

TURNOVER INDICES FOR MOTOR TRADES (2015=100.0)

1. Introduction

The Turnover Index for Motor Trades is a short term index compiled on a quarterly basis with base year 2015=100.0, for the sale, maintenance and repair of motor vehicles and motorcycles, as well as the sale of corresponding spare parts and accessories. This index was released for the first time in 2006, with base year 2005=100.0.

The aforementioned index is being compiled pursuant to the provisions of Council Regulation (EC) No 1165/98 concerning short-term statistics (STS) and the requirements of Regulation (EC) No 1158/05 of the European Parliament and Council, amending the original Regulation 1165/98.

The need for short-term statistics mainly arose after the signing of the Treaty on Economic and Monetary Union (EMU), when rapidly available reliable statistical data were considered necessary for analyzing the economic progress of each Member State, within the framework of the EU's economic policy.

2. The purpose of the index – Definitions used

The Index is an indicator of an enterprise's business cycle showing the development of the market for goods and services.

The aim of this index is to measure in value terms the activity of *Wholesale and retail trade and repair of motor vehicles and motorcycles* in the market. Turnover excludes VAT and comprises the totals invoiced by the enterprise during the reference period (quarter), which correspond to sales of goods or services supplied to third parties.

The definitions used, in accordance with Commission Regulation (EC) No 1503/2006 defining variables and frequency of data compilation, repealing new orders received for building construction and new orders received for civil engineering are as follows:

- Turnover comprises the totals invoiced by the enterprise during the reference period, and this corresponds to market sales of goods and services supplied to third parties.
- Turnover includes all duties and taxes on the services invoiced by the enterprise, with the exception of the VAT passed on by the enterprise to its customers. It also includes all other charges (transport, packaging, etc.) passed on to the customer, even if these charges are listed separately in the invoice.

More specifically, the items generally included in turnover are the following:

- Sales of manufactured products;
- Sales of products manufactured by subcontractors;
- Sales of goods purchased for resale in the same condition as received;
- Sales of by-products;
- Invoiced charges for packaging and transport;
- Hours worked invoiced to third parties for labour-only subcontracting;
- Invoiced mounting, installations and repairs;
- Invoiced installments (stage payments);
- Sales of waste and scrap materials;

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 are excluded from turnover. Any operating subsidies received are also excluded.

3. Statistical classification

During the year 2009 the statistical classification NACE Rev.2 was implemented as it is required by Regulation (EC) 1893/2006 of the European Parliament and the Council. Under the new classification the group "retail sale of automotive fuel and lubricants" is classified in retail trade (Division 47) and is surveyed on a monthly basis, in the Retail Trade Turnover Index by compiling of individual monthly Turnover Index on "Retail sale of automotive fuel in specialized stores".

4. Geographical and population coverage

The Turnover Index for Motor Trades covers the whole of the country. The index includes the activities classified under Division 45 (*Wholesale and retail trade and repair of motor vehicles and motorcycles*) of NACE Rev. 2 classification (Statistical Classification of Economic Activities in the European Community), as required by the Regulation (EC) No 1893/2006 of the European Parliament and the Council.

More specifically, Division 45 includes the following groups:

- 451 Sale of motor vehicles
- 452 Maintenance and repair of motor vehicles
- 453 Sale of motor vehicle parts and accessories
- 454 Sale, maintenance and repair of motorcycles and related parts and accessories.

Apart from the general index for the division 45, individual index is compiled for the three digit group 451 of the NACE Rev.2 classification.

5. Base period – Revision – Time series

According to the requirements of article 11 of the Council Regulation (EC) No 1165/98 concerning short-term statistics, the Turnover Index for Motor Trades is revised every 5 years and in particular to the calendar years ending with 0 and 5. The purpose of the revision of the Turnover Index for Motor Trades is to adapt the index to structural changes of the "*wholesale and retail trade and repair of motor vehicles and motorcycles*" division by renewing the sample of enterprises that are surveyed, as well as the extrapolation factors, which are used.

The time series are compiled for the Division 45 and the three-digit Group 451 of the NACE Rev.2 classification.

6. Survey design -Selection of the sample of enterprises

The survey for the compilation of the index covers 2,949 enterprises listed in the Business Register having an annual turnover (in 2015) equal to or higher than 200,000 euro. Out of these enterprises a representative random sample of 247 enterprises was selected across the country with elements from 45 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 economic activity classes (3-digit code of NACE Rev. 2) as follows: 451. 452. 453 and 454
- b. By size class of enterprises: In each class, the enterprises were stratified into seven (7) size classes, determined by their annual turnover (in 2015) in BR as follows

Size class	Annual Turnover (€)
1	200,000 – 450,000
2	450,001 – 950,000
3	950,001 – 2,050,000
4	2,050,001 – 4,500,000
5	4,500,001 – 10,000,000
6	10,000,001 – 18,000,000
7	18,000,001+

In each stratum that is created by crossing the above stratification criteria of enterprises (economic activity x size class), a sample of enterprises was selected with equal probabilities and by applying the systematic sampling. The enterprises that belong to 6th the 7th size class are surveyed exhaustively.

7. Compiling Turnover Indices

The calculation of the turnover indices is performed by applying the chaining method. For each index, initially the moving based index is calculated by comparing the estimated turnover value \hat{Y}_q for the current quarter q with the corresponding value \hat{Y}_{q-1} of the previous quarter. Afterwards, the fixed-base index for the current quarter I_{Y_q} is calculated by multiplying the moving-based index by the fixed-base index of the previous quarter.

7.1 Turnover value

a. Symbolisms

For each of the three digit groups that are used as stratification criteria stands for:

h : size class of enterprises ($h = 1, \dots, 7$)

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 ,

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

y_{qhi} : turnover value of the current quarter q of the enterprise of order i in the size class h

Y_{qh} : turnover value of the current quarter q of all enterprise that belong to the size class h

$$\text{that is: } Y_{qh} = \sum_{i=1}^{N_h} y_{qhi}$$

Y_q : turnover value of the current quarter q of all enterprises that belong to the target population

$$\text{that is: } Y_q = \sum_{h=1}^7 Y_{qh}$$

b. Estimation of the turnover value

The estimation \hat{Y}_q of the turnover value Y_q of the current quarter q is calculated by applying the following relations:

$$\hat{Y}_{qh} = \sum_{i=1}^{m_h} a_h \cdot y_{qhi} \quad (1)$$

$$\hat{Y}_q = \sum_{h=1}^7 \hat{Y}_{qh} \quad (2)$$

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

$$\hat{Y}_q = \sum_{h=1}^7 \sum_{i=1}^{m_h} a_h \cdot y_{qhi} \quad (3)$$

The estimated turnover value at two digit level is derived by summing the individual estimates of the turnover of three-digit codes that make the estimated level.

c. Reduction of turnover values to a typical quarter

The initial turnover value estimates refer to calendar quarters which do not all have the same number of working days and therefore all the compiled indices are not comparable. The quarterly indices 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 quarter of the year. The correction factor is calculated by dividing the mean quarterly number of working days in the given year by the number of regular working days in the quarter under consideration, as follows:

$$C_q = \frac{\bar{x}_t}{x_{tq}} \quad (4)$$

where:

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

x_{tq} : the number of regular working days in the quarter q in the given year t

7.2 Turnover index

a. Moving base index

Firstly, the moving-base index is calculated by comparing the 'estimated' turnover value for the current quarter q with the corresponding value of the previous quarter, as follows:

$$I_{q..q-1} = \frac{\hat{Y}_q}{\hat{Y}_{q-1}} \quad (5)$$

where:

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

Y_q : turnover estimate of the current quarter q

Y_{q-1} : turnover estimate of previous quarter ($q - 1$)

b. Fixed-base index

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

$$I_{y_q} = I_{q,q-1} \cdot I_{Y_{q-1}} \quad (6)$$

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

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

The indices are reduced to a typical quarter indices by multiplying the turnover estimates of the moving base in the relation (5) by the appropriate correction factor according to the relation (4).

8. Releasing and publishing data on compiled indices

Data on Turnover Indices for Motor Trades are released on a quarterly basis in a standardized press release, within specified deadlines, 52-55 days after the end of the reference quarter.

The data are presented in a Press Release and published in the ELSTAT's regular publications:

- The Greek Economy (<http://www.statistics.gr/en/the-greek-economy>)
- Greece in figures (<http://www.statistics.gr/en/greece-in-figures>)

The time series of the above indices are also available on the ELSTAT's website (<http://www.statistics.gr/en/statistics/-/publication/DKT45/>), since the 1st quarter of 2000.