

BUSINESS STATISTICS DIVISION

MANUFACTURE – CONSTRUCTION INDICES AND INDUSTRIAL PRODUCTS SECTION

**METHODOLOGICAL NOTE ON THE REVISION
OF TURNOVER INDEX IN INDUSTRY**

BASE YEAR 2015 = 100.0

Piraeus, August 2019

Revised Turnover Indices in Industry (2015=100.0)

General note

The Industrial Turnover Indices are short-term indices that are compiled on a **monthly** basis in the framework of requirements of Council Regulation (EC) No 1165/98 concerning short-term statistics, as well as Regulation (EC) No 1158/05 of the European Parliament and Council, amending the Council Regulation No1165/98. The indices were first compiled in 2006, with base year 2000 (2000=100.0) and reference period from 2000. The recent revision, with base year 2015 (2015=100.0) covers the period from January 2000 and onwards.

Revision of Turnover Indices in Industry

The latest revision of the Turnover Indices in Industry, with base year 2015 (2015=100.0), was based on the results of the Annual Industrial Survey, the Annual Mining-Quarrying Survey, the Annual External Trade Survey for the year 2015, all carried out by the ELSTAT. The revision took place in the framework of the requirements of the Council Regulation (EC) No 1165/98 concerning short-term statistics, according to which short-term indices are revised every five (5) years, particularly on calendar years ending with a 0 or a 5.

Statistical classification

The revised Industrial Turnover Index (2015=100.0) covers all the activities listed in Sections B (Mining-Quarrying) and C (Manufacturing) as defined in the NACE Rev. 2 statistical classification of economic activities according to Regulation (EC) No 1893/2006 of the European Parliament and Council.

Purpose of the industrial short-term indices

The need for the aforementioned indices arose primarily from the signing of the Treaty of Economic and Monetary Union (EMU), which acknowledged the necessity of having reliable statistics rapidly available for the purpose of analysing the economic performance of each Member State within the framework of implementation of EU economic policy.

The Turnover Index in Industry is an indicator of an enterprise's business cycle, showing the monthly evolution of the market of goods and services in industry. The purpose of this index is to measure the activity of the industrial sector in terms of value. Turnover comprises the totals invoiced (without VAT) by the enterprise during the reference period, and corresponds to the market sales of goods or services supplied to third parties. The purpose and the characteristics of the turnover index in industry also apply to the corresponding sub-indices for domestic and non-domestic turnover, respectively.

Compiled indices

The revised industrial indices, which are currently being compiled, allowing for the separation of transactions according to the product's destination (in compliance with the requirements of the aforesaid Regulation (EC) No 1158/05 of the European Parliament and Council amending the Council Regulation No1165/98, are the following:

Turnover Indices in Industry

Turnover Index in Industry (Total Market)

Turnover Index in Industry for the Domestic Market

Turnover Index in Industry for the Non-Domestic Market

Turnover Index in Industry for the Eurozone Countries

Size of samples of enterprises

The sampling unit used is the KAU (Kind of Activity Unit), which in the majority of cases identifies with the enterprise, according to Regulation 1165/1998 on Short-Term Statistics (Rule 12). The size of sample of enterprises surveyed for the revised Turnover Indices in Industry comprises 3,560 enterprises out of a total population of 62,550 enterprises according to the results of the Annual Industrial Survey, the Annual Mining-Quarrying Survey for the year 2015.

Enterprises are selected by applying the purposive sampling, stratified by 4-digit NACE Rev.2 codes. The number of the selected four-digit codes for the compilation of revised turnover indices amount to 151. Initially, the four-digit codes were selected so that the sum of their value is higher than 70% of the total value at two-digit level of economic activity, according to the aforementioned surveys conducted for 2015. As regards turnover, the surveyed units of the sample cover 90% of the total turnover.

Computation of the Indices

The revised Indices of Turnover in Industry (2015=100.0) refers to Greece total and are calculated using an equivalent form of the Laspeyres formula.

The method and the procedure of the calculation of the indices are described here. The Turnover Index in Industry, as regards

- Domestic Market,
- Eurozone Countries and
- Non-Eurozone Countries,

is calculated initially at the four-digit level of economic activity and subsequently, with the implementation of appropriate weighting coefficients, the index is calculated at higher levels (three-level, two-level and one-level of economic activity) or at the level of Main Industrial Groupings (MIGs).

More specifically, in order to compile the index at the four-digit level k , for each of the above mentioned markets m , the value of turnover of all the surveyed enterprises, for the month t , in the market m , is computed and compared to the average monthly value of turnover of the base year 2015 (2015=100.0), as follows:

$$I_{k,m,t} = \frac{y_{k,m,t}}{\bar{y}_{k,m,0}}$$

where:

- $I_{k,m,t}$: the index at the four-digit level k for market m , during the month t .

- $y_{k,m,t}$: the monthly turnover of all the surveyed enterprises at the four-digit level k during the month t , in the market m ,

- $\bar{y}_{k,m,0}$: the average monthly turnover value of all the surveyed enterprises at the four-digit level during the base year (2015), in the market m .

The aggregated Turnover Indices in Industry for the Non-Domestic Market (Eurozone and Non-Eurozone countries) and for the Total Market (Domestic and Non-domestic market), at the four-digit level k , are defined from the aggregation of the elementary indices of m markets, as follows:

$$I_{kt} = \sum_{m=1}^2 w_{k,m} I_{k,m,t}$$

where:

- I_{kt} : the index at the four-digit level k during the month t, for Non-Domestic Market.
- $w_{k,m}$: the weighting coefficient of m market ($m=1$ Eurozone market and $m=2$ Non-Eurozone market) at the four-digit level k.

The composite Index of the Total Market (General Index) is calculated on the basis of the above formula as a combination of the previous index (Non-Domestic Market Index) and the Domestic Market Index.

The indices for each four-digit level are converted to typical month indices I'_{kt} , where typical month is the month adjusted according to the number of working days. The adjustment is made by multiplying the indices of four-digit level I_{kt} by the appropriate weighting coefficient (α_t) calculated as follows:

$$\alpha_t = \frac{\bar{x}}{x_t}$$

where:

\bar{x} : the average monthly number of working days of current year,

x_t : the number of working days in month t.

These weighting coefficient are reviewed annually.

At higher levels (three-level, two-level, one-level and main industrial groupings), for all markets, the unadjusted (I_t) and adjusted (I'_t) for working days index for the month t are compiled as follows:

$$I_t = \sum_k w_k I_{kt}$$

$$I'_t = \sum_k w_k I'_{kt}$$

where:

$$w_k = \frac{Y_{k,0}}{\sum_k Y_{k,0}} \text{ (weighting coefficient of the four-digit level k)}$$

- $Y_{k,0}$: the annual turnover value of all the enterprises of the four-digit level, in the base year 2015 (2015=100.0), according to the results of the Annual Industrial Survey, the Annual Mining-Quarrying Survey, the Annual External Trade Survey for the year 2015,

- $\sum_k Y_{k,0}$: the annual turnover value of all the four-digit levels k which compose the level for which the index is being compiled (three-digit, two-digit, one-digit level) for the year 2015.

Backcasting of time series

The backcasted (by reduction) monthly and annual indices of sections for the period January 2000 - December 2014 are calculated on the basis of the average annual indices of sections in 2015, according to the formula:

$$R_{k(2015)}^{(t)} = R_{k(2010)}^{(t)} \cdot b_k$$

where:

$$b_k = \frac{100}{\bar{R}_{k(2010)}^{(2015)}}$$

$R_{k(2015)}^{(t)}$: the index of the section k during the current period (month, year) t with base year 2015,

$R_{k(2010)}^{(t)}$: the index of the section k during the current period (month, year) t with base year 2010

and

$\bar{R}_{k(2010)}^{(2015)}$: the average annual index of the section k in the year 2015 with the base year 2010.

The indices from 2015 onwards have been calculated using the new weights and new turnover data.

Publishing and data release of the revised Turnover Index in Industry

The data on the Turnover Indices in Industry are released on a monthly basis, 50 days after the end of the reference month t (t+50) and then they are transmitted to Eurostat.

The time series and metadata of the Turnover Indices in Industry (base year 2015=100.0) are available on the website of ELSTAT <http://www.statistics.gr>, at the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT24/>.

The first release of data on these indices concerns June 2019 and is held in 19th August 2019.

Finally, guidelines for the compilation of short-term statistics are available in the manual of Eurostat *“Methodology of short-term business statistics - Interpretation and Guidelines”*, which is available at:

<http://ec.europa.eu/eurostat/web/short-term-business-statistics/methodology>.

The tables below present the two digit level divisions of economic activity of NACE Rev.2 (Table 1), the weights of Industrial sections B and C, by kind of market for the Overall Index (Table 2), the weights of two-digit level divisions of economic activity by industrial section and kind of market for the Overall Index (Table 3) and the weights of the Main Industrial Groupings - MIGs by kind of market for the Overall Index (Table 4).

TABLE 1. DIVISIONS OF ECONOMIC ACTIVITY OF NACE Rev. 2 CLASSIFICATION**B. MINING AND QUARRYING**

- 05 Mining of coal and lignite
- 06 Extraction of crude petroleum and natural gas
- 07 Mining of metal ores
- 08 Other mining and quarrying
- 09 Mining support service activities

C. MANUFACTURING

- 10 Food
- 11 Beverages
- 12 Tobacco products
- 13 Textiles
- 14 Wearing apparel
- 15 Leather and related products
- 16 Wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials
- 17 Paper and paper products
- 18 Printing and reproduction of recorded media
- 19 Coke and refined petroleum products
- 20 Chemicals and chemical products
- 21 Basic pharmaceutical products and pharmaceutical preparations
- 22 Rubber and plastic products
- 23 Other non-metallic mineral products
- 24 Basic metals
- 25 Fabricated metal products, except machinery and equipment
- 26 Computers, electronic and optical products
- 27 Electrical equipment
- 28 Machinery and equipment n.e.c.
- 29 Motor vehicles, trailers and semi-trailers
- 30 Other transport equipment
- 31 Furniture
- 32 Other manufacturing
- 33 Repair and installation of machinery and equipment

TABLE 2. WEIGHTING COEFFICIENTS BY INDUSTRIAL SECTION AND BY KIND OF MARKET
(2015=100.0)

NACE Rev. 2 Code	INDUSTRIAL SECTION	Weighting coefficients (%)				
		Total Market	Domestic Market	Non-Domestic Market	Non-Domestic Market Eurozone countries	Non-Domestic Market Non-Eurozone countries
	TOTAL INDEX	100.00	100.00	100.00	100.00	100.00
B	MINING-QUARRYING	1.34	1.14	1.72	1.97	1.59
C	MANUFACTURING	98.66	98.86	98.28	98.03	98.41

TABLE 3. WEIGHTING COEFFICIENTS BY DIVISION OF ECONOMIC ACTIVITY OF NACE Rev. 2, BY INDUSTRIAL SECTION AND BY KIND OF MARKET
(2015=100.0)

NACE Rev. 2 Code	Divisions of economic activity	Weighting coefficients %				
		Total Market	Domestic Market	Non-Domestic Market	Non-Domestic Market Eurozone countries	Non-Domestic Market Non-Eurozone countries
B	MINING-QUARRYING	100.00	100.00	100.00	100.00	100.00
05	Mining of coal and lignite	13.27	23.44	0.00	0.00	0.00
06	Extraction of crude petroleum and natural gas	3.26	0.00	7.53	18.99	0.00
07	Mining of metal ores	17.56	12.83	23.74	20.16	26.09
08	Other mining and quarrying	61.25	55.50	68.74	60.85	73.91
09	Mining support service activities	4.65	8.22	0.00	0.00	0.00
C	MANUFACTURING	100.00	100.00	100.00	100.00	100.00
10	Food	23.39	28.50	13.27	19.00	10.23
11	Beverages	3.57	4.86	1.01	1.71	0.64
12	Tobacco products	1.19	0.51	2.53	1.95	2.84
13	Textiles	1.28	1.11	1.61	2.19	1.30
14	Wearing apparel	1.80	1.77	1.86	3.12	1.19
15	Leather and related products	0.34	0.41	0.19	0.23	0.17
16	Wood and products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	0.72	0.96	0.24	0.32	0.20
17	Paper and paper products	2.44	3.12	1.11	1.42	0.94
18	Printing and reproduction of recorded media	1.17	1.63	0.26	0.51	0.13
19	Coke and refined petroleum products	28.73	24.90	36.32	23.17	43.28
20	Chemicals and chemical products	4.43	4.90	3.50	3.14	3.70
21	Basic pharmaceutical products and pharmaceutical preparations	3.67	3.85	3.30	5.68	2.04
22	Rubber and plastic products	3.47	3.31	3.79	4.44	3.44
23	Other non-metallic mineral products	3.31	3.31	3.31	1.30	4.38
24	Basic metals	7.19	3.49	14.54	19.82	11.74
25	Fabricated metal products, except machinery and equipment	4.51	4.25	5.03	3.60	5.78
26	Computers, electronic and optical products	0.78	0.40	1.52	1.11	1.74
27	Electrical equipment	2.65	2.24	3.44	3.99	3.15
28	Machinery and equipment n.e.c.	1.56	1.46	1.76	1.32	2.00
29	Motor vehicles, trailers and semi-trailers	0.23	0.27	0.14	0.21	0.10
30	Other transport equipment	0.52	0.58	0.40	0.20	0.51
31	Furniture	0.97	1.35	0.21	0.31	0.16
32	Other manufacturing	0.66	0.88	0.22	0.35	0.16
33	Repair and installation of machinery and equipment	1.42	1.92	0.43	0.92	0.17

**TABLE 4. WEIGHTING COEFFICIENTS BY MAIN INDUSTRIAL GROUPINGS (MIGs), BY KIND OF MARKET
(2015=100.0)**

		Weighting coefficients %				
		Total Market	Domestic Market	Non-Domestic Market	Non-Domestic Market Eurozone Countries	Non-Domestic Market Non-Eurozone Countries
	MAIN INDUSTRIAL GROUPINGS (MIGs)	100.00	100.00	100.00	100.00	100.00
1	Energy	28.57	24.89	35.82	23.08	42.59
2	Intermediate goods	28.29	25.73	33.33	37.90	30.90
3	Capital goods	7.00	7.19	6.62	4.83	7.58
4	Durable consumer goods	1.86	2.31	0.98	1.15	0.89
5	Non-durable consumer goods	34.28	39.88	23.25	33.04	18.05