INDICES OF EXPORT AND IMPORT UNIT VALUES

LEGISLATION

The estimation of indices of export and import unit values is based on the data from customs declarations that are obtained within the complex statistical survey of external trade. The Official Statistics Law (Official gazette of RS, number 104/2009) and the Regulation on statistical surveys, which is passed annually, create the legislation basis for the statistical calculation of this indicator. The SORS Plan of statistical surveys for 2013 envisaged the implementation of five complex statistical surveys in the area of external trade statistics.

Generally, the legislation acts applicable for external trade statistics are the following:
- Customs Law (Official gazette of RS, number 73/2003, 61/2005, 85/2005, 62/2006, 63/2006, 9/2010 – CC resolution, 18/2010, 111/2012);
- Rules on processing customs declaration and other forms in customs procedure (Official gazette of RS, number 29/2010, 84/2010, 100/2010, 56/2011 and 66/2011);
- External Trade Law (Official gazette of RS, 36/2009, 36/2011 and 88/2011) and
- Customs tariff act (Official gazette of RS, number 62/05, 61/07 and 5/09).

Other legal acts of importance for external trade statistics are the following:
- Official Statistics Law (Official gazette of RS, number 104/2009);
- Regulation on the Plan of statistical surveys for 2013 (Official gazette of RS, number 120/12);
- Resolution on the Program of statistical surveys, 2011 – 2015, which includes the Official statistics development strategy in RS (Official gazette of RS, number 23/11);
- Memorandum of understanding concluded in 2004 between the SORS and the Customs Administration, which stipulates the rights and obligations in this statistical area;
- Methodology of external trade statistics, which was released within the SORS edition "Methodologies and standards" (Vol. 20, Belgrade 2007). Here defined are the basic methodological principles applicable for data compilation, processing and publishing
- "International Merchandise Trade Statistics: Concepts and Definitions" (Series M, No. 52, Rev. 2,) released in 1998, as well as IMTS 2010;
- Exstrastat Basic regulation No. 471/2009, which creates an important source of statistical recommendations and provisions adopted in the EU;
- "Statistics on the trading of goods: Users Guide", useful in the use and analysis of external trade statistics published by Eurostat. These guidelines describe the basic methodology applicable for data compilation, the Eurostat role in data dissemination, as well as the sources available to users. Special attention is drawn to unit values, physical volume indices and seasonal adjustments.

METHODOLOGICAL BACKGROUNDS

Objective and description of complex statistical survey

Starting from the results of external trade, the estimation of export and import unit values is primarily envisaged to offer an analytical study of the fluctuation of average export and import prices. The term 'prices' shall be used with a reserve, since export and import unit values are principally discussed here.

Reporting units and statistical units

The Customs administration is reporting unit and through customs offices and branch offices/stations it compiles and make visual check up of all features contained in customs declarations, including those for statistical purposes as well. The Customs administration forwards the checked data, stored in magnetic form, to the SORS on monthly basis (the 15th day in month).

Observation unit is any trade in goods that is carried out as exports, i.e. imports (electricity excluded); observation unit being any transaction homogenous from the viewpoint of type of goods, country of origin, i.e. destination, payment terms and moment of border crossing. Likewise, the subject transaction shall be classified pursuant to the Customs tariff act; also it shall be registered in the process of customs clearing, marking in this way the border crossover for goods.

Coverage

The compilation of data required for the estimation of export and import unit values shall be carried out exclusively pursuant to customs documents, i.e. export and import customs declarations (for more details see the Methodology of external trade (SORS edition "Methodologies and standards", number 20/2007, page 8).

The complex statistical calculation of indices of export and import unit values covers about 85% of representative units (in exports and imports) from the basic set, applied to base and current period, namely over 8500 products defined by the Customs tariff act.

Method, timeliness and sources for data collection

In the Republic of Serbia, *calendar month* when goods are exported or imported is regarded as referent time of observation. Pursuant to the Customs Law, the data are classified by respective month and for the mayor part of goods in exports/imports, the day of customs document/declaration acceptance is regarded as referent point.

The list of products covered by the calculation of indices of unit values is envisaged by the applicable Customs tariff of the RS, which has been harmonised with the EU Combined nomenclature and the Harmonised system.

The List of products covers about 80% of the total value of exports, i.e. imports, while for certain groups of SITC, Rev. 4 and CA divisions the value coverage can be higher, i.e. lower, depending to what extent products that belong to certain sections or divisions met the envisaged criteria. The uncovered part of the basic set consists of those export or import products that in the base or current period were not represented in trade, i.e. their values and quantities for the two subject periods are not comparable. The calculations of these indices do not include the products that considerably vary in quality so that the ratio of their quantity and value does not represent an average price comparable over a longer period. Due to specific and different structure of exports and imports, created are two separate lists of products for which price indices are estimated; namely separate list for exports, i.e. for imports.

The creation of the product list in the above described manner is followed by the stage when according to the processing schedule for each product that passed the criteria of logic control calculated is unit value for the base and current period and produced is the result of multiplying the current unit value and base quantity of the subject product, i.e. its base unit value and quantity from the current period. Thereby weighted value is obtained, on the basis of which in the next step and applying the described formulas it is possible to calculate index value indices, both on monthly basis and for the respective cumulative period. After having calculated indices for individual products, these products shall be aggregated in the respective sections and divisions of SITC, Rev. 4 and for them also weighted values and unit value indices are obtained. Applying this approach we are able to reduce or even completely eliminate the problem of heterogeneous products, i.e. we defined relatively homogenous product groups with similar technical features. Therefore relatively good data comparability in time is achieved; however, relatively acceptable homogenous data are achieved even after price control.

The following products are excluded from index calculations: a) products that have not met price control criteria, i.e. the price of which is out of the envisaged limits; b) products for which prescribed measurement unit is not entered; and c) products without data on weight measurement unit or statistical value. All other products are covered by estimations and they make 80% of the basic set value. This coverage is regarded to provide rather reliable data; however in international practice it is acceptable that representative list covers the basic set with more than 50% value.

In the next step we exclude all products with extreme values of index numbers, i.e. the values of which are out of the interval 20 – 1000 index points relative to the base year. In this way the effect of extremes is excluded from processing and achieved is better comparability of data on value and quantities for the base and current period. This procedure eliminates also extreme reactions of groups in the basic set of all goods.

However, in the control table resulting from the following stage of processing unit value indices certain discrepancies may appear in index ratios, when in spite of all measures undertaken it is not possible to achieve an ideal ratio of indices calculated by Laspeyres and Paasche formulas. In such cases that are characteristic for large product groups, provided that the stability of the product list is maintained, the difference of 10 index points for certain product groups is allowed. However, for extremely heterogeneous groups even a larger difference is acceptable and it varies in accordance with the expert estimation on the products that could possibly unsettle the ratios within the subject group. After excluding the unsettling products, the control table is processed again in order to determine the effects of the changes on the ratios of indices calculated pursuant to Laspeyres and Paasche formula. If these ratios prove to be satisfactory now, in the following stage unit value indices and products are calculated for higher aggregation levels.

When all stages of data processing have been completed, the final results of calculations of export and import price indices are provided; these results meet the envisaged criteria and may be officially released in the SORS publications.

Several data sources are at disposal to be used for compiling external trade statistics: customs files, reports and surveys of enterprises, administrative records related to VAT, etc. However, customs declaration/document is predominant for national statistics and therefore it is used in our statistical system as a single data source for external trade statistics.

Individual data protection – confidentiality

The adopted definition of confidentiality describes confidential data as those that can identify statistical unit, either directly or indirectly. The precise operative criteria that can define confidential statistics are defined on national basis, either by practice or legislation.

Passive confidentiality is expressed in cases when importers or exporters, government authorities and other institutions request that statistical authorities should not publish data that can cause damage to them or jeopardise national interests.

Active confidentiality means that statistical authorities take active steps to protect data, either in national interest, or in interest of individual economic entities.

In 2004 the SORS and the Customs Administration signed the Memorandum of cooperation in the area of external trade and transport statistics that stipulates (Article 6) that the SORS shall not make public or otherwise release individual data without obtaining prior consent from the Customs Administration.

The Official Statistics Law (Official gazette of RS, number 104/2009), in Chapter IX, Articles 44-49, stipulates the issue of data confidentiality.

Main features and indicators – Definitions

Value of goods presents the basis for calculating indices of export and import unit values and it is established in the process of contracting external trade transactions.

The value of exported and imported goods is calculated applying the price basis FCO border of the Republic of Serbia; namely FOB (*free on board*) price basis for exports, and CIF (*cost, insurance and freight*) for imports.

The value of goods FCO border of the Republic of Serbia is determined by recalculating invoice value (foreign currency) into statistical value (RSD), on the date when customs document is submitted, applying weekly exchange rates applicable for accounting and statistical purposes, as well as for calculating customs duties and other import dues.

Quantity of exported or imported goods shall be expressed in specific measurement unit as provided by the Customs tariff act. Besides, quantities shall be expressed as net weights, for all products of the Customs tariff act, excluding electricity. Net weight of goods means net mass without packing. In weight of goods is contracted gross for net, then gross weight is considerable. Specific measurement units have been introduced upon having accomplished harmonisation of our customs document with those applicable in the EU member states (starting from 1 January 2004) and along with the adoption of the Combined nomenclature as the main nomenclature for data compilations (in mid-2005). Specific measurement unit is mandatory regarding the criteria of product selection to sample because product prices are expressed in specific measurement units, and so all discrepancies/anomalies in calculations can be efficiently avoided by relating product price from the current period with price movements for the subject product in the previous period. Export and import unit value indices shall be calculated by reducing to common measurement unit – kilogram. Namely, if for the index calculations instead of net weight unit we use specific measurement unit, the problem of uniform reduction of different specific measurement units to one common measurement unit would arise.

Individual product price is defined by the ratio of value and quantity of the subject product.

In our practice, Laspeyres and Paasche formulas are applicable for calculating unit value indices.

Unit value indices calculated by Laspeyres formula use quantities from the base period as weights.

$$I_{p\,(L)} = \frac{\sum p_1 q_o}{\sum p_o q_o}$$

Unit value indices calculated applying Paasche formula use quantities from the current period as weights.

$$I_{p\,(P)} = \frac{\sum p_1 q_1}{\sum p_o q_1}$$

where p_0 is price, and q_0 is quantity from the previous (base) period, while p_1 is price and q_1 quantity from the current period.

Apart from these formulas, for calculating unit value indices for certain product sub-groups we use Fisher formula also, which represents the geometric mean of Laspeyres and Paasche price index.

Indices of export and import physical volume are indicators of dynamics and they express the changes of product quantities, i.e. volume, which were realised in external trade in the observed period relative to the base period.

In our external trade statistics, physical volume indicator (I_q) is a derived indicator and it is calculated as the quotient of value index and price index, i.e. unit value index, where I_v is value index, and I_p is price index, i.e. unit value index, calculated applying Paasche formula.

Trade ratios are calculated as the ratio of export and import prices, or as the ratio of import to export prices. When P_x is mean export price, and P_y is mean import price, then trade ratio is calculated as the quotient of these prices:

$$T = \frac{P_x}{P_y}$$

The two ratios can be equally used; however the ratio of export to import prices is usually applicable, which is the case in our practice as well. Increasing quotient value indicates that export purchase power related to imports is rising, while decreasing quotient value indicates that export purchase power is falling. Similarly, rising ratio in this case is regarded as positive, and falling ratio as negative trade balance. Positive trend here means that for the same exports amount it is possible to purchase a larger quantity of imported products.

Representative data

Representative product is any product selected from the main set for the calculation of export and import unit values, while meeting the following criteria:
- Existent code in prescribed unit value not different than that envisaged by the Customs tariff act;
- Existent data in specific measurement unit, net weigh and statistical value;
- Price of representative product is expressed in specific measurement unit and meets the criteria of price control, i.e. it is found within the respective interval, the bottom limit being the minimal price and top limit being the maximum price acquired in a four-year period as its lowest, i.e. highest average price;
- Representative product reflects relative continuity over a longer period, i.e. it is consistently homogenous (approximate product quality and physical features). Practically this is hard to achieve due to the appearance of new products, resulting both from technological changes and market demands. The structure of representative products is also influenced by the glut of certain products in exports, i.e. exports, which inevitably leads to the stoppage of exports or imports for these products;
- Existent in the current base period (referent period for calculations).

The issue of coverage for estimating indicators of export and import unit values is possibly solved in several ways, namely separately for imports, exports, re-export or specialised shops, for global value only, or for groups of major products. The coverage of export and import values for the RS is quite sufficient for the estimation of these indicators and their confirmed reliability and use in the system of national accounts and balance of payments, for deriving constant prices from current prices. Unit value indices, physical volume and trade ratios in exports and imports are published for high aggregation levels, namely by SITC Rev. 4 sections, by BEC, by degree of products' processing, and by CA sections and divisions.

Harmonisation with international recommendations, standards and practice

Indices of export and import unit values, export and import physical volume indices and trade ratios are harmonised with international standards and recommendations provided by UN Statistics Division and Eurostat.

The referent publications here are "International Merchandise Trade Statistics: Concepts and Definitions", edition of the UN Statistics Division and "Statistics on the trading of goods: User Guide" edition of Eurostat, where the issues unit values, physical volume and trade ratios are specially observed.

SURVEY ORGANISATION

Implementation

Pursuant to the Regulation on statistical surveys, the SORS is responsible for the statistical stages of the complex survey on external trade in goods, and the Customs Administration is in charge of data compilation and their check up in the course of customs procedure. Since the data sources and the nature of implementation of the survey are specific, the survey organisation is largely different than in other statistical areas.

The Customs Administration, through its offices and other branches compiles and make visual check up of all features described in the customs declaration, including those used for statistical purposes. On monthly basis (on the 15th day in month), the Customs Administration passes the checked data in magnetic form to the SORS for additional check up, processing and publishing.

Responsiveness

Pursuant to the Official Statistics Law, the Regulation on statistical surveys, which is passed every year by the Government of the RS, and the Memorandum of understanding concluded between the SORS and the Customs Administration, which stipulates the cooperation in the area of external trade and transport statistics, the Customs Administration is obliged on monthly basis to compile and forward to the SORS the data for further check up, processing and publishing.

Main survey stages and release of data

The data compilation is carried out on monthly basis, as cumulative for the period from the beginning of year to the referent month; reporting units being obligated on the 14th day in month to deliver data for the previous months. The SORS is obligated to deliver the first results on external trade in goods in the form of news release published on the last working day in month.

The data on indices of export and import unit values, export and import physical volume indices and trade ratios are published monthly and quarterly (on 26th day in month) as statistical releases ST21 and ST22, and annually in the Statistical yearbook of RS. ST21 and ST22 feature the same form and they include:

- exports and imports by sections of SITC, Rev. 4;
- exports and imports by degree of processing;
- exports and imports by broad economic categories (BEC);
- exports and imports by CA sections and divisions (production approach).

For each of these indicators published are value indices, unit value indices and physical volume indices relative to the same period previous year, trade ratios and share (%) of representative product list in the main set. The releases include all required methodological guidelines for data use. All calculations are expressed in USD. Unit value indices and physical volume indices are derived according to Paasche formula, where the quantities in the referent period are used as weights. The circulation of the two releases is different, namely ST21 is published on monthly basis and the observed period extends from the beginning of year to the referent month. ST22 is released quarterly and indices are calculated for each quarter of current year relative to the respective quarter of the previous year; thereby offered is a more precise image of the fluctuations of prices and physical volume over the year than in calculations observing period from the beginning of January to the referent month, where the influence of mean values on the creation of aggregated indices is more considerable.

For the purpose of national accounts we calculate unit value indices on monthly basis, for the following indicators: SITC, Rev. 4 – sections and subgroups, CA – sections and divisions. The previous year average is adopted as base period for the calculations. The estimated indices serve as deflators for national accounts calculations.

SURVEY INSTRUMENTS

Nomenclatures and specifications

The major classification for publishing external trade statistics is the UN Standard International *Trade Classification – SITC*. This classification is used for data publishing and various analytical purposes. Starting from 01/01/1988, simultaneously with the application of the Harmonised system of descriptions and codes of goods, SITC Rev. 3 was introduced, and from 01/01/2010 SITC Rev. 4 is in use.

Customs tariff, which was harmonised with the EU Combined nomenclature 2005 and the Harmonised system (HS), i.e. the first six digits were taken over from the Harmonised system, the following two digits were taken over from the EU Combined nomenclature, and for the purpose of the Serbian economy the CN was further extended by another two digits, and therefore a customs entry of the Serbian Customs tariff has ten digit points. They are furher developed up to the 12-digit level, the last two digits being x-nomenclature for specific purposes.

Using SITC, the Classification by broad economic categories (BEC) classifies large economic groups of products in relation to end-use categories (work, reproduction and general consumtion assets), observing the principle of prevelence. The classification of products by BEC is applied in the System of national accounts (SNA).

The Classification of Activities applicable in the Republic of Serbia is based on the classification of activities established in the EU (NACE, Rev. 2)

The Classification of products by degree of processing establishes three groups of products, i.e. unprocessed (raw) products; Products of regular processing and products of high-level processing.

All mentioned international classifications can be found at the Eurostat website (http://ec.europa.eu/eurostat/ramon/nomenclatures), and the applicable Customs tariff can found at the SORS site (www.stat.gov.rs) or at the site of the Customs Administration of RS (www.upravacarina.rs).

List of publications

- Indices of average prices in external trade of RS, *(ST21),* monthly, 26th day in month
- Indices of average prices in external trade of RS, *(ST21),* quarterly, 26th day in month
- Statistical yearbook of RS (the last four editions)

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