RETAIL TRADE TURNOVER AND VOLUME INDEX
(2015=100.0)

1. Introduction

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 and as a result it 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 compiled from the Consumer Price Index (CPI) data.

With the revision of the base year (2015 = 100.0) and from the reference month September 2018, the deflators are compiled from the Harmonized Index of Consumer Price Index. By using these deflators, there is a complete consistency between the domestic sales turnover and the deflators that relate to domestic expenditure as well.

3. Revision of 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.

During this revision of the Retail Trade Turnover Index, with base year 2015=100.0, as well as in the previous revision with base the year 2010 = 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 (2015=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 with base year 2010=100.0 was based on the data from the Business Register of ELSTAT compiled from administrative sources, in accordance with the turnover data of retail trade enterprises in the year 2015.

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: 4711-4799).

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

1. Supermarkets[1]
2. Department stores[2]
3. Food, beverages and tobacco[3]
4. Automotive fuel-lubricants
5. Pharmaceuticals and cosmetics[4]
6. Clothing and footwear[5]
7. Furniture, electrical goods, household goods[6]
8. Books, stationery and other articles[7]
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.

The survey for the compilation of the index covers 38,444 retail trade enterprises listed in the Business Register having an annual turnover (in 2015) equal to or higher than 140,000 euro. Out of these enterprises a representative random sample of 1,674 enterprises was selected across the country with elements from 72 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.

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[1] Retail sale in non-specialized stores with food, beverages or tobacco predominating
[2] Other retail sale in non-specialized stores
[3] Retail sale of food, beverages and tobacco in specialized stores
[4] Dispensing chemist, medical and orthopaedic goods, cosmetic and toilet articles in specialised stores.

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

[6] 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

[7] 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 enterprises included in the survey were stratified as follows:

a. By economic activity with four digit-code Nace Rev 2. (economic activity classes)
b. By size class of the enterprise. In each economic activity class, the enterprises were stratified into H=7 size classes, according to their size, determined by their annual turnover (in 2015) in BR as follows:

Size class	Annual Turnover (€)
1	140,000 – 414,999.9
2	415,000 – 889,999.9
3	890,000 – 1,984,999.9
4	1,985,000 – 5,304,999.9
5	5,305,000 – 18,849,999.9
6	18,850,000 – 73,949,9999.9
7	73,950,000 +

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. The two last strata are surveyed on a census basis (take-all strata).

The distribution of enterprises of both the population and the sample is appeared by size classes, in the following table.

Size class	Number of enterprises	
	Population	Sample
1	24,580	862
2	9,233	355
3	3,162	173
4	1,137	125
5	246	73
6	51	51
7	35	35
Total	**38,444**	**1674**

5. Compilation of the Retail Trade Turnover Index

The turnover index is calculated by applying the chaining method. First, the moving based index is calculated by comparing the estimated turnover value for the current month with the corresponding value of the previous month. Afterwards, the fixed-base index for the current month is calculated by multiplying the moving-based index by the fixed-base index of the previous month.

5.1. Turnover value

a. Symbolisms

For each economic activity classes stands for:

h : Size class of enterprises ($h = 1,2 \ldots ,7$)

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

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

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

Y_{mh} : Turnover value of 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 economic activity class, that is: $Y_m = \sum_{h=1}^{7} Y_{mh}$

b. **Estimation of turnover value**

The estimation of the turnover value $\hat{Y}_m$ of the current month *m* is calculated as follows:

$$\hat{Y}_m = \sum_{h=1}^{7} \frac{N_h}{m_h} \sum_{i=1}^{m_h} y_{mhi}$$

The estimate of the turnover value for each of the above 11 retail categories is obtained by summing up the individual estimates of turnover value of the four-digit classes that make up the category. Finally, the turnover value estimate of a level that is composed from one or more retail categories (e.g. overall index, food sector index, etc.) is obtained by summed up the individual estimates of turnover values of the categories that constitute the estimated level.

5.2. Turnover index

a. Moving base index

For each of the eleven (11) above categories, first the moving-base index is calculated of the current month m , as follows:

$$I_{m,m-1} = \frac{\hat{Y}_{k,m}}{\hat{Y}_{k,m-1}}$$

where:

$I_{m,m-1}$: Moving-base index of the current month m , in relation to the previous month (m-1)

$\hat{Y}_{k,m}$: Turnover estimate of the category k for the current month m

$\hat{Y}_{k,m-1}$: Turnover estimate of the category k for the previous month ($m-1$)

b. Fixed-base index (2015=100.0)

For each of the eleven (11) retail categories, the fixed-base index of the current month is obtained by multiplying the moving-base index by the fixed-base index of the previous month, as follows: ως εξής:

$$I_{Y_{k,m}} = I_{\ m,m-1} \cdot I_{Y_{k,m-1}}$$

where:

$I_{Y_{k,m}}$: Fixed-base index of the category k for current month, m
$I_{Y_{k,m-1}}$: Fixed-base index for the category k for the previous month, $m-1$

The fixed base indices at a level that is composed from one or more retail categories (eg overall, food sector index, etc.) is calculated by putting to the numerator and the denominator of the moving base index the sum of the turnover estimates of the retail categories that compose the survey level for the current and the previous month, respectively. Next, we multiply this moving base index with the fixed base index of the previous month of this survey level.

c. Reduction of turnover values to a typical month

The initial turnover value estimates for the 11 retail categories 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. So, in order to comparisons, the indices are adjusted on the basis of the number of working days. This is achieved by reducing the indices to a typical month indices of equal duration, multiplying the estimated turnover values by a specific 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:

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

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

6. Retail trade Volume index

The Retail Trade Volume Index is obtained from the Retail Trade Turnover Index if the latter is deflated by the Harmonized Index of Consumer Price Index (HICPI) with constant taxes.

The deflators based on HICPI data are compiled for the overall index, overall index except automotive fuel, food sector, non-food sector except automotive fuel, and for 9 of the 11 retail categories It should be noted that no deflators are calculated for the 'Retail sale of second-hand goods in stores' and 'Retail trade not in stores, stalls or markets', because data on the sales prices of the products of these stores is not collected.

In order to deflate the turnover index and to 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 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[8]

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. Seasonal adjustment

Seasonal adjustment is the procedure followed to remove the impact of seasonality on the time series (that is eliminating the monthly effects, e.g. the beginning of the school year, holidays, tourist period etc) in order to improve the comparability over time. The method applied is the TRAMO-SEATS with the use of JDemetra+ 2.0.0. The whole series with seasonally adjusted indices is *recalculated* every time a *new* observation is added in time series.

9. Compiled index series

For the last revision (2015=100.0), as well as the previous one (2010=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 (2010=100.0), backcasting was performed for these series with base year 2015=100.0, including and not including fuels, until August 2018. Backcasting of revised index series (2015=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.

[8] Retail sale via mail order houses or via Internet and retail trade not in stores, stalls or markets

From September 2018 onwards, the indices are calculated on the basis of the turnover values of the new sample of surveyed enterprises and the use of the new extrapolation factors (weights of enterprises).

10. 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 (2015=100.0), which include fuels are published since 2000, whereas the time series of the same indices, which do not include fuel are published since 1995.

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/-