RETAIL TRADE TURNOVER AND VOLUME INDEX
(2010=100.0)

1. Introduction

The Retail Trade Turnover Index is a continuation of the Retail Sales Value Index that was compiled during the period of 1963-2004.

During the revision of the Index (2000=100.0), pursuant to Council Regulation (EC) 1165/98 concerning short-term statistics, it was deemed necessary to change its name to “Retail Trade Turnover Index” and introduce the measurement of volume changes in retail trade by calculating the “Retail Trade Volume Index”.

The new NACE Rev. 2 Classification was used for the revision of the “Retail Trade Turnover Index” (base year 2005=100.0) in conjunction with the calculation of the Turnover and Retail Trade Volume Indices.

During the revision of the Retail Trade Turnover Index, with the year 2005=100.0 as the base period, the new EU NACE Rev.2 statistical classification of economic activities was used, in conformity with Regulation (EC) 1893/2006 of the Council and the European Parliament. The most important change in the Retail Trade section of the new NACE Rev. 2 classification, compared to NACE Rev. 1, is that the retail sale of automotive fuel and lubricants is classified under retail trade and not under the “trade, maintenance and repair of motor vehicles and motorcycles” division of NACE Rev. 1. As a result, in order to establish the link with the previous Retail Trade Turnover and Volume indices (2000=100.0), backcasting was used for these series, including and not including fuels, until December 2008 inclusive, as required by Commission Regulation (EC) 472/2008 concerning backcasting.

During the last revision of the Retail Trade Turnover Index, with the year 2010=100.0 as the base period, the recursive on reduction monthly and annual indices was calculated based on the average annual indices in 2010, so that backcasting of revised index series that include fuel has been performed for the period since January 2000, whilst for the corresponding series that do not include fuel, backcasting has been performed since January 1995.

The Retail Trade Turnover and Volume Indices are drawn up in pursuant to No. 1165/98 Regulation (EC) concerning short-term statistics, as amended by No. 1158/2005 Regulation (EC) of the European Parliament and Council. Moreover, for the compilation of these indices we apply the No. 1893/2006 Regulation of the European Parliament and of the Council establishing the statistical classification of economic activities NACE Rev 2, as well as the No. 1503/2006 Regulation (EC) of the Commission implementing and amending No. 1165/98 Regulation (EC) concerning short-term statistics as regards definitions of variables, list of variables and frequency of data compilation.

2. Purpose of the index - Input data

The purpose of the Retail Trade Turnover Index is to show the performance of the goods market in retail trade. The index does not cover other activities, such as provision of services. The index is corrected on the basis of the number of working days in each month. Therefore, the index is reduced to a typical month of equal duration.

The turnover comprises the total amounts invoiced by the enterprise during the reference period, which correspond to the resale of goods without any further transformation. The data collected each month refer to sales effected (both retail and wholesale), excluding VAT but including other duties and taxes on the goods.

The sales volume represents the turnover value, at constant prices, and is a quantum index. It can be calculated as the turnover at current prices, deflated by applying the sales deflator.

3. Updating the Index – Statistical Classification

Pursuant to the article 11 of the Regulation No 1165/98 concerning short-term statistics, the Retail Trade Turnover Index is updated every five years in years ending in 0 or 5. The purpose of the revision of the Retail Trade Turnover Index is to adapt the index to structural changes of retail trade sector by renewing the sample of enterprises that are surveyed, as well as the extrapolation factors (weightings) that are used (implementation of new weighting scheme).

During the last revision of the Retail Trade Turnover Index, with base year 2010=100.0, as well as in the previous revision with base the year 2005 = 100.0, the new European Union NACE Rev.2 statistical classification of economic activities is applied, in conformity with Regulation (EC) 1893/2006 of the European Parliament and Council. The most important change in the Retail Trade section of the new NACE Rev. 2 classification, compared to the NACE Rev. 1, is that the retail sale of automotive fuel and lubricants is classified under retail trade and not under the "trade, maintenance and repair of motor vehicles and motorcycles" division of NACE Rev. 1.

The revised Retail Trade Turnover Index (2010=100,0), according to the new NACE Rev. 2 classification covers the economic activity classes identified by codes 4711 to 4799 inclusive.

The revised Retail Trade Turnover Index (base year 2010=100,0) was based on the data of the Business Register of ELSTAT compiled from administrative sources, in accordance with the turnover data of retail trade enterprises in the year 2010.

4. Survey design - Selection of sample of enterprises

The Retail Trade Turnover Index refers to the whole country. The General Index is composed of the separate indices for the eleven (11) categories of aggregated economic activity classes. These categories result from the aggregation of the relevant economic activity classes (NACE Rev. 2 codes: 47.11-47.99).

The eleven (11) categories of aggregated economic activity classes of the revised Retail Trade Turnover and Volume Indices are the following:

1. Supermarkets
2. Department stores
3. Food, beverages and tobacco
4. Automotive fuel-lubricants
5. Pharmaceuticals and cosmetics[1]
6. Clothing and footwear[2]
7. Furniture, electrical goods, household goods[3]
8. Books, stationery and other articles[4]
9. Retail sale via mail order houses or via Internet
10. Retail sale of second-hand goods in stores
11. Retail trade not in stores, stalls or markets

The breakdown of the Retail Trade Volume Index is similar, the difference being that for the last three categories, it is not calculated the Volume Index.

[1] Dispensing chemist, medical and orthopaedic goods, cosmetic and toilet articles in specialised stores.

[2] Textiles, clothing, footwear and leather goods in specialised stores

[3] Furniture, lighting equipment, audio and video equipment, hardware, paints and glass, electrical household appliances and other household articles, music and video recordings in specialised stores

[4] Books, newspapers and stationery, computers, peripheral units and software, telecommunications equipment, carpets, rugs, wall and floor coverings, sporting equipment, games and toys, flowers, plants, seeds, fertilisers, pet animals and pet food, watches and jewellery, other retail sale of new goods in specialised stores

The survey for the compilation of the index covers 41,801 retail trade enterprises listed in the Business Register having an annual turnover (in 2010) equal to or higher than 200,000 euro. Out of these enterprises a representative random sample of 1,607 enterprises was selected across the country with elements from 61 Regional Units

The single stratified random sampling method was applied, employing the enterprise as a surveyed unit. The sampling frame used for the sample design was based on the Business Register (BR) of the ELSTAT.

The enterprises included in the survey were stratified as follows:

a. By 11 categories of aggregated economic activity classes
b. By size class of the enterprise. In each category of aggregated activity classes, the enterprises were stratified into H=6 size classes, according to their size, determined by their annual turnover (in 2010) in BR as follows:

Size class	**Annual Turnover (€)**
1	200,000 - 400,000
2	400,001 - 900,000
3	900,001 - 2.500,000
4	2,500,001 - 10,000,000
5	10,000,001 - 40,000,000
6	40,000,001+

In each stratum that is created by crossing the above stratification criteria, a sample of enterprises was selected with equal probabilities and by applying systematic sampling.

5. Compilation of the Retail Trade Turnover Index

The turnover index is calculated by the chaining method. First, the moving based index is calculated by comparing the estimated turnover value $\widehat{Y}_m$ for the current month m with the corresponding value $\widehat{Y}_{m-1}$ of the previous month. Afterwards, the fixed-base index for the current month I_m is calculated by multiplying the moving-based index by the fixed-base index of the previous month.

More specifically:

5.1. Turnover value

a. Symbolisms

For each of the 11 categories of aggregated economic activity classes stands for:

h : size class of enterprises $(h = 1,...,6)$

N_h : number of enterprises in the size class h (population size)

n_h : number of enterprises of the sample in the size class h (sample size)

m_h : the number of the enterprises of the sample that responded in the size class h (respondents)

r_h : response rate in the size class h, that is: $r_h = \frac{m_h}{n_h}$

a_h : extrapolation factor of the respondents in the size class h

that is: $a_h = \frac{N_h}{n_h \cdot r_h}$

y_{mhi} : turnover value of the current month *m,* of the enterprise of order i , in the size class h

Y_{mh} : turnover value of the current month *m,* of all enterprise that belong to the size class h

that is: $Y_{mh} = \sum_{i=1}^{N_h} y_{mhi}$

Y_m : turnover value of the current month *m,* of all enterprise that belong to the category of aggregated economic activity classes:

that is: $Y_m = \sum_{h=1}^{6} Y_{mh}$

b. **Estimation of the turnover value**

For each of the eleven (11) categories of aggregated economic activity classes, the estimation $\widehat{Y}_m$ of the turnover value Y_m of the current month *m* is calculated by applying the following relations:

$$\widehat{Y}_{mh} = \sum_{i=1}^{m_h} a_h \cdot y_{mhi} \quad (1)$$

$$\widehat{Y}_m = \sum_{h=1}^{6} \widehat{Y}_{mh} \quad (2)$$

From the relations (1) and (2) we have:

$$\widehat{Y}_m = \sum_{h=1}^{6} \sum_{i=1}^{m_h} a_h \cdot y_{mhi} \quad (3)$$

The estimated turnover value for an economic level higher than the 11 categories of aggregated economic activity classes (i.e. Overall Index, Food sector etc) is calculated by adding the separate estimates of the categories composing the estimated level.

c. Reduction of turnover values to a typical month

The initial turnover value estimates for the category of aggregated economic activity classes refer to calendar months which do not all have the same number of working days (e.g. February, March, etc.), and therefore all the compiled indices are not comparable. The monthly indices for the category of aggregated economic classes are made comparable by adjusting the indices in order to make them of equal duration.

To this end, the turnover estimates are multiplied by a special correction factor which is different for each month of the year. The correction factor is calculated by dividing the mean monthly number of working days in the given year by the number of regular working days in the month under consideration, as follows:

$$c_m = \frac{\bar{x}}{x_m} \quad (4)$$

where:

c_m : correction factor of the month m

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

x_m : the number of regular working days in the month m

5.2. Turnover index

a. Moving base index

For each of the eleven (11) categories of aggregated economic activity classes, first the moving-base index is calculated by comparing the 'estimated' turnover value for the current month m with the corresponding value of the previous month, as follows:

$$I_{m.m-1} = \frac{\widehat{Y}_m}{\widehat{Y}_{m-1}} \quad (5)$$

where:

$I_{m,m-1}$: the moving-base index for the current month m , in relation to the previous month $m-1$

$\widehat{Y}_m$, $\widehat{Y}_{m-1}$: the corresponding turnover estimates for the current and previous months

b. Fixed-base index

For each of the eleven (11) categories of aggregated economic activity classes, the fixed-base index for the current month is obtained by multiplying the moving-base index by the fixed-base index of the previous month, as follows:

$$I_{Y_m} = I_{m,m-1} \cdot I_{Y_{m-1}} \quad (6)$$

I_{Y_m} : the fixed-base index for the current month, m

$I_{Y_{m-1}}$: the fixed-base index for the previous month, $m-1$

The indices for each category of aggregated economic activity classes are converted to typical month indices, by multiplying the turnover values of the moving-base index in relation (5) with appropriate correction factor, according to the relation (4).

The fixed-base index for an economic level higher than the 11 categories of aggregated economic activity classes (i.e. Overall Index, Food sector etc) is calculated as follows:

a) By taking as the numerator and denominator of the equation in relation (5) the total of the separate turnover values of categories composing the economic level under consideration for the current and previous month respectively (moving index), and

b) By multiplying the said moving index of the economic level by the fixed-base index of the relevant economic level of the previous month.

6. Retail trade Volume index

The Retail Trade Volume Index is obtained from the Retail Trade Turnover Index if the latter is deflated in accordance with the Consumer Price Index (CPI), as follows:

By using CPI data, deflator-indices are compiled for the corresponding groups of the Turnover Index. More specifically, deflators are calculated for the general index and for 8 of the 11 categories of economic activity classes of the index. It should be noted that no deflator is calculated for the last 3 categories, 'Retail sale via mail order houses or via Internet', 'Retail sale of second-hand goods in stores' and 'Retail trade not in stores, stalls or markets', because it is not possible to calculate the required deflators.

In order to deflate the turnover index and convert it to a Volume index, the individual turnover indices are divided by the appropriate deflators.

7. Breakdown of the Retail Trade Turnover and Volume Indices

The Retail Trade Turnover Index refers to the whole country. The General Index is composed of the separate indices for the eleven (11) categories of aggregated economic activity classes. These categories result from the aggregation of the relevant economic activity classes (NACE Rev. 2 codes: 4711-4799).

The published nine categories of aggregated economic activity classes of the revised Retail Trade Turnover and Volume Indices are as follows:

1. Supermarkets
2. Department stores
3. Food, beverages and tobacco
4. Automotive fuel-lubricants
5. Pharmaceuticals and cosmetics
6. Clothing and footwear
7. Furniture, electrical goods, household goods
8. Books, stationery and other articles
9. Sales not in stores

It should be noted that the corresponding categories of the Retail Trade Turnover and Volume Indices with base year 2000=100.0 were eight. The additional category in the revised Retail Trade Turnover and Volume Indices (2005=100.0) and (2010=100.0) resulted from the inclusion of the retail sale of automotive fuel and lubricants under retail trade

The breakdown of the Retail Trade Volume Index is similar, the difference being that the last category (‘Sales not in stores’) of the Volume Index is not published.

8. Compiled index series

For the last revision (2010=100.0), as well as the previous one (2005=100.0) of the Retail Trade Turnover and Volume Indices, it was deemed necessary to calculate parallel series for those indices including and not including fuel.This was due to the inclusion of fuel in retail trade in order to maintain comparability with the previous series of the Retail Trade Turnover and Volume indices (2000=100.0).

To establish the link with the previous Retail Trade Turnover and Volume indices (2005=100.0), backcasting was performed for these series with base year 2010=100.0, including and not including fuels, until December 2013. Backcasting of revised index series (2010=100.0) that include fuel is feasible and has been performed since January 2000, whilst for the corresponding series that do not include fuel backcasting has been performed since January 1995.

9. Release and publication of data of the Retail Trade Turnover and Volume indices

The time series of the revised Retail Trade Turnover and Volume Indices (2010=100.0), which include fuels re published since 2000, whereas the time series of the same indices, which do not include fuel are published since 1995. The above indices are derived from reduction until December 2013, whilst the indices from January 2014 are calculated on the basis of turnover data from the new sample of surveyed enterprises and on the basis of the information obtained from the new extrapolation factors.

The data of the Retail Trade Turnover and Volume Indices are announced monthly, on specified dates, sixty (60) days after the end of the data reference month.

The data are presented in a Press Release and published in the ELSTAT’s regular publications: a) The Greek Economy and b) GREECE in figures.

The data pertaining to the Retail Trade Turnover and Volume Indices are also available on the ELSTAT website: http://www.statistics.gr/en/statistics/-/publication/DKT39/-