

## Single Integrated Metadata Structure (SIMS v2.0)

**Country:** Greece

**Compiling agency:** ELSTAT

**Domain name:** Services Producer Price Indices (SPPI)

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1. Contact <a href="#">Top</a>	
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## 2. Metadata update

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2.1 Metadata last certified	14/6/2024
2.2 Metadata last posted	14/6/2024
2.3 Metadata last update	14/6/2024

## 3. Statistical presentation

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### 3.1 Data description

Data are disseminated for the following activities of Sections H, M και N of the statistical classification NACE Rev.2 at 2-digit, 3-digit and 4-digit level:

- Freight transport services by road and removal services (group 494)
- Scheduled air transport services (division 51)
- Warehousing and storage services (class 5210)
- Cargo handling services (class 5224)
- Postal and courier services (division 53)
- Accounting, bookkeeping, auditing and tax consulting services (group 692)
- Technical testing and analysis services (group 712)
- Media representation services (class 7312)
- Market research and public opinion polling services (group 732)
- Security and investigation services (division 80)
- Cleaning services (group 812)
- Sea and coastal passenger and freight water transport services (division 50: 501 & 502)
- Total telecommunications services (division 61)
- Computer programming, consultancy and related services (division 62)
- Information service on computers and related services (division 63)
- Legal services (group 691)
- Management consulting services (group 702)
- Architectural and engineering services, related technical consulting services (group 711)
- Services provided by advertising agencies (class 7311)
- Employment services (division 78)

### 3.2 Classification system

Eurostat's classification NACE Rev.2 is used at 4-digit level of analysis, as required by Regulation (EC) 1893/2006 of the European Parliament and of the Council, along with the Eurostat's classification CPA 2008 at 6-digit level of analysis, as required by Regulation (EC) 451/2008 of the European Parliament and the Council.

### 3.3 Sector coverage

The Services Producer Price Indices with base year 2015=100.0, cover part of Sections H, J, M and N as defined in NACE Rev. 2 classification, i.e., branches: 494, 50, 51, 5210, 5224, 53, 61, 62, 63, 691, 692, 702,711, 712, 7311,7312, 732, 78, 80, 812.

### 3.4 Statistical concepts and definitions

The Producer Price Indices for Services are output price indices for the production of services from domestic producers and show the evolution of prices for the services that are provided to customers which are enterprises or persons that represent enterprises, in other words, they refer to services that are used as intermediate use (Business to Business-B2B), without differing significantly from the overall index (Business to All-B2All). Particularly in the group of indices of: the air transport index and the sea and short sea shipping index (of the new branches of services) have already been compiled as overall index (B2All) and the two indices for postal and courier services and the

telecommunication services (of the new branches of services), which are compiled as overall indices (B2All) and as sub-indices for businesses (B2B) and for consumers (B2C).

The purpose of these indices is to measure the quarterly changes in producer's prices in services and to record the trend of prices that reflect supply and demand in the services markets, in order to analyze the actual changes in the economy and to monitor inflation pressures.

### 3.5 Statistical unit

The sampling unit of the survey is the enterprise.

### 3.6 Statistical population

Purposive sample of enterprises that are activated in the corresponding branch of economic activity and which are selected from the business register of 2015, on the basis of a turnover threshold.

### 3.7 Reference area

Greece total.

### 3.8 Time coverage

The SPPI time series are disseminated on a quarterly basis from the 1<sup>st</sup> quarter 2007 onwards.

### 3.9 Base period

The base year is the year 2015 (2015=100.0).

## 4. Unit of measure

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Index, percentage changes (%) (quarterly and annual).

## 5. Reference period

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The reference period is the quarter.

## 6. Institutional mandate

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### 6.1 Legal acts and other agreements

The legal framework concerning the organization and operation of ELSTAT is as follows:

- **Law 3832/2010** (Government Gazette No 38, Issue A): *"Hellenic Statistical System Establishment of the Hellenic Statistical Authority (ELSTAT) as an Independent Authority"*, as amended and in force
- **Regulation on the Operation and Administration of the Hellenic Statistical Authority (ELSTAT)**, 2012, (Government Gazette No 2390, Issue B, 28-8-2012)
- **Regulation (EC) No 223/2009 of the European Parliament and of the Council**, on the European statistics (Official Journal of the European Union L 87/164).
- **Article 14 of the Law 3470/2006** (Government Gazette No 132, Issue A): *"National Export Council, tax regulations and other provisions"*.
- **Article 3, paragraph 1c, of the Law 3448/2006** (Government Gazette No 57, Issue A): *"For the further use of information coming from the public sector and the settlement of matters falling within the responsibility of the Ministry of Interior, Public Administration and Decentralization"*.
- **European Statistics Code of Practice**, adopted by the Statistical Programme Committee on 24 February 2005 and promulgated in the Commission Recommendation of 25 May 2005 on the independence, integrity and accountability of the national and Community statistical Authorities, after its revision, which was adopted on 28 September 2011 by the European Statistical System Committee.

- **Presidential Decree 226/2000** (Government Gazette No 195, Issue A): *“Organization of the General Secretariat of the National Statistical Service of Greece”*.
- **Articles 4, 12, 13, 14, 15 and 16 of the Law 2392/1996** (Government Gazette No 60, Issue A): *“Access of the General Secretariat of the National Statistical Service of Greece to administrative sources and administrative files, Statistical Confidentiality Committee, settlement of matters concerning the conduct of censuses and statistical works, as well as of matters of the General Secretariat of the National Statistical Service of Greece”*.

The Legal Framework is detailed in the following link:

<http://www.statistics.gr/en/legal-framework>.

The legal framework concerning Eurostat legislation:

The legal basis for the SPPI is the Council Regulation No 1197/2020 of 30<sup>th</sup> July 2020 concerning short-term statistics (STS) as amended by the Regulation No 1165/98 of 19<sup>th</sup> May 1998 and (EC) No 1158/2005 of the European Parliament and of the Council of 6<sup>th</sup> July 2005 concerning short-term statistics (STS). The definitions of short-term statistics variables are laid down in Commission Regulation No 1503/2006 of 28<sup>th</sup> September 2006. In addition, it is the new Regulation (EU) No 2019/2152 of the European Parliament and of the Council on European business statistics. as well as Commission Implementing Regulation (EU) No 2020/1197 laying down technical specifications and arrangements pursuant to Regulation (EU) No 2019/2152.

## 6.2 Data sharing

The SPPI data are disseminated to Eurostat pursuant to Regulation (EC) 1165/98 of the Council on short-terms statistics, as amended by the Regulation (EC) No 1158/2005, also by Regulation (EU) No 2019/2152 of the European Parliament and of the Council on European business statistics. as well as Commission Implementing Regulation (EU) No 2020/1197 laying down technical specifications and arrangements pursuant to Regulation (EU) No 2019/2152.

## 7. Confidentiality

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### 7.1 Confidentiality - policy

The issues concerning the observance of statistical confidentiality by the Hellenic Statistical Authority (ELSTAT) are arranged by articles 7, 8 and 9 of the Law 3832/2010 as in force, by Articles 8, 10 and 11(2) of the Regulation on Statistical Obligations of the agencies of the Hellenic Statistical System and by Articles 10 and 15 of the Regulation on the Operation and Administration of ELSTAT.

More precisely:

ELSTAT disseminates the statistics in compliance with the statistical principles of the European Statistics Code of Practice and in particular with the principle of statistical confidentiality.

<http://www.statistics.gr/en/statistical-confidentiality>

### 7.2 Confidentiality - data treatment

- ELSTAT protects and does not disseminate data it has obtained or it has access to, which enable the direct or indirect identification of the statistical units that have provided them by the disclosure of individual information directly received for statistical purposes or indirectly supplied from administrative or other sources. ELSTAT takes all appropriate preventive measures so as to render impossible the identification of individual statistical units by technical or other means that might reasonably be used by a third party. Statistical data that could potentially enable the identification of the statistical unit are disseminated by ELSTAT if and only if:

a) these data have been treated, as it is specifically set out in the Regulation on Statistical Obligations of the

agencies of the Hellenic Statistical System (ELSS), in such a way that their dissemination does not prejudice statistical confidentiality or

b) the statistical unit has given its consent, without any reservations, for the disclosure of data.

- The confidential data that are transmitted by ELSS agencies to ELSTAT are used exclusively for statistical purposes and the only persons who have the right to have access to these data are the personnel engaged in this task and appointed by an act of the President of ELSTAT.
- ELSTAT may grant researchers conducting statistical analyses for scientific purposes access to data that enable the indirect identification of the statistical units concerned. The access is granted provided the following conditions are satisfied:
  - a) an appropriate request together with a detailed research proposal in conformity with current scientific standards have been submitted;
  - b) the research proposal indicates in sufficient detail the set of data to be accessed, the methods of analyzing them, and the time needed for the research;
  - c) a contract specifying the conditions for access, the obligations of the researchers, the measures for respecting the confidentiality of statistical data and the sanctions in case of breach of these obligations has been signed by the individual researcher, by his/her institution, or by the organization commissioning the research, as the case may be, and by ELSTAT.
- Issues referring to the observance of statistical confidentiality are examined by the Statistical Confidentiality Committee (SCC) operating in ELSTAT. The responsibilities of this Committee are to make recommendations to the President of ELSTAT on:
  - the level of detail at which statistical data can be disseminated, so as the identification, either directly or indirectly, of the surveyed statistical unit is not possible;
  - the anonymization criteria for the microdata provided to users;
  - the granting to researchers access to confidential data for scientific purposes.
- The staff of ELSTAT, under any employment status, as well as the temporary survey workers who are employed for the collection of statistical data in statistical surveys conducted by ELSTAT, who acquire access by any means to confidential data, are bound by the principle of confidentiality and must use these data exclusively for the statistical purposes of ELSTAT. After the termination of their term of office, they are not allowed to use these data for any purpose.
- Violation of data confidentiality and/or statistical confidentiality by any civil servant or employee of ELSTAT constitutes the disciplinary offence of violation of duty and may be punished with the penalty of final dismissal.
- ELSTAT, by its decision, may impose a penalty amounting from ten thousand (10,000) up to two hundred thousand (200,000) euros to anyone who violates the confidentiality of data and/or statistical confidentiality. The penalty is always imposed after the hearing of the defense of the person liable for the breach, depending on the gravity and the repercussions of the violation. Any relapse constitutes an aggravating factor for the assessment of the administrative sanction.

## 8. Release policy

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### 8.1 Release calendar

A release calendar is available on the website with the precise release dates of statistics for the following year.

## 8.2 Release calendar access

The calendar is distributed to the press and is available to all interested parties free of charge. This calendar is also posted on the website of the ELSTAT ([www.statistics.gr](http://www.statistics.gr)) under the link: "Announcements Calendar". <http://www.statistics.gr/en/calendar>.

## 8.3 User access

In line with the Community legal framework and the European Statistics Code of Practice, ELSTAT disseminates national statistics on ELSTAT's website respecting professional independence and in an objective, professional and transparent manner in which all users are treated equitably.

In this content, data for SPPI are released simultaneously to all interested parties and users through the Announcement, which is posted on the website of ELSTAT ([www.statistics.gr](http://www.statistics.gr)) and specifically under the link: <http://www.statistics.gr/en/statistics/-/publication/DKT59/>-according to the release calendar. This Announcement is also available by e-mail to all interested parties. In addition, data are transmitted to Eurostat on a predefined date, concomitantly with their national publication.

## 9. Frequency of dissemination

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The Services Producer Price Indices are disseminated on a quarterly basis.

## 10. Accessibility and clarity

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### 10.1 News release

Every quarter, 90 days (t+90) after the end of the reference quarter, at 12:00, an Announcement is released concerning the newly compiled indices in Greek and in English. The Announcement is sent, free-of-charge, and mostly by email to the press and to other interested parties. It is also available on the website of ELSTAT website at:

<http://www.statistics.gr/en/statistics/-/publication/DKT59/>.

### 10.2 Publications

There are no publications concerning the Services Producer Price Indices.

### 10.3 On-line database

There are no data concerning the Services Producer Price Indices available on the on-line database of ELSTAT.

#### 10.3.1 Data tables - consultations

In 2023, total access to the website as regards the SPPI amounted to 24,040 hits.

### 10.4 Micro-data access

Data are available after submitting a request to ELSTAT, Division of Statistical Information and Publications, Peiraios 46 & Eponiton, 18510, Piraeus, tel. (+30) 213 135 2022, e-mail: [data.dissem@statistics.gr](mailto:data.dissem@statistics.gr)

Access to microdata is only permitted under strict conditions and always with due process.

More information are available on the website link: [http://www.statistics.gr/en/scientific\\_provision\\_data](http://www.statistics.gr/en/scientific_provision_data)

### 10.5 Other

More data dissemination by ELSTAT on the link: <http://www.statistics.gr/en/statistics/-/publication/DKT59/>, as well as in Eurostat's publications through the link: <http://ec.europa.eu/eurostat/web/short-term-business-statistics/>.

Users can be given data or further analysis, usually by tel or e-mail after submitting a request, describing the requested data to the Section of Statistical Dissemination (the Trade and Services Indices Section will be informed), at

the following e-mail addresses: [data.dissem@statistics.gr](mailto:data.dissem@statistics.gr), [data.supply@statistics.gr](mailto:data.supply@statistics.gr) και [data.source@statistics.gr](mailto:data.source@statistics.gr).

Users can also submit their requests electronically, through the portal at:

<http://www.statistics.gr/en/statistical-data-request>

#### **10.5.1 Metadata – consultations**

In 2023, total access to the website as regards the SPPI amounted to 24,040 hits.

There is no possibility to make the distinction between users' consultations on data tables and users' consultations on metadata.

### **10.6 Documentation on methodology**

The methodology for the compilation of the index is laid down by ELSTAT, taking into account international practices and, in particular, Eurostat's recommendations, guidelines and standards.

The methodological issue that includes a set of guidelines for the preparation of short-term statistics is available:

[Methodology of short-term business statistics - Interpretation and Guidelines](#)

While the methodological manual on Services Producers Price Indices (SPPI) by Eurostat, is available:

[Services producer price index \(2010\)](#)

#### **10.6.1 Metadata completeness – rate**

The metadata of the SPPI are posted on the webpage of ELSTAT at the link:

<http://www.statistics.gr/en/statistics/-/publication/DKT59/->. Metadata completeness amounts to 100%.

### **10.7 Quality documentation**

A concise user-oriented quality report is available on the website of ELSTAT at:

<http://www.statistics.gr/en/statistics/-/publication/DKT59/->

## **11. Quality management**

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### **11.1 Quality assurance**

The Hellenic Statistical Authority (ELSTAT) aims to ensure and further improve the quality of statistics produced and maintain the confidence of users in them. This is achieved through the Quality Policy of ELSTAT which is posted on the website of ELSTAT and is available at the following link:

<http://www.statistics.gr/en/quality-assurance-framework> and <http://www.statistics.gr/en/policies>.

Quality checks and validation of data are carried out during the whole process of the compilation of the index - from the data collection stage to the final compilation of the index.

The well-trained and experienced staff deals with all the stages of the compilation of the indices, that is: data collection, including communication with the enterprises, initial checks of the data as to their correctness, data entry and final checks, which are conducted after the calculation of the index. This way, the personnel have a comprehensive and long-standing experience with the enterprises under survey.

Data are validated either before or after data entry by means of logical checks. During data processing, the data are checked in order to identify and correct any measurement or data entry errors. The detection of these errors is done in data of the enterprises, by examining whether these data are within a certain range of values, based on the size of the enterprises, as well as the seasonality of the data. At the same time, data are checked for completeness, accuracy and consistency of the correlating variables.

The index is calculated by means of specialised software, through computation routines, thus eliminating any errors to the final results. Nevertheless, even during this stage, consistency checks are carried out to the final results, mainly

on comparing the percentage changes of the corresponding quarters.

### 11.2 Quality assessment

The Services Producer Price Indices have been progressively developed by making revisions every five-year period, following European and international standards and guidelines on both concepts and definitions as well as methodology.

## 12. Relevance

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### 12.1 User needs

The Services Producer Price Indices cover national needs and the needs of European and other users. The main national users of the SPPI are the government, other public agencies, the Central Bank of Greece, other Hellenic banks, the Hellenic Federation of Enterprises (SEV), the Foundation for Economic and Industrial Research (IOBE), the Centre for Planning and Economic Research, chambers, etc., while at international level, the indices are used by Eurostat, the International Monetary Fund (IMF), the United Nations (UN), etc.

Users needs vary. At national level, the SPPI are used as a tool offering up-to-date and reliable information for the observation of the trend of prices and as deflators for the corresponding branches of economic activity of the services sector, so as the government is able to define the monetary policy, and the enterprises or other institutions to facilitate the decision-making for undertaking initiatives in order to enhance growth. At European level, there is the need for reliable statistics, such as SPPI, which would be comparable at all levels, in order for the European monetary policy to be defined.

### 12.2 User satisfaction

a. User satisfaction survey:

ELSTAT conducts an annual user satisfaction survey. The comments on the media are positive. More information about the latest results of user research, for the annual periods per semester, is available in the Library Information Bulletin, on the website of ELSTAT ([www.statistics.gr](http://www.statistics.gr)), "Products and Services" at the link:

<http://www.statistics.gr/en/user-satisfaction-survey>.

b. Conference of statistical data users

According to its annual statistical program, ELSTAT has been conducting a user conference since 2010 on an annual basis, attended by representatives of private and public sector bodies, as well as educational and research institutions. Information about user conferences at the link:

<http://www.statistics.gr/en/user-conference>.

### 12.3 Data completeness

The data provided cover completely the requirements of the relevant Eurostat Regulations.

## 13. Accuracy and reliability

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### 13.1 Overall accuracy

The accuracy of SPPI is generally considered to be high. ELSTAT does not calculate sampling errors for SPPI because the purposive sampling technique is applied, instead of the random sampling technique. As regards non-sampling errors, they mostly refer to measurement or non-response errors. The efforts which are made mostly focus on identifying and eliminating, to the extent possible, these errors, through the revision of data.

### 13.2 Sampling error

Sampling error is not estimated for the SPPI because the purposive sampling technique is applied.

The information of collected prices referred to the mid of the quarter, in a quarterly periodicity, so in this way, to ensure the comparison of the average price level of the current period (quarter), compared to the level of prices in

the corresponding base period (quarter).

### **13.3 Non-sampling error**

#### **a. Unit non – response**

In case of non-response, the surveyed enterprise is contacted by telephone, or is sent a reminder by e-mail or even a statistical interviewer pays a visit to the enterprise. There are, also, errors due to non-response of enterprises, yet non-response rate is less than 5% of the sample, with the overall response to be about 95%. Non-response is treated by estimating missing values according to the prices trend from other enterprises that provide the same or similar services.

#### **b. Item non - response**

There are not any errors related to the inconsistent implementation of definitions. If some services-products cease to be representative or change their characteristics on the basis of which they are defined, new items or similar items are used to replace them. In these cases, their calculation, for the base year, is based on the use of the indices of the group in which they belong.

#### **13.3.1 Coverage error**

No coverage errors are observed in the Business Register of ELSTAT, on the basis of which the survey on the compilation of the SPPI was designed.

#### **13.3.1.1 Over-coverage – rate**

No over-coverage errors (e.g., closed enterprises, enterprises out of the scope of the survey, etc.) are observed in the Business Register of ELSTAT, on the basis of which the survey on the compilation of the SPPI was designed.

#### **13.3.1.2 Common units – proportion**

The index is compiled on the basis of a common sample of enterprises for each quarter, which is renewed with the change of the base year. The enterprises which stop their activity, replaced immediately by the Business Register, so that the percentage of common enterprises of the sample among the quarters to be at 100%.

#### **13.3.2 Measurement error**

Measurements errors occur during data collection. They are identified by means of quality checks and are duly corrected.

#### **13.3.3 Non response error**

In case of non-response, the surveyed enterprise is contacted by telephone or is sent a reminder by e-mail.

#### **13.3.4 Processing error**

Processing errors are minimized because all the relevant tasks are performed by using a special software application and logical checks are performed.

#### **13.3.5 Model assumption error**

No model is used for the compilation of the index.

## **14. Timeliness and punctuality**

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### **14.1 Timeliness**

The indices are published 90 days (t+90) after the end of the reference quarter.

### **14.2 Punctuality**

All the indices are published in accordance with the pre-announced release calendar.

## **15. Coherence and comparability**

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### **15.1 Comparability - geographical**

The STS Regulations and the STS basic methodological guidelines are implemented for the compilation of the indices, thus ensuring a good comparability between the Greek SPPI and the other national and European statistics, taking always into account any special conditions prevailing in each country, which may dictate minor methodological

deviations.

#### **15.1.1 Assymetry for mirror flows statistics – coefficient**

For the SPPI there are no mirror-flows statistics among EU Member States.

#### **15.2 Comparability over time**

The time series of the index with base year 2015=100.0, which is available from January 2000 onwards, is considered fully comparable over time.

#### **15.3 Coherence cross-domain**

Regular crosschecks are carried out based on informations from other surveys. Comparisons are made mainly with the sub-indices of the consumer price index (CPI) that have to do with the corresponding branches of services sector. The difference with these sub-indices is that the latter include taxes in the prices, as well as that the services in the CPI may be provided by non-domestic producers

#### **15.3.1 Coherence – sub annual and annual statistics**

The common sample of enterprises used for the index ensures the accurate representation of the evolution of the index during several time periods.

#### **15.3.2 Coherence – National Accounts**

The SPPI are used by the National Accounts Division for the compilation of their estimations and they are also used as deflators for the relevant branches of economic activities in the services sector.

#### **15.4 Coherence - internal**

The SPPI are internally coherent because a common data base is used and they are compiled on the basis of common methodology. Higher-level aggregate derive from detailed indices according to well-defined procedures.

## **16. Cost and burden**

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a) Regarding the staff of ELSTAT that is involved in the compilation of the index, the annual cost, in working hours in 2023, amounts to 1,972 hours.

b) With regard to the surveyed enterprises, the average annual charge in working hours required to provide a response in 2023, is 4.4 minutes per price (in an average of 7 prices per collected questionnaire of the enterprises).

## **17. Data revision**

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### **17.1 Revision policy**

According to Regulation No 1165/98 (art.11), the Services Producer Price Indices, like other short-term statistics variables, is revised every five years in years ending in 0 or 5. The purpose of these revisions is to adjust the index to the current developments in the services sector, where in addition to the change of the base year, both, the survey sample and the reduction factors (weights) of the enterprises are updated.

The data are revised, in accordance with the Revision Policy of ELSTAT, which is available at the following link: <http://www.statistics.gr/en/policies>.

The same revision policy for all kind of revisions is applied to data released nationally and to those transmitted to Eurostat to assure coherence.

### **17.2 Revision practice**

The data released for the most recent quarter are provisional and are published together with revised data of the previous quarters. Quarterly correction is made due to late reporting of respondents. Whenever the data are revised, the same revision policy is applied to data released nationally and to those transmitted to Eurostat, in order to ensure coherence.

## 18. Statistical processing

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### 18.1 Source data

The turnover of each service in a 6-digit CPA analysis was provided from the results of an Ad hoc statistical survey of the enterprises from the Statistical Business Register (SBR) of ELSTAT in year 2015.

The selection of the enterprises of the sample was done with the application of purposive sampling from ELSTAT's SBR in year 2015, so as: a) to produce the services that were selected and b) their turnover in services to be significantly high in relation to the total turnover in the respective division of economic activity which are classified.

From the results of the above survey, we calculated the weighting coefficients (in 6-digit CPA analysis), that were used on calculation of the indices in every respective sectors of economic activity, with the reduction to the available total turnover of 2-digit, 3-digit and 4-digit of NACE Rev. 2, as existed in the data of ELSTAT's SBR in year 2015.

The data are collected from a sample that contains 362 enterprises, while the total number of observations (prices in the middle of the reference quarter) is approximately 2500. For the compilation of SPPIs are recorded the transactions that reflect the prices received by the producers for services actually sold to purchasers, including discounts, rebates or other charges. The collected prices are the basic prices for services sold. i.e. prices excluding VAT and other similar deductible taxes directly linked to turnover and also excluding all other taxes on products-services but including any existed subsidies.

### 18.2 Frequency of data collection

The data are collected on a quarterly basis.

### 18.3 Data collection

Data are collected by specialized employees—price collectors and for this purpose specially designed questionnaires are used for this purpose, adapted to each enterprise. The services provided by each enterprise are pre-printed in the questionnaires and the prices charged for these services are requested, during the reference quarter. The prices are collected by means of the following ways:

- with personal visits of price collectors to the enterprises
- via telephone contacts
- via e-mail
- via internet search.

Non-response is treated by telephone contacts, e-mails and personal visits of interviewers to the enterprises.

### 18.4 Data validation

Data are validated by means of logical checks. Data processing encompasses investigation of data in order to identify and duly correct any errors. Special emphasis is put on the errors that have significant impact on the results. After identifying errors, further investigation takes place in cooperation with the enterprise in order to confirm that it is an error or just an unusual price. Moreover, completeness checks are carried out in order to confirm that the values are within given ranges and that values for related variables are coherent. The data processing and data validation takes place either during or after data entry.

The data are compared with the data of the previous quarters and inconsistencies, or major deviations lead to more thorough investigation.

### 18.5 Data compilation

The indices are Laspeyres-type indices with weights based on turnover data at 6-digit level that are produced from the specific structural survey of the year 2015.

In the cases of postal and courier services and of telecommunications services, as it was stated, two sub-indices, a B2B and a B2C, are compiled and then the overall index B2All as a weighted average of the above two indices. The indices are compiled with successive aggregations from lower to higher levels, in which every aggregation level uses the arithmetic mean of indices at the lowest level duly weighted.

The SPPI indices in any industry are calculated using a variation of the Laspeyres formula, as follows:

$$I^{(t)} = \sum_{i=1}^n R_i^{(t)} * w_i$$

where :

$I^{(t)}$ , is the general index of the current period (quarter)  $t$ , at the highest level of aggregation,

$R_i^{(t)}$ , is the total index of grouping level  $i$  during the current period (quarter)  $t$ ,

$$w_i = \frac{p_i^0 q_i^0}{\sum_{i=1}^n p_i^0 q_i^0}, \quad \sum_{i=1}^n w_i = 1$$

$w_i$  = the weighting coefficient of grouping level  $i$ , (from the turnover of every level  $i$  during the base period 0),

$i = 1, 2, \dots, n$ , grouping level

$t$  = current period (quarter or year)

where:  $p_i^0$  and  $q_i^0$  are the price and quantity of the product-service (of businesses involved in weighting) in the lowest grouping level  $i$  in base period 0, respectively,

with:  $p_i^0 \times q_i^0$  = the turnover of each subcategory  $i$ , in base period 0.

and the:  $\sum_{i=1}^n p_i^0 \times q_i^0$  = the turnover in the total level of completion of each subcategory  $i$ , in base period 0.

The successive phases of grouping from the lower to the higher level classifications are: service, sub-category (6-digit level), category (5-digit level), activity or class (4-digit level), group (3-digit level), division (2-digit level), B2B and B2C indicators, overall index.

The total index of each subcategory  $i$ , is calculated as weighted mean:

$$R_i^{(t)} = \sum_{j=1}^k w_{ij} R_{ij}^{(t)}, \text{ where: } \sum_{j=1}^k w_{ij} = 1,$$

$w_{ij}$  is the  $j$  company's turnover in the subcategory  $i$  and  $R_{ij}^{(t)}$  is the index of company  $j$  in the subcategory  $i$ , with  $j = 1, 2, \dots, k$ , companies.

The calculation of the index  $R_{ij}^{(t)}$ , is done using the arithmetic mean of the relative prices of the  $m$  varieties of each service  $r$ , in the subcategory  $i$ , in  $j$  companies.

Then:

$$R_{ij}^{(t)} = \frac{1}{N_r} \sum_{m=1}^{N_r} \left( \frac{p_{rm}^{(t)}}{p_{rm}^{(0)}} * 100 \right),$$

where:  $N_r$ , is the number of varieties  $m$  (when exist in  $j$  companies), of the service  $r$ , from all sources of price collection,  $m=1, 2, 3, \dots, N_r$ ,

$p_{rm}^{(t)}$ , is the price of  $m$  variety of the service  $r$ , the current period  $t$ ,

$p_{rm}^{(0)}$ , is the price of  $m$  variety of the service  $r$ , in the base period 0.

The back casting calculation of indices is a simple reduction in the base year 2015=100.0, without recalculation of the indices with new weights 2015=100.0.

The quarterly and annual indices with base year 2010=100.0 were divided by the average annual individual indices of every service in the year 2015 (so that in the base year 2015 the mean is 100.0). The retrospective calculation following the type:

$$R_{i(2015)}^{(t)} = R_{i(2010)}^{(t)} * \frac{100}{\bar{R}_{i(2010)}^{(2015)}}$$

Where:

$R_{i(2015)}^{(t)}$ : is the individual index of service  $i$  in the current period (quarter, year)  $t$  with 2015 as base year,

$R_{i(2010)}^{(t)}$ : is the individual index of service  $i$  in the current period (quarter, year)  $t$  with 2010 as base year and

$\bar{R}_{i(2010)}^{(2015)}$ : is the individual mean annual index of service  $i$  in 2015, with 2010 as base year.

The SPPI indices for the 3<sup>rd</sup> quarter 2018 onwards have been calculated with the new weights of the 2015 revision. The calculation of the annual SPPI is done using the arithmetic mean of quarterly SPPI in every classification division of NACE Rev.2.

#### **18.5.1 Imputation – rate**

Not usually imputed values are used to substitute the price collection by sample enterprises. However, in very few cases imputed values are the rate not exceeding 0.01%. The procedure followed for the handling of missing data (missing values) is their assessment (imputed rates), based on the trend of current price collection of companies that provide the same or similar services.

#### **18.6 Adjustment**

A statistical procedure for adaptation or correction of the data is not used.

##### **18.6.1 Seasonal adjustment**

There is no seasonal adjustment in the index.

#### **19. Comment**

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None.