INDEX OF PERSONS EMPLOYED IN RETAIL TRADE
(2010=100.0)

1. Introduction

The Index of Persons Employed in Retail Trade is a quarterly index that was compiled for the first time in 2004 with 2000=100.0 as the base year and backdated data from the 1st quarter of 2000. It was followed the revision of the index, with base year 2005 = 100.0, by applying the new classification of Economic Activities NACE Rev.2, where the retail sale of automotive fuel in specialized stores belong to the retail trade.

The Index of Persons Employed in Retail Trade has been compiled pursuant to No. 1165 / 1198 Regulation (EC) concerning short-term statistics, as amended by No. 1158/2005 Regulation (EC) of the European Parliament and of the Council. Moreover, for compiling the index they are applied the No. 1893/2006 Regulation of the European Parliament and of the Council establishing the statistical classification of economic activities NACE Rev 2, and the No 1503/2006 Commission Regulation (EC) implementing and amending the Regulation (EC) No. 1165/98 concerning short-term statistics as regards definitions of variables, list of variables and frequency of data compilation.

In the last revision of the index with base year 2010 = 100.0, the time series of indices up to the fourth quarter 2013 are derived from reduction[*], while from the first quarter of 2014 onwards, the indices are calculated based on the data of the number of employees from the new sample of surveyed enterprises and by using new extrapolation factors.

2. Purpose of the index

The aim of this index is to measure, on a quarterly basis, changes in the number of persons employed in retail trade.

The compilation of the index includes the number of persons employed in the enterprise irrespective of their status (owners, partners and their family members) and the nature of their work (managers, sales persons and auxiliary staff, wage and salary earners) and irrespective of whether they work on a provisional or seasonal basis, full time or part time, with or without remuneration.
Employment figures are recorded on the last working day of the reference quarter and refer to the total number of persons working for the enterprise, as follows:

- Unpaid persons employed include owners, partners, employers and members of their families who work regularly for the enterprise, without being paid, without a contract of employment and without receiving any fixed remuneration for the work they do.

- Paid employees include workers in all categories who are on the enterprise's payroll, and belong to the enterprise and are paid by it, whether working on or off the premises (sales representatives, goods delivery personnel, etc.). They include wage and salary earners, persons on temporary leave (maternity leave, sick leave, etc.) and those on part-time, temporary and seasonal employment.

3. Revision of the Index - Statistical classification

In accordance with the requirements of article 11 of the Council Regulation (EC) No 1165/98 concerning short-term statistics, short-term indices are revised every five (5) years, particularly in calendar years ending in 0 or 5. The purpose of the revision of the index of persons employed in the retail trade is to adapt the index to structural changes of retail trade sector by renewing both the sample of observation units and the used extrapolation factors.

In the present revision of the Index of Persons Employed in Retail Trade, based on year 2010=100.0, as well as in the previous one with base year 2005=100.0, the new statistical classification of economic activities of the EU NACE Rev.2 was applied in conformity with Regulation (EC) 1893/2006 of the European Parliament and of the Council. The most important amendment to the retail trade section of the new NACE Rev.2 classification compared to the previous NACE Rev.1 classification is the inclusion of retail sale of automotive fuel and lubricants under retail

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[*] Recalculation of indices by changing the base year (from 2005 to 2010), while maintaining unchanged their annual and quarterly growth rates.

trade instead of its allocation to "trade, maintenance and repair of motor vehicles and motorcycles" in accordance with NACE Rev.1.

According to this approach, the time series of the above index are now calculated including or not including persons employed in enterprises dealing with retail sale of automotive fuel and lubricants (group 473 of NACE Rev 2: Retail sale of automotive fuel in specialized stores).

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

4. Survey design - Selection of enterprise sample

The Index of Persons Employed in Retail Trade refers to the whole country. The General Index covers the economic activity classes with codes: 4711-4799 of NACE Rev. 2. Four aggregated levels of economic classes are produced as follows:

The Index of Persons Employed in Retail Trade refers to the whole country. The General Index covers the economic activity classes with four digit codes 4711 to 4799 of the statistical classification of Economic Activities NACE Rev.2 and it is broken down into four categories:

- General Index
- General Index except for "Retail sale of automotive fuel in specialized stores"
- Food sector index
- Non-food sector index (except for retail sale of automotive fuel)

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 754 enterprises was selected across the country with elements from 58 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 as follows:

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

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

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[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

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. This sample is a sub-sample of the existent sample of enterprises that is used to compile the revised Retail Trade Turnover and Volume Index (2010=100.0). The enterprises that belong to the 6th size class are surveyed exhaustively.

Specifically, of the enterprises included in the survey sample for the Retail Trade Turnover and Volume Index (2010=100.0), 754 enterprises were selected covering all the strata of the above survey, which resulted from the cross-linking of the economic activity (11 categories of aggregated economic activity classes) and the size class of enterprises.

This approach was based on the fact that:
- The reference population for the variable "number of persons employed" of the Index of Persons Employed in Retail Trade is the same and just as extensive as the reference population of the "turnover" variable of the Turnover Index in Retail Trade.
- There is a strong correlation between the "turnover" variable and the "number of persons employed" variable of the Index of Persons Employed in Retail Trade thus ensuring a satisfactory level of reliability for that second variable.

5. Compiling the Index of Persons Employed in Retail Trade

The index is calculated by applying the chaining method. First, the moving based index is calculated by comparing the estimated persons of employed $\widehat{E}_q$ for the current quarter q with the corresponding value $\widehat{E}_{q-1}$ of the previous quarter. Next, the fixed-based index for the current quarter I_{E_q} is calculated by multiplying the moving-based index by the fix-based index of the previous quarter.

5.1. Persons Employed

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: $r_h = \dfrac{m_h}{n_h}$

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

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

e_{qhi} : persons employed of the current quarter q, of the enterprise of order i, in the size class h

E_{qh} : persons employed of the current quarter q, of all enterprise that belong to the size class h :

that is: $\quad E_{qh} = \sum_{i=1}^{N_h} e_{qhi}$

E_q : persons employed of the current quarter q, of all enterprise that belong to the category of aggregated economic activity classes:

that is: $E_q = \sum_{h=1}^{6} E_{qh}$

b. Estimation of Persons Employed

The estimation $\widehat{E}_q$ of persons employed E_q of the current quarter q is calculated by applying the following relations:

$$\widehat{E}_{qh} = \sum_{i=1}^{m_h} a_h \cdot e_{qhi} \quad (1)$$

$$\widehat{E}_q = \sum_{h=1}^{6} \widehat{E}_{qh} \quad (2)$$

$$\widehat{E}_q = \sum_{h=1}^{6} \sum_{i=1}^{m_h} a_h \cdot y_{qhi} \quad (3)$$

The estimated number of persons employed 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.

5.2. Index of Persons Employed

a. Moving base index

The moving-base index is calculated by comparing the 'estimated' number of persons employed for the current quarter q with the corresponding value of the previous quarter as follows:

$$I_{q.q-1} = \frac{\widehat{E}_q}{\widehat{E}_{q-1}} \quad (4)$$

where:

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

$\widehat{E}_q$: estimates of persons employed for the current q

$\widehat{E}_{q-1}$: estimates of persons employed for the previous quarter $(q-1)$

b. Fixed-base index

The fixed-base index for the current quarter is obtained by multiplying the moving-base index by the fixed-base index of the previous quarter, as follows:

$$I_{E_q} = I_{q,q-1} \cdot I_{E_{q-1}} \quad (5)$$

I_{Eq} : fixed-base index for the current quarter q

$I_{E_{q-1}}$: fixed-base index for the previous quarter ($q-1$)

The fixed base index at a higher level than the categories of aggregated economic activity classes (e.g. general index, food, etc.) is calculated by setting as numerator and denominator of the moving base index of the relations (4), the sum of the number of estimated persons employed in categories that make up the level under survey for the current and the previous quarter, respectively, and then multiplying the moving base index by the fixed base index of the previous quarter of the level of survey.

9. Compiling the index series

For the present revision of the Index of Persons Employed in Retail Trade (2010=100.0), as well as the previous one (2005=100.0) it was deemed necessary to calculate parallel series for this index, including persons employed in enterprises selling automotive liquid fuel and lubricants and without including such persons. This was decided as a result of the inclusion of automotive fuel and lubricants in retail trade and in order to maintain comparability with the previous series of the Index of Persons Employed in Retail Trade (2000=100,0).

In order to establish the link with the previous series of the Index of Persons Employed in Retail Trade (2000=100.0), these series underwent backdating and backcasting by including the persons employed in enterprises selling automotive liquid fuel and lubricants and without including such persons as required by Commission Regulation (EC) 472/2008 concerning backcasting.

10. Releasing and publishing index data

The time series of the revised Index of Persons Employed in Retail Trade (2010=100.0), including persons employed in enterprises selling automotive liquid fuel and lubricants or not including such persons (in line with the index published until the 4th quarter of 2008) are being published since 2000.

The data of the above index are released quarterly, in pre-fixed dates, 75 days after the end of the reference quarter in a Press Release of standardized form and are issued in ELSTAT publications a) The Greek Economy and b) GREECE in figures.

Also, the data of indices are available on the ELSTAT website from the first quarter 2000, at:
http://www.statistics.gr/en/statistics/-/publication/DKT12/-