Retail sales' indices

1. Purpose and economic importance

The retail sales' index reflects the short-term trends and occurred changes in the market consumption structure in the both main groups - 'Foods, beverages and tobacco' and 'Durable and other consumer goods' and the group of goods defined according to the classification of individual consumption COICOP.

The indices reflect the retail sales variation between two compared periods. These are generally the reported quarter, referred to the previous one or to the same quarter of the previous year, but the data series give a possibility to be compared each randomly selected period from the row to any other.

Information is up-to-date and is purposed for the management authorities of all levels, international organizations, business representatives and other interested bodies and could be used for economic analyses, assessments and short-term forecasts.

2. Indicator definition and information sources

The retail sales in the country include the value of the sold own production, ready goods and materials to a final user at prices of realization (including VAT and excises), excluding those in the Catering.

The necessary data for indices calculation are collected quarterly by a form 'Main short-term indices' and annually with Reference for Sales by group of goods as a part of the Annual report for activity of the non-financial enterprises.

3. Survey coverage, model and volume of the sample

The Population for calculation of retail sales' indices includes all enterprises, which have realized retail sales of own production and/or purchased ready goods to the final user in the country, as principal or secondary trade activity, independently from their branch classification by NACE.BG2008. All of the enterprises outside of the trade coverage are added to the Population through using a code table (transition key) of correlation between production and trade. The enterprises with a turnover below BGN 10 thousand are excluded from the Population and thus is produced the so-called Target population, which is a base for calculation of the indices. For the retail sales' observation is used the generated sample for the turnover into section 'Wholesale and retail trade; repair of motor vehicles and motorcycles', to which are added all enterprises from the sample of the other sections, which met the necessary criteria. For the both main groups 'Foods, beverages and tobacco' and 'Durable and other consumer goods' representativeness is insured.

The sample is planned at national level by the stratified random sample method. It is formed by two criteria - a group and a turnover amount, distributed into a fixed number of strata (intervals), when representativeness of the results for all groups is insured. Each combination between a group and a stratum defines a single cell. The large enterprises, located in the stratum with the highest turnover are exhaustively observed. The completeness limit is a function of a criterion for representativeness and varies both between observed groups within a year as well as between different years for the same group. For all of the rest enterprises from the Target population a random sample is made.

4. Calculation of the indices

Retail sales' indices at constant prices are calculated quarterly and annually for the both main groups 'Foods, beverages and tobacco' and 'Durable and other consumer goods' and annually for the commodity groups, content of which is according to the classification of individual consumption COICOP.

The impact of the prices is eliminated through using deflators, obtained by means of regrouping of the products from the Consumer basket in accordance with a content of the commodity groups and calculated on a base of the annual average prices of the base year.

The calculation of quarterly and annual indices of the retail sales is done by analogical way therefore only the method of the quarterly indices will be presented.

4.1. Calculation of the basic retail sales' index

4.1.1. Calculation of the basic retail sales' index on the lowest level (group)

The method foresees direct deflation of the quarterly retail sales of each from the observed groups with the regrouped indices of the consumer prices for the relevant group during the current quarter, calculated at annual average prices of the base year. The retail sales' indices for these groups are obtained through referral of the constant quarterly volumes to the relevant average quarterly volume during the base year. Thus are provided automatically weighted index valuations and their average arithmetic for the four quarters of the base year amounted to 100.

The retail sales' index at constant prices for the lowest level (group) is given by the formula:

$$I_t^L = \frac{\dfrac{Q_t^L}{Ip_t^L}}{\sum Q_0^L / 4}$$

where

I_t^L - the retail sales' index for a group **L** during the current quarter **t**

Q_t^L - retail sales for a group **L** during the current quarter **t**

Ip_t^L - a price index for a group **L** during the current quarter **t** at annual average prices of the base year

$\sum Q_0^L / 4$ - average quarterly retail sales for a group **L** during the base year

4.1.2. Calculation of the basic retail sales' indices for higher aggregation levels

The aggregation of the indices is done in ascending order, from the lower to higher levels. That is achieved by summing of the constant volumes of the groups, which formed a relevant level and the referral of this sum to the analogical sum from their average quarterly volumes during the base year.

The retail sales' index at constant prices for the higher aggregation levels is given by the formula:

$$I_t^K = \frac{\sum\limits_{L=1}^{n} \dfrac{Q_t^L}{Ip_t^L}}{\sum\limits_{L=1}^{n} Q_0^L / 4}$$

where

I_t^K - a retail sales index for an aggregation level **K** during the current quarter **t**

$\sum\limits_{L=1}^{n} \dfrac{Q_t^L}{Ip_t^L}$ - retail sales for an aggregation level **K** during the current quarter **t** at annual average prices of the base year

$\sum\limits_{L=1}^{n} Q_0^L / 4$ - average quarterly retail sales for an aggregation level **K** during the base year

L=1…..n - the groups number, forming an aggregation level **К**

4.2. Calculation of the basic retail sales' indices for various periods

This method allows be to calculate indices for different periods at annual average prices of the base year. The indices for the period could be calculated as a simple average arithmetic, when the sum from the basic quarterly indices for the relevant aggregation level is divided to the number of the quarters from the beginning of the period.

For example:
The retail sales' index at constant prices for the period from the beginning of the year is given by the formula:

$$I_T^L = \frac{\sum\limits_{t=1}^{n} I_t^L}{n}$$

where

I_T^L - a retail sales' index for the period from the beginning of the year for a group **L**

I_t^L - a retail sales' index for a group **L** during the current quarter **t**

n - number of quarters from the beginning of the year

4.3. Calculation of the retail sales' indices for a quarter and a period upon a different base

From the obtained basic indices could be calculated the retail sales' indices at constant prices to a different base (for example - a quarter to the previous or to the same quarter of the past year; a period from the beginning of the current year to the same period of the previous year and other).

The retail sales' indices at constant prices upon a different index base are given by the formulas:

$$I_{t/t-1}^{L} = \frac{I_{t}^{L}}{I_{t-1}^{L}} * 100 \qquad\qquad I_{t/t-4}^{L} = \frac{I_{t}^{L}}{I_{t-4}^{L}} * 100$$

where

$I_{t/t-1}^{L}$ - a retail sales' index to the current quarter for a group **L**

$I_{t/t-4}^{L}$ - a retail sales' index to the correspond quarter of the previous year for a group **L**

5. Non-response valuation

The enterprises which have not responded are assessed according to the stratum in which they are registered. In the exhaustive stratum an individually evaluation is made for each enterprise, using available information for the trends in the development of that enterprise and the smoothed trends of reported units from the same cell. In the sampling strata for each cell a total evaluation is done of the no-responded through using extrapolated coefficients, calculated from the data of the reported enterprises in the cell after elimination of the extreme values. In these cases it is assumed that there are no essential differences in the behaviour between the enterprises which have responded or not responded.

6. Dissemination of information

The retail sales' indices - totally and for the both main groups - 'Foods, beverages and tobacco' and 'Durable and other consumer goods' are published 40 days after the end of the reported quarter on the website of NSI.

Annual data by groups of goods, defined according to COICOP are published on the NSI website and in the Statistical yearbook of Republic of Bulgaria.