. Translation and interpretation activities
- d. Other professional, scientific and technical activities n.e.c.

#### SECTION N — ADMINISTRATIVE AND SUPPORT SERVICE ACTIVITIES (part)

- ◆ Division 78: Employment activities
- a. Activities of employment placement agencies
- b. Temporary employment agency activities
- c. Other human resources provision
  
- ◆ Division 80: Security and investigation activities
- a. Private security activities
- b. Security systems service activities
- c. Investigation activities
  
- ◆ Division 81: Services to buildings and landscape activities
- a. Combined facilities support activities
- b. Cleaning activities
- c. Landscape service activities
  
- ◆ Division 81.2: Cleaning activities
- a. General cleaning of buildings
- b. Other building and industrial cleaning activities
- c. Other cleaning activities
  
- ◆ Division 82: Office administrative, office support and other business support activities
- a. Office administrative and support activities
- b. Activities of call centers
- c. Organization of conventions and trade shows
- d. Business support service activities n.e.c.

#### **Survey design – Selection and Size of the sample of enterprises**

The sampling unit used is the enterprise. The population of enterprises with annual turnover equal or bigger than 100,000 euro for the above mentioned Divisions of the NACE Rev. 2, according to the business register of ELSTAT, is about 12,162 enterprises for the reference year 2010. Due to the great number of enterprises belonging to the population, a representative

sample of 589 enterprises was selected.

The single - stage stratified random sampling was used for the selection of the enterprises of the sample. The enterprises included in the survey were stratified in up to 8 size classes, based on their turnover of the year 2010, depending on the Nace Rev.2 division where they belong.

More specifically, the stratification per NACE Rev.2 Division (2-digit level) is as follows:

Strata for the Divisions 63,70.2,74,81

Size class	Turnover in euro
1	100,000 – 299,999
2	300,000 – 599,999
3	600,000 – 1,299,999
4	1,300,000 – 2,699,999
5	2,700,000 – 5,299,999
6	5,300,000 – 9,999,999
7	10,000,000 – 19,999,999
8	20,000,000 and over

Strata for the Divisions 58,62,73,80,82

Size class	Turnover in euro
1	300,000 – 599,999
2	600,000 – 1,299,999
3	1,300,000 – 2,699,999
4	2,700,000 – 5,299,999
5	5,300,000 – 9,999,999
6	10,000,000 – 19,999,999
7	20,000,000 and over

For the Divisions 53 and 61 of NACE Rev.2 there is only one stratum, with turnover bigger than 20 million and 200 million euro, respectively. The enterprises of Divisions 69 and 71 were stratified to 7 strata, with the first stratum starting from 100,000-299,000 and for Division 78, the enterprises were stratified to 6 strata, with the first stratum starting from 300,000-599,000 euro.

The distribution of the sample by Nace Rev. 2 Divisions (two-digit codes) or Groups (three-digit codes) is depicted in the following table:

NACE Rev.2 Code	Number of enterprises	Sample of enterprises by 2-digit code of economic activity
53	8	8
58	549	56
61	13	13
62	508	58
63	230	29
69	1,791	68
70.2	1,743	61
71	5,083	78
73	648	51
74	414	44
78	32	17
80	122	29
81 <sup>1</sup>	692	39
82	329	38
Total	12,162	589

### Calculation and compilation of Turnover Indices in the Services Sector

The short-term Turnover Indices in the Services Sector are compiled on the basis of the chain-linking method and are fully in line with the methods and guidelines stipulated in Eurostat's Manual "*Methodology of short – term business statistics- Interpretation and Guidelines, 2006 Edition*" (<http://ec.europa.eu/eurostat/web/short-term-business-statistics/methodology>.)

#### 1. Estimation of turnover value

The first step in compiling the index is to estimate, from the records kept by the enterprises in the sample, the turnover value  $\hat{Y}_q$  for the current quarter q, which then has to be compared with the corresponding estimate for the previous quarter  $\hat{Y}_{q-1}$  (moving-base index).

The turnover estimate for the current quarter is obtained by reduction from the entire set of relevant data provided by the enterprises in the sample. This is achieved by multiplying the quarterly turnover value of each enterprise by an appropriate reduction factor and then adding the

<sup>1</sup> Section N Division 81.2 is included

partial products. This reduction factor for each turnover stratum h (cross-linking the division and the turnover stratum) is defined as the quotient obtained by dividing the total number of enterprises  $N_h$  by the number of enterprises in sample  $n_h$ .

The reduction factor  $\alpha_h$  for each enterprise in stratum h is given by the equation:

$$\alpha_h = \frac{N_h}{n_h}$$

where

$N_h$  is the total number of enterprises in stratum h

$n_h$  is the number of enterprises in stratum h included in the sample.

The estimate  $\hat{Y}_q$  of the turnover value  $Y_q$  for the current quarter q, in any two-digit code (division) of Nace Rev.2, is given by the equation:

$$\hat{Y}_q = \sum_{h=1}^7 \sum_{i=1}^{n_h} \alpha_h * y_{qhi}$$

where  $y_{qhi}$  is the turnover value for the current quarter q of the  $i^{\text{th}}$  enterprise in stratum h.

The index is calculated by the chaining method.

## 2. Reduction of turnover values to a typical quarter

The initial turnover value estimates for the two-digit codes (Divisions) refer to calendar quarters which do not all have the same number of working days, so the indices, as initially compiled, are not comparable. The quarterly indices for the two-digit codes (Divisions) are made comparable by adjusting the indices and thus making them indices of equal duration. To this end, the turnover estimates are multiplied by a special correction factor, which is different for every quarter of the year.

The correction factor is calculated by dividing the mean quarterly number of working days in the given year  $t$  by the number of regular working days in the surveyed quarter of year  $t$  as follows:

$$c_{tq} = \frac{\bar{x}_t}{x_{tq}}$$

where,

$\bar{x}_t$  : mean quarterly number of working days in the given year  $t$

$$\bar{x}_t = \frac{\sum_{q=1}^4 x_{tq}}{4}$$

and  $x_{tq}$  :

number of regular working days in the quarter q, in the given year t

The reduction of the index to a typical quarter is achieved by multiplying the turnover estimates of the current quarter by the corresponding correction factor.

### 3. Calculation of the indices

Each Turnover Index in Services is calculated by applying the chain-linking method.

At a first stage, the moving-base index is calculated by comparing the 'estimated' turnover value of the current quarter with the corresponding value of the previous quarter.

The fixed-base index for the two-digit code (division) of economic activity for the current quarter q is obtained by multiplying the moving-base index by the fixed-base index of the previous quarter.

The above is the product of the equations:

$$I_{Yq} = I_{q,q-1} * I_{Y_{q-1}}$$

and

$$I_{q,q-1} = \frac{\hat{Y}_q}{\hat{Y}_{q-1}}$$

where

$I_{Yq}$  is the fixed-base index for the current quarter q,

$I_{q,q-1}$  is the moving-base index for the current quarter q, in relation to the previous quarter q-1,

$I_{Y_{q-1}}$  is the fixed-base index for the previous quarter q-1, and

$\hat{Y}_q$ ,  $\hat{Y}_{q-1}$  are the corresponding turnover estimates for the current and previous quarters.

It should be noted that, when calculating the first fixed-base index  $I_{Y1}$  of the base year, i.e.

the index for the first quarter of 2010 (q=1), the following equation applies:

$$I_{Y1} = \frac{\hat{Y}_1}{\hat{Y}_0} * 100$$

where

$\hat{Y}_1$  is the turnover estimate for the first quarter of 2010, and

$\hat{Y}_0$  is the mean quarterly turnover estimate for the year 2010.

That is to say:

$$\hat{Y}_0 = \frac{\sum_{q=1}^4 \hat{Y}_q}{4},$$

where

$\hat{Y}_q$  is the turnover estimate for the quarter  $q$  of the year 2010.

If the fixed-base index of the reference quarter is compared with the fixed-base index of the corresponding quarter of the previous year, the percentage changes (+ or –) are calculated and we have:

$$\left[ \frac{I_{Y_q}^t}{I_{Y_q}^{t-1}} - 1 \right] * 100$$

where

$I_{Y_q}^t, I_{Y_q}^{t-1}$  are the fixed-base indices for the quarter  $q$  of the current year  $t$  and the previous year  $t-1$ , respectively.

### Backcasting of time series of indices for the period 1<sup>st</sup> quarter 2000 to 4<sup>th</sup> quarter 2015

The backcasting for the quarterly and annual Turnover Indices in the Services Sector, for the period 1<sup>st</sup> quarter 2000 – 4<sup>th</sup> quarter 2009, was calculated on the basis of the individual annual average indices of the divisions in 2010, according to the following type:

$$R_{k(2010)}^{(t)} = R_{k(2005)}^{(t)} \cdot b_k$$

where :

$$b_k = \frac{100}{\bar{R}_{k(2005)}^{(2010)}}$$

$R_{k(2010)}^{(t)}$ : is the individual index of division  $k$  in the period (quarter)  $t$  with 2010 as base year,

$R_{k(2005)}^{(t)}$ : is the individual index of division  $k$  in the period (quarter)  $t$  with 2005 as base year,  
and

$\bar{R}_{k(2005)}^{(2010)}$ : is the average annual index of division  $k$  in 2010, with 2005 as base year

The time series of the revised Turnover Indices in the Services Sector (2010 = 100.0) include the indices which derive from backcasting (period 2000-2009) and the indices from 2010 onwards, which have been calculated on the basis of the new turnover data and new weights.

### **Publication of data**

The data of the new Turnover Indices in the Services Sector are published every quarter, through a Press Release, within specified deadline and more specifically 75 days after the end of the reference quarter.

The above indices with reference period the 1<sup>st</sup> quarter 2016 will be published for the first time on 15 June 2016. The time series of the Turnover Indices in the Services Sector which are published from 2000 onwards include the indices which derive from backcasting (period 2000-2009) and the indices from 2010 onwards, which have been calculated on the basis of the new turnover data and new weights.

The time series of the aforementioned Indices are made available through Press Releases and they are also available on the website of ELSTAT ([www.statistics.gr](http://www.statistics.gr)) at the link: "Statistics / Economy-Indices/Turnover Indices/ Turnover Indices for Specific Activities of the Services Sector" (<http://www.statistics.gr/en/statistics/-/publication/DKT54/->)