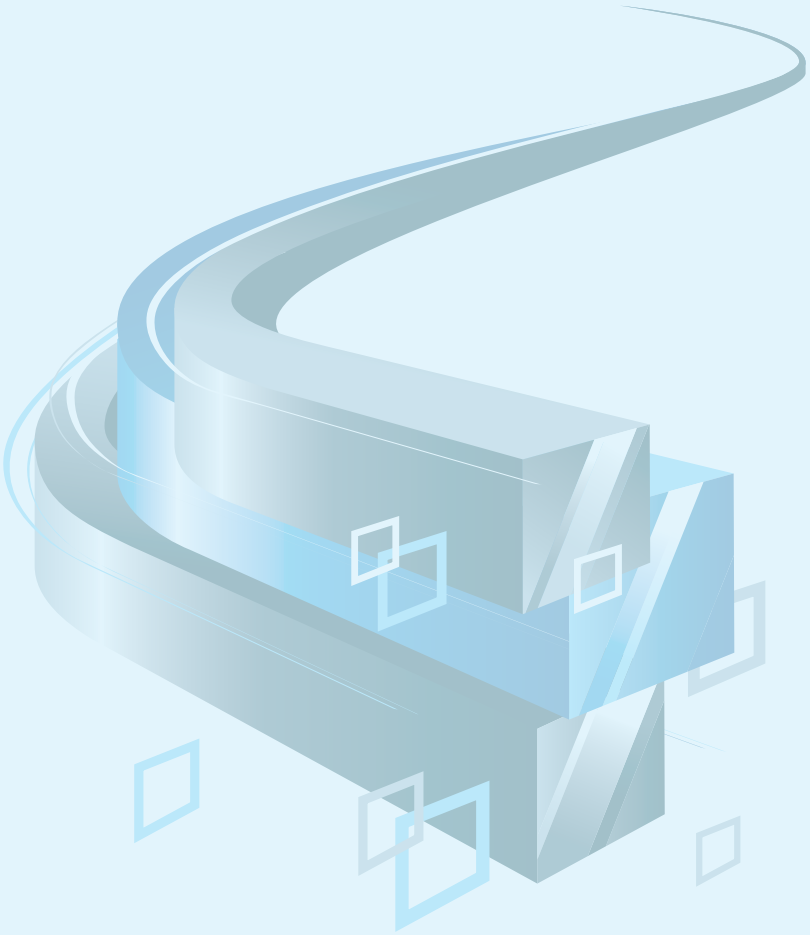
Statistical Office of the Republic of Serbia

National Accounts

GDP Methodology - sources and methods

(Version 1.1)



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Chapter 1 OVERVIEW OF THE GDP CALCULATION

1.1 Basic concepts and GDP calculation process

This document, prepared by the Statistical Office of the Republic of Serbia (SORS), aims to provide a comprehensive and transparent description of the sources and methods of national accounts used in calculating gross domestic product (GDP) and reflecting the most recent methodology.

The compilation of annual national accounts conducted by the SORS is based on the application of the principles and definitions established by the European System of National and Regional Accounts 2010 (ESA 2010), as well as other relevant methodological manuals prescribed by Eurostat and the IMF[1]. Among the macroeconomic aggregates that are the result of the national accounts system, the most important one is ceirtanly gross domestic product.

Gross domestic product is a measure of the results of a country's economic activity and its production capacity to meet the needs of different forms of consumption. If GDP is viewed from the perspective of a producer (the so-called production approach or calculation method), GDP represents a sum of gross value added created by all economic entities or, using the terminology of national accounts, institutional units, for one year (accounting period). From the accounting point of view (extremely simplified) GDP, as a total value added generated by producers, represents the difference between the total output (value of production) and intermediate consumption that comprises the costs of materials, as well as industral and non-industrial services (excluding personnel costs and deprecation of capital goods). That is, we may call it in the business accounting jargon, the "Net operating income" of a country before deducting personnel costs, depreciation and amortization and can be shown as follows:

Table 1. Simplified presentation of GDP calculation according to the production approach (2017, RSD mill.)

1	Value of production (Gross Output)	**9603659.7**
2	Intermediate consumption (-)	**5657307.9**
3	Gross value added (1-2)	**3946351.8**
4	Taxes on products (+)	**813927.3**
5	Subsidies on products (-)	**5910.7**
6	**GDP at market prices (3+4-5)**	**4754368.4**

The ssues of GDP valuation (market and basic prices) and taxes and subsidies as components of GDP will be discussed in the following chapters of this document.

[1] Handbook on prices and volume measures in national accounts (Eurostat 2016); Eurostat Manual of Supply, Use andInput-Output Tables (Eurostat 2008); System of National Accounts 2008 (International Monetary Fund, 2009); Manual on Government Deficit and Debt – Implementation of ESA 2010 (Eurostat, 2016); Government finance Statistics Manual 2014 (International Monetary Fund, 2014); Handbook on Quarterly National Accounts, (Eurostat, European Commission, 2013); Quarterly National Accounts Statistics: Concepts, Data Sources and Compilation (International Monetary Fund, 2001); Quarterly National Accounts Manual (International Monetary Fund, 2017); International Merchandise Trade Statistics: Concepts and Definitions 2010 (United Nations publication, 2011); Balance of Payments and International Investment Position Manual, sixth edition (BPM6) (International Monetary Fund, 2009); Balance of payments and international investment position compilation guide (IMF, 2014); Manual on the economic accounts for agriculture and forestry EAA/EA 97 (Eurostat, 2000); Manual on Measuring Research and Development in ESA 2010 (Eurostat, 2014); Frascati Manual (OECD, 2015); Handbook on price and volume measures in national accounts (Eurostat,2016); Changes in inventories in the National Accounts (IMF Working paper, 2003); Eurostat-OECD compilation guide on inventories (Eurostat-OECD, 2017).

The definition of GDP and its economic and accounting content is derived from the basic macroeconomic equation according to which the total supply of goods and services in one country must be equal to the total use, ie, consumption of these goods and services. The total supply of goods and services on the market of a country consists of the goods produced in that country, as well as the imported goods and services. On the other hand, i.e. from the perspective of usage, goods and services that make up the supply can be consumed or used in different ways. And here as well, for the readers, we will give a very simplified model of the total use of goods and services or the so-called. expenditure approach of GDP calculation.

First, a part of the goods and services that make up the total supply will be spent for production purposes in the form of inputs for the production of other goods and services or, as we have already said, intermediate consumption. The second, the most important part will be used in the so-called. personal consumption as consumables and services to meet the personal needs of households, while some of the goods will remain unused in the form of stocks or capital goods that will be used as a capital investment in the production of new goods and services over a number of years. Finally, the "surplus" of unconsumed goods will be used as export in foreign trade. In order to perceive the whole of the economy, we will include in the consumption or use also the value of services provided by the Government (government bodies and institutions) and non-profit institutions to the whole of society or individuals i.e. households. Although the services of these entities often do not have a market price and a "tangible" value, they are estimated by certain methods and are included in the total use or expenditure side of equation (of course, they are also on the supply side as the output of those services)., consumption of Government and NPISHs services, together with the use of final products and services by households constitute so-called *final consumption*. These relations can be expressed in the form of the following equations:

output + import = intermediate consumption + final consumption + capital expenditure (gross fixed capital formation) + changes in inventories + exports

By rearranging this equation (by moving the intermediate consumption to the left and imports to the right side), we get the following GDP equation that shows the relationship between GDP calculated by production (left side) and expenditure approach (right side):

output - intermediate consumption = final consumption + gross fixed capital formation + changes in inventories + export - import

On the left side we can identify GDP by the production approach (shown in Table 1) as the difference between the value of production and intermediate consumption. On the right side there are other elements of use i.e. goods and services which are available for the different uses other than intermediate consumption. Accordingly, GDP can be defined as the value of all goods and services produced in one country used for final consumption, investments in capital goods and exports. Or, in other words, this is the market value of all final goods and services produced in a national economy in the observed accounting period (year). Since GDP is a measure of the production activities of domestic producers, the value of imported goods and services is deducted, i.e, it is excluded from the total value of use. This is briefly, and again, extremely simplified, the essence of the so-called. expenditure approach to GDP calculation.

The SORS calculates GDP by both methods. According to the production approach, GDP shows, in particular, gross value added by activity and institutional sectors that are producers of added value. The expenditure approach shows, the use (consumption of final goods and services) of GDP according to the above main categories of consumption.

Table 2. GDP according to the expenditure approach (2017, RSD mill.)

GROSS DOMESTIC PRODUCT (GDP)	**4754368.4**
Final consumption expenditure	**4136270.7**
Individual consumption expenditure	**3796274.0**
Household sector	**3310993.3**
Sector of NPISHs	**56480.9**
Government sector	**428799.8**
Collective consumption expenditure	**339996.7**
Gross fixed capital formation	**843694.8**
Changes in inventories	**87771.9**
Statistical discrepancy	**-**
Acquisitions less disposals of valuables	**5.1**
Exports of goods and services	**2402895.4**
Imports of goods and services (-)	**2716269.4**

In the calculation of GDP, the SORS strictly adheres to the definition, classification and formulas for calculations prescribed by ESA 2010. In ESA 2010, the definition of the producer i.e, the the productive entity generating GVA and as such is the subject of the GDP calculation, is somewhat wider and different in relation to what most readers consider as enterprise. As we have said, within the so-called "Production boundary", besides economic entities (corporations and unincorporated enterprises), include institutions, bodies and entities of the Government, non-profit organizations as well as self-employed persons who do not have a registered business or are formally employed, such as services of the so-called outworkers or the output of farmers.

The system of national accounts, identifies all producers as "institutional units", which for analytical and methodological reasons are grouped into five institutional sectors. Those are:

- Non-financial corporations
- Financial corporations (banks, insurance companies and other financial institutions)
- Government
- Households sector (sole-proprietorships, farmers, self-employed persons and natural persons - households that produce goods and services for the market, for their own personal consumption or as capital goods for their own needs).
- Non-profit institutions providing services to households (NPISH)
- Non-resident institutional units that carry out transactions with domestic, residual units (import and export transactions) represent "Rest of the Word" (ROW).

Grouping of producers ie institutional units are of importance because of the different way of calculating the value of output and GVA, which will be discussed more in the second chapter.

The GDP calculation in the Statistical Office of the Republic of Serbia is characterized by a high degree of utilization and, we might say, dependence on administrative data sources. The basic, indispensable and key data source for almost all accounts, primarily the sector of non-financial corporations, the Government and NPISH sectors, are not statistical surveys, but financial reports (balance sheet and profit and loss account) of enterprises provided by the the Serbian Business Register Agency (SBRA) after the end of the business year. The Agency is in charge of operating and maintaining a business register of all companies and sole-proprietorships which is used for updating the so-called. the statistical business register of the SORS as the starting point of all calculations and surveys carried out by the SORS. The financial statements for the government sector

are obtained from the Treasury Department. Of course, in addition to the data on the final accounts, the SORS also uses other administrative and statistical sources to be discussed later. But what is important to emphasize is that the process of calculating GDP is directly conditioned by the process of collection, processing and control checks by the (SBRA), as well as the system of registration of economic entities. The significance of the administrative sources is not only reflected in the updating of the statistical business register in terms of identification of newly established companies and other institutional units that need to be included in the GDP calculations. When starting a business, the SBRA, it assigns to it activity code, which is one of the most important identifiers necessary for the proper calculation of gross value added and GDP. SBRA is also in charge of the primary checks and controls of the financial statements used by the SORS for the calculation of GDP while the Tax Administration is responsible for verifying the correctness of data in the Income tax and other tax returns. All of the above points to the fact that the quality, accuracy and exaustiveness of GDP calculation is directly proportional to the quality, precision and exhaustiveness of administrative sources, primarily of the registers and results of the processing of financial statements of enterprises by the SBRA, the Treasury Department, and it should be noted, that the Tax Administration, which besides the SBRA is the only data source for the households sector. These facts do not represent an attempt to limit the responsibility of the SORS in terms of GDP calculation, but a fact that is confirmed by the history and practice of all the countries of the European Union, which is that - the quality of statistics is a reflection of the quality of public administration as a whole and its accounting, fiscal and registry functions.

The process of calculating GDP begins with the moment of obtaining the data, i.e, the database of the final statements of all enterprises from the SBRA, after which the procedure for checking and assessment and analysis of the received material begins. National accounts teams in charge of different institutional sectors and domains of national accounts aggregate and tabulate data in a way that enables the calculation of the value of production, intermediate consumption and gross value added. The primary data from the financial statements are then supplemented with the results of numerous statistical surveys that are used in particular in GDP calculations by expenditure approach. In this initial calculation phase, the so-called, transition from business accounting concepts and categories of income and revenue to the to the economic concepts and categories of national accounts between which there are differences. For example, non-operating and extraordinary income and costs, as well as costs of finance and income from financial operations are not included in gross value-added calculations because they do not represent the category of production of goods and services, but according to the definition of ESA 2010, are category of distribution of GVA. The services of persons who on a fee or contract basis provide services to companies are treated as a part of the wages and salaries according to the official Chart of Accounts and as such recorded in business accounting and financial statements, whereas according to the methodology of national accounts these services are considered as third party services, not wages and salaries of employees, and as such constitute part of the intermediate consumption, and not personnel costs. There are other conceptual adjustments of the data from the final accounts in this transition of primary business accounting data to the accounting categories of national accounts, which will be discussed in more detail below.

After integration of data from different sources, gross value added is calculated by institutional sectors and activities. The calculation is carried out simultaneously in current, nominal values and, within the special calculation, at constant prices ie. volume by deflation methods using appropriate, previously prepared, price indices and quantitative indicators. Particular attention in data processing and calculations of gross value added is devoted to large economic systems that determine the level and dynamics of certain activities throughout the economy, and which, in addition to the main, have significant secondary activities. For these systems, the results of the SBS profiling survey are also used as an important source. This very complex, detailed input-output survey with a detailed breakdown of sales and intermediate consumption was conducted ad hoc until 2017, and from 2017 onwards annually on a regular basis and, together with financial statements, represents the most

important data source not only for GDP calculations at current prices, but for constant price calculations and compilation of the supply and use tables as well.

A special domain of the system of national accounts is the related to non-observed or "gray" economy that, according to the ESA2010, must also be included in the GDP calculation to ensure its exhaustiveness.

Concerning the procedure for calculating GDP, it should be pointed out that almost all methodological solutions, calculation models and process tables used by the SORS are developed in direct cooperation with Eurostat´s experts through various forms of cooperation, professional and technical assistance. The European Commission and Eurostat have the most important role in the current and future development of the system of national accounts not only in terms of imposing statistical standards and directing this process, but especially in terms of methodological training, financing of new statistical surveys, and direct work on the calculations, together with experts of the SORS within a number of projects aimed at improving the methodology of national accounts. The strategic goal of SORS is full compliance with the ESA2010 and the requirements of the Eurostat transmission program, and therefore the sector of National Accounts, Prices and Agriculture is in the permanent process of harmonization and implementation of EU methodological standards with the permanent presence and monitoring by Eurostat representatives in almost everyday communication. Also, the expert and advisory assistance provided by the International Monetary Fund (IMF) should be emphasized, which gave a great, invaluable contribution to the development of the system of national accounts in the form of technical assistance missions and training of our experts.

The final calculation phase consists of balancing, ie, harmonization of GDP estimates calculated according to production and expenditure approach, which, as a rule, due to different data sources and methodology of calculation, create a greater or lesser difference in the initial estimates of GDP between the two. Balancing is a delicate and complex iterative process aimed at achieving a single GDP estimate achieved by validating the consistency of alterative estimates, growth rates and deflators with pre-determined parameters and relevant indicators of STS, price statistics and quarterly GDP calculations.

After the balancing and determination of the final, single GDP estimate, the first preliminary results are disseminated, ie, as a rule, on September 30, after the the accounting period, ie, reference year.

1.2 Dissemination of GDP data

With respect to timeliness, the first annual GDP estimate at current prices, obtained as the sum of four quarters, is available 60 days after expiration of the reference year. On the basis of the full set of data sources, preliminary GDP data by production and expenditure approaches are published at the end of September of the subsequent year (t+9 months). The final estimates are to be released a year later (t+18 months) – in accordance with the new dynamics of publishing GDP data. This represents major novelty, not just in terms of dissemination but also regarding the GDP calculation iteself, introduced by the SORS in 2018. Namely, up to 2018, the so-called *September estimate* (30 September for the previous year) if GDO was considered practically as the final estimate, which so far was not corrected. The new program of releases envisages that in future the September estimate will be regarded as a preliminary GDP estimate that is subject to changes, and the final estimate would be released a year later. This program of releases is common practice among all EU countries, also allowed by the Eurostat Transmission Program, and this has become necessity because of the long, complex process of annual accounts compilation, especially as regards supply and use tables, which cannot be optimally finalized within short the period of 3-4 months from the moment when the financial statements of enterprises as the primary data source for GDP compilation are (physically) obtained from the SBRA (May-June current year for the previous year), at which point the production of annual accounts i.e GDP calculation can actually start.

Concerning the accessibility, Data on gross domestic product (GDP) and other aggregates are disseminated at current prices, previous year's prices and chain-linked volume measures (reference year 2010), in absolute values (RSD millions) and as the year-to-year growth rates (%). Annual data are available from 1995 onwards. By production approach, data on gross value added are broken down by NACE Rev. 2 categories (sections and divisions). For international comparisons GDP is also recalculated into USD (since 1995) and EUR (since 1999). The recalculation into USD and EUR is based on the average annual exchange rate. GDP per capita calculation is based on the mid-year population.

Annual national accounts data are regularly published in the statistical release "Gross Domestic Product of the Republic of Serbia" (NR30), available in Serbian and in English. The data are released simultaneously to all interested parties by issuing the statistical release at noon on the day of release. The official releases calendar is available on the SORS website approximately one month before the beginning of the year.

Detailed ANA data, including the system of national accounts for the total economy, are published in the Statististical Yearbook of Serbia (also in the form of hard copy), in Serbian and English.

More detailed and extensive series of annual data at current and constant prices, according to ESA 2010 and ESA 1995 as well, are available at the SORS website, in Statistical database.

1.3 Revisions of National Accounts

Due to the complexity of the calculation of GDP and the continuous development and improvement of methods and sources, revisions of national accounts and GDP series are common in almost all countries, although, almost always, any change in published data is in received by the public with scepticism with mostly negative connotations attached. However, revisions should be contemplated as a regular process of improving the quality, reliability and exhaustiveness of statistical calculations, always bearing in mind that national statistical institutions deal with *estimates* (not exact mathematical figures) that inevitably carry with them a greater or lower risk of reliability. In transition economies where the development of administrative sources of data and registry is still insufficient, as well as the fiscal discipline and efficiency of fiscal authorities in combating the "grey" economy, the mentioned risk will certainly be higher.

When taking into account the causes and frequency of revisions, they can be distinguished as:

- current revisions,
- major revisions,
- non-scheduled revisions.

Current revisions

Current revisions, by their nature, are integral part of the process of data production (e.g. estimated values for missing data are replaced by data collected by statistical survey). They are generally performed because there is a continuous inflow of new information and incoming new data related to the past. Current revisions are planned, announced and performed regularly according to specified dates at monthly, quarterly and annual frequency. These revisions are primarily oriented towards short-term statistics, which are more frequently subject to changes because of a shorter time interval between the period the data refer to and the date of their release. These revisions can also be performed in annual statistics.

Some examples of current revisions:

- revision of data that are calculated and released at a higher aggregation level – previously published data are revised using results of calculations which are more detailed and performed at a lower aggregation levels;
- revision of data because there is new and more complete incoming information (new or revised reports) collected from reporting units;
- revision of data because there are new or revised data incoming from administrative sources;
- revision of released data, which is the result of seasonal adjustment;
- revision due to changes of the base period.

Major revisions

Major revisions present planned and significant changes in released published data, which are performed for one or more reasons:

- availability of new data that are collected at multi-annual frequency (5–10 years), such as censuses (population, agriculture, the economy), input-output tables, etc.;
- availability of new data sources (new statistical surveys or administrative data sources);
- changes of the base year – implementation of a new weighting system;
- changes in concepts, definitions and/or classifications (e.g. adoption of a new classification or changes in international statistical standards);
- improvements in methodological procedures;
- changes in regulations.

It is common practice that major revisions are not the consequence of one cause, but of a combination of them. This should be accepted as a good practice because in order to avoid too frequent revisons.

Major revisions affect a substantial part of time series and sometimes even the complete time series. Therefore, it is necessary to back-cast the data in order to obtain a comparable series of data. When determining the period for which data should be back-cast, costs and benefits of the recalculation are taken into account.

Non-scheduled revisions

Non-scheduled revisions are unforeseen changes in published data, which stem from unexpected events. They are performed upon the detection of minor/serious errors in published data/information or upon the detection of a failure in the process of data production, which leads to the occurrence of errors. Frequent non-scheduled revision may confuse the users and undermine their confidence in the statistics quality. Therefore, it is very important to avoid them whenever it is possible and limit them only to cases of serious errors. It is worth mentioning that, depending on users' needs, an error might be seen as minor by one user and as serious by another user. This should be taken into account when determining the type of error and deciding on performing non-scheduled revisions.

Chapter 2 THE PRODUCTION APPROACH

2.1 Outline of the production approach

Gross domestic product by the production approach is estimated as the sum of gross value added of all industries (at basic prices) plus taxes on products and less subsidies on products. Gross value added of each industry is calculated as the difference between respective output (value of production) at basic prices and intermediate consumption at purchasers' prices. Gross value added is calculated separately for each institutional sector due to the different calculation methods (formulas) for value of production – gross output.

Three types of output are distinguished in ESA 2010 (and this distinction is also applied to institutional units i.e. producers): market output; output produced for own final use; and non-market output. Distinction between types of output is deretmined by the type of production, as does the classification of institutional units by sector.

Market output consists of output that is disposed of on the market or intended to be sold on the market. It includes goods and services sold at "economically significant" prices (that is, prices allowing 50% or more of the production costs to be covered by sales). Market output also includes products bartered; products used for payments in kind, products supplied by one local KAU to another within the same institutional unit and products added to the inventories of finished goods and work in progress intended for any of above uses.

Output produced for own final use consists of goods and services that are produced for the owner's own final use. This includes so called "capitalised production" i.e. own account production of goods retained by their producers as investment. It also includes own-produced goods used as intermediate consumption. Non-market output consists of goods and services that are supplied to other units either free or at prices that are not economically significant.

Market output is measured as turnover - sales of goods and services and value of merchandise sold, plus or minus changes in stocks of finished goods and work in progress. In order to calculate the value of output from trading activities, the cost of resold goods bought for the sole purpose of reselling them in the same condition without further processing (exclusive of VAT) are subtracted from turnover from trading activities so the difference represents the trade margin. Additions to the inventories of finished goods and work-in-progress are initially valued at production costs as they are declared in financial statements. Later in the process of the conceptual adjustment of the change in inventory status, they are corrected for the so-called. holding gains to eliminate the effects of different accounting methods for inventory accounting that indirectly affect the level of output but also the cost of materials and the costs of goods for resale (regarding inventories of materials and merchandise).

The value of output includes other operating income such as rentals, membership fees, royalties, services provided by self-employed persons etc. Rents on land is not considered as a component of output as land, as other natural resources, represents a non-produced asset. Financial income (interest, dividends and similar) and other non-operating or extraordinary income is excluded as they do not represent part of GVA. Output at basic prices also includes subsidies on products i.e. only those subsidies which are directly connected with the quantity of value of production.

According to ESA 2010, within the production boundary as output is also included own-account production of housing services produced by owner-occupiers, so called "Imputed rents" - imputed rentals to the homeowners who live in their own homes as if they were renting their dwellings out (to themselves).

Intermediate consumption represents the value of goods and services consumed as inputs in the production process. It consists mainly of costs of materials and industrial and other non-industrial services excluding personnel costs and consumption of fixed capital (depreciation). Finance costs, non-operating expenses, extraordinary or non-recurring costs and expenditures are also excluded.

2.2 Valuation of output and intermediate consumption

The distinction between *market*, *own final use* and *non-market* determines the way that output is valued.

In GDP calculation, market output is valued at *basic prices*. The basic price is the amount receivable by the producer from the purchaser for a unit of a good or service produced as output excluding any taxes on products the producer receives from the purchaser and passes on to government (excise duties or VAT invoiced to the purchaser), but include subsidies the producer receives from government – subsidies on products (which should be differentiated from other subsidies on production and current transfers). Subsidies on products are subsidies payable per unit of a good or service produced. The subsidy may be a specific amount of money per unit of quantity of a good or service, or it may be calculated *ad valorem* as a specified percentage of the price per unit. A subsidies on products may also exist in the form of compensations payed to producers calculated as the difference between market price and an administratively set target price (*deficiency* or *compensantory payments*) strictly linked to the quantites of goods produced. Subsidies on products include also subsidies to public corporations to compensate for persistent losses which they incur on their productive activities as a result of charging prices which are lower than their average costs of production as a matter of deliberate central or local government or European economic and social policy. In Serbia, the majority of subsidies on products is related to agriculture and public transportation and are distributed to these activities in the process of calculation of GVA by activities. Data on taxes and subsidies on products are collected from the Treasury Department and Ministry of Agriculture. Taxes on products are VAT, excise duties (such as excise duties on oil derivatives, tobacco products, and alcoholic beverages) and customs duties.

Since GDP by expenditure approach is valued at purchasers prices, in order to measure GDP by producton approach in the same manner, i.e to measure GDP at market prices, subsidies on products (as they are not included in the market price) are deducted and taxes on products are added to the sum of GVA by activties at basic prices.

Output for own final use is valued at basic prices of similar products sold on the market. It is calculated by adjusting – adding a layer of gross operating surplus to the output for own use valued at production costs as declared in the financial statements. Output of non-market producers is valued at the costs of production. This comprises intermediate consumption, compensation of employees, consumption of fixed capital and other taxes, less subsidies, on production. If there is any secondary market output, this is valued by receipts from sales declared in financial statements. Output for the units in the government sector, NPISH and Central bank is calculated in the same way using data disclosed in financial statements.

Intermediate consumption is valued at purchasers' prices including non-deductible VAT. It is estimated using accrual based figures declared in financial statements. Financial statements – profit and loss account and especially Statistical annex, provide rather detailed breakdown of costs of materials and various industrial and non-industrial services so there is no need for additional re-calculations or adjustments of the original figures. The only exceptions are the costs of R&D which are excluded from the intermediate consumption and treated as a capital expenditure and rents on land which are considered as a category of property income

Intermediate consumption includes also FISIM (*Financial Intermediation Services Indirectly measured*) which represents service that banks (financial intermediaries) charge implicitly via interest margin. In line with the method prescribed by ESA2010, FISIM is allocated to intermediate consumption of user sectors using the data on stocks of loans and deposits and corrsesponding average interest rates by institutional setors and the reference rate of interest. These data are provided to the SORS directly in appropriate format by the National Bank of Serbia.

2.3 Transition from private accounting and administrative concepts to ESA 2010

2.3.1 Non-financial corporations

The transition from private accounting and administrative concepts to ESA 2010 national accounts concepts is an important part of national accounts compilation and particularly of GDP by the production approach, the estimation of which mostly depends on financial statements' data. In this section the main steps and adjustments necessary to transfer and prepare accounting data in line with national accounts concepts and principles are explained by the main types of financial statements and administrative data sources mentioned before. All other specific data sources, which are used in national accounts for individual industries and categories, are reviewed in sections 2.4 to 2.21.

It should be noted that questionnaires of annual financial statements are gradually improved following national accounts definitions. Significant changes related to the format and the content of financial statements occurred as of 2014 when the number of items increased, making the new statements more exhaustive, with more detailed breakdowns of existing as well as with some new items, in line with national accounts' needs. The SORS was actively involved in designing of the format of financial statements especially the statistical annex.

Non-financial corporations (S.11) are covered exhaustively with financial reports. Financial statements consist of:

- Balance sheet
- Profit and loss account
- Statement of cash flow
- Statement of changes in equity
- Statistical annex

The statistical annex is the most important part of this set of accounts and represents an expanded collection of data that gives a more detailed insight into transactions which define intermediate consumption and income of companies, similarly to the SBS questionnaire.

The calculation of output and intermediate spending is carried out through processing tables which enables us to follow the entire procedure from primary data via conceptual adjustments and exhaustiveness adjustments to final result.

The output of non-financial corporations as market-producers are composed of market production (P.11) and production for own final use (P.12). The both are directly derived from the financial statements. The most important accounting item for this derivation is the item of *Revenue from undertaking for own purposes*

Under the heading *Sales* the following elements of the enterprise's turnover are declared:

- Merchandise sold which covers goods for resale in the same condition as purchased both on the domestic and foreign market
- Sales of processed goods and services provided both on the domestic and foreign market

The item *Other operating income* is also included in calculation of the output and comprises:

- Other operating income which covers income from rentals, rents, royalties and similar income

The first part of calculation is exclusively based on accounting data. In this part, according to the ESA principles, rents on land (receivable) are excluded from the point 5. *Other operating income* as a part of income which represents Property Income. This change is shown in point 9. *Negative adjustment*.

Output components in data sources and national accounts adjustments for non-financial corporations sector:

1. Sales
2. Revenue from undertaking for own purposes
3. Increase in inventories
4. Decrease in inventories
5. Other operating income
6. Cost of goods sold

7 Output in data sources (1+2+3-4+5-6)

8. Positive adjustment (+)
9. Negative adjustment (-)

10a Output at basic prices in national accounts (7+8-9)

Some conceptual adjustments have to be made after acquisition of source data into the system of national accounts. The reason for these adjustments is the difference between business and national accounting rules. The corrections done are:

- calculation of holding gains and losses from inventories (for types of stock work-in-progress, finished goods, goods for resale)
- calculation of subsidies and division to subsidies for production and subsidies for products
- estimation software for own use
- R&D output
- correction duo to different evaluation revenue from undertaking for own purposes

Some of these corrections have a positive, and some have a negative influence on a primary amount of output.

Output components in data sources and national accounts conceptual adjustments for non-financial corporations sector:

10a Output at basic prices in national accounts

1. Holding gains (-)
2. Subsidies for products
3. Software for own use
4. R&D output
5. Revenue from undertaking for own purposes

10b Output at basic prices in national accounts (10a-1+2+3+4+5)

In the next step an evaluation of exhaustiveness is carried out after which the final value of output is obtained.

Output components in data sources and national accounts exhaustiveness adjustments for non-financial corporations sector:

10b Output at basic prices in national accounts
1. Exhaustiveness
10c Final Output at basic prices in national accounts (10b+1)

Intermediate consumption of the non-financial corporations is derived from the items in the financial statements.

The item *Raw material costs* consists of:

- Cost of raw materials
- Cost of other materials
- Fuel and energy costs

The item *Other operating expenses* comprises:

- Costs of outsourced services directly linked to production of goods
- Transportation services
- Cost of maintenance of capital goods
- Rentals and rents
- Promotional expenditure on fairs, exhibitions and similar
- Marketing and advertising costs
- Expenditure on industrial research
- Cost of other industrial services n.e.c.

Furthermore, after deduction of tax expenses and contribution expenses, it also comprises the following elements included in the calculation of the intermediate consumption:

- Cost of non-industrial services
- Other promotional costs
- Insurance premiums paid
- Bank commissions and fees
- Membership contributions and fees
- Cost of other non-industrial services

In this way an amount of intermediate spending is derived based on primary data, where the amounts of rents on land (payable) and financial leasing are excluded as well (*negative adjustment*).

Intermediate consumption by components in data sources and national accounts adjustments for non-financial corporations sector

1. Raw material costs
2. Other operating expenses
3. Less: tax expenses
4. Less: contribution expenses
5 IC in data sources (1 + 2 - 3 - 4)
6. Positive adjustment (+)
7. Negative adjustment (-)
8a IC in national accounts (5 + 6 - 7)

In the next phase, as was the case with output, conceptual adjustments are made. The basic corrections are related to:

- calculation of holding gains and losses from inventories (for material)
- calculation of non-life insurance services
- R&D costs
- correction in recording of travel expenses
- correction due to different evaluation revenue from undertaking for own purposes

Some of these corrections have a positive, and some have a negative influence on a primary amount of intermediate consumption.

Intermediate consumption by components in data sources and conceptual national accounts adjustments for non-financial corporations sector:

8a IC in national accounts
1. Holding loss (-)
2. Insurance services (-)
3. R&D costs (-)
4. Travel costs
5. Revenue from undertaking for own purposes

8b IC in national accounts Concept. adj. (8.a-1-2-3+4+5)

Finally, an evaluation of exhaustiveness, together with FISIM are carried out, after which the final value of the IC is obtained.

Intermediate consumption by components in data sources and exhaustiveness national accounts adjustments for non-financial corporations sector

8b IC in national accounts
1. FISIM
2. Exhaustiveness

8c FINAL IC in national account (8b+1+2)

2.3.2 Government sector

The general government sector (S.13) consists of institutional units that are non-market producers whose output is intended for individual and collective consumption, and are financed by compulsory payments made by units belonging to other sectors, and institutional units principally engaged in the redistribution of national income and wealth. The institutional units included in sector S.13 are the following: (a) general government units which exist through a legal process to have judicial authority over other units in the economic territory, and administer and finance a group of activities, principally providing non-market goods and services, intended for the benefit of the community; (b) corporations which is the government units, if their output is mainly nonmarket and a government unit controls it; (c) non-profit institutions recognised as independent legal entities which are nonmarket producers and which are controlled by general government; (d) autonomous social security funds, where there is a legal obligation to contribute, and where general government manages the funds with respect to the settlement and approval of contributions and benefits.

Data sources defined for the compilation of the aggregates of the general government are following:

- The Treasury Administration data (disaggregated data on monthly basis)
- Financial statements (for incorporated enterprises, budgetary users and banks and other financial intermediaries)

The Treasury Administration provides data on revenues and expenditures for central government bodies and agencies, whereas annual financial statements of government units provide data on revenues and expenditures of non-market non-profit institutions classified in the general government sector.

The output of the general government units is compiled by the input-cost method, i.e. as a sum of the following costs:

Output = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid – Other subsidies on production received[2] *+ Operating surplus*[3]

The output of the general government units could be distinct as non-market, market and for own final use.

2.3.3 Non-profit institutions serving households (NPISH)

The primary source of data for calculating aggregates of non-profit institutions serving households sector (S.15) are annual financial reports.

The procedure for calculating output and intermediate spending are also taken through the system of processing tables.

A significant difference is the way of calculating aggregates of the NPISH sector. The distinction between market and non-market producers is important here, bearing in mind that output of market producers is in principle equal to the value of goods and services at current market prices and, on the other hand, the output of non-market producers can only be valued according to their costs of production and is thus equal to the sum of intermediate consumption, compensation of employees, consumption of fixed capital, other taxes on production, and minus other subsidies on production received. Given that this sector comprises only non-market producers, the output of the NPISHs is compiled on a cost basis as:

Intermediate consumption (P.2)
+ Compensation of employees (D.1)
+ Consumption of fixed capital (K.1)
+ Other taxes on production (D.29)
- Other subsidies on production (D.39)

The procedure for calculating aggregates:

Output components in data sources and national accounts adjustments for NPISHs:

1. Raw material costs
2. Other operating expenses
3. Less: tax expenses
4. Less: contribution expenses
5. Societies serving households

6 **Total costs in data sources (1 + 2 – 3 – 4 + 5)**

7. Positive adjustment (+)
8. Negative adjustment (-)

A Intermediate consumption in national accounts (6 + 7 – 8)

[2] It is considered that government units do not receive subsidies, i.e. funds received from government are treated as intra-governmental transfers.

[3] By convention, operating surplus for the government units is equal to zero.

1. Salaries, wages and other personal indemnities
2. Contributions expenses
3. Societies serving households
4 Total labour costs in data sources (1 + 2 + 3)
5. Positive adjustment (+)
6. Negative adjustment (-)
B Compensation of employees in national accounts (4 + 5 – 6)

1. Other taxes on production
2. Societies serving households
3 Other taxes on production in data sources (1 + 2)
4. Positive adjustment (+)
5. Negative adjustment (-)
C Other taxes on production in national accounts (3 + 4 – 5)

1. Depreciation costs
2. Societies serving households
3 Consumption of fixed capital in data sources (1 + 2)
4. Positive adjustment (+)
5. Negative adjustment (-)
D Consumption of fixed capital in national accounts (3 + 4 – 5)

TOTAL OUTPUT (A + B + C + D)

Positive adjustments include holding loses of material inventories and corections of travel expences, while the negative ones represent excluding costs of land rent out of total costs.

2.3.4 Financial institutions

The Financial corporations sector (S.12) is subdivided into the following nine subsectors:

1. Central bank (S.121);
2. Deposit-taking corporations except the central bank (S.122);
3. Money market funds (MMFs) (S.123);
4. Non-MMF investment funds (S.124);
5. Other financial intermediaries, except insurance corporations and pension funds (S.125);
6. Financial auxiliaries (S.126);
7. Captive financial institutions and money lenders (S.127);
8. Insurance corporations (S.128);
9. Pension funds (S.129).

S.121 *Central Bank (NACE 64.11)*

This includes the National Bank of Serbia (NBS) as the central and governing monetary and credit institution in the financial system of the Republic of Serbia.

S.122 *Deposit-taking corporations except the central bank (NACE 64.19)*

This is the most important subsection among the financial institutions with regards to the volume of GVA and employment. It comprises depository financial intermediaries as the major FISIM producers. This subsector consists entirely of commercial banks due to the fact that savings and loan banks and associations so as other deposit-taking corporations do not exist at this moment. Namely, the Serbian “Law on banks” recognize and permits commercial bank as the only mode of banking business.

S.123 *Money market funds (MMFs) (Part of 64.30)*

Money market funds are investment funds whose fund shares or units are considered as close substitutes for deposits, and who, for their own account, make investments primarily in short-term financial assets such as: short-term debt securities, deposits or certificates of deposit, short-term Treasury securities, corporate commercial paper and other liquid, money market financial instruments.

S.124 *Non-MMF investment funds (Part of 64.30)*

Non-money market funds are investment funds whose fund shares or investment units are not considered as close substitutes for deposits, and whose investment portfolio is comprised primarily of long-term financial assets (shares, bonds and other long-term debt securities) or nonfinancial assets (mostly real estate). The following financial intermediaries are classified in subsector S.124:

- Open-ended investment funds whose investment fund shares or units are, at the request of the holders, repurchased or redeemed directly or indirectly out of the undertaking's assets;
- Closed-ended investment funds with a fixed share capital, where investors entering or leaving the fund must buy or sell existing shares;
- Real estate investment funds;
- Investment funds investing in other funds ('funds of funds');
- Hedge funds.

S.125 *Other financial intermediaries, except insurance corporations and pension funds (64.9)*

This subsector comprises credit-granting and other non-depository financial intermediaries (excluding collective investment schemes) who are primarily engaged in provision of long-term financing. This subsector comprises:

- Financial leasing;
- Factoring;
- Underwriters and security and derivative dealers;
- Export/import financing companies;
- Hire purchase and the provision of personal or commercial finance;
- Financial vehicle corporations engaged in securitization transactions (FVC);
- Venture and development capital companies.

In the Republic of Serbia this subsector consists mainly of financial lease and factoring companies.

S.126 *Financial auxiliaries* (NACE 66)

This subsector covers resident corporations who are engaged primarily in auxiliary financial activities and which do not themselves perform an financial intermediation role (lending or provision of finance by collecting deposits, creating of collective investment or insurance schemes or similar). This subsector consists of the following financial corporations:

- Central Securities Depository and Clearing House
- Securities Commission
- Belgrade Stock Exchange

- Companies engaged in securities brokerage and dealing
- Pension and Investment Fund managing companies,
- Other incorporated enterprises engaged in auxiliary financial services (bureaux de change, investment advisory services, activities of insurance agents and brokers etc.)

S.127 *Captive financial institutions and money lenders* (NACE 64.20, parts of 64.30 and 64.92)

This subsector comprises financial corporations which are neither engaged in financial intermediation nor in providing financial auxiliary services. Apart from holding companies, trusts, estates and agency accounts they include captive finance companies that act as financial agents for their parent corporations, raising funds for lending to their parent corporations or factoring of parent corporations' accounts receivables. This subsector includes also SPEs and special purpose government funds (if not classified in S.13) so as private money lenders and pawnshops that predominantly engage in lending. In the Republic of Serbia at this moment, this subsector consists solely of holding companies. Other types of these institutions are either not existent or not yet permitted by domestic legislation on financial institutions (money landers outside the banking system).

S.128 Insurance corporations (NACE 65.1-2)

This subsector comprises units engaged in provision of insurance services - life and non-life insurance and reinsurance.

S.129 *Pension funds* (NACE 65.3)

Private pension funds in the Republic of Serbia are autonomous, non-compulsory, common funds managed by fund management companies and which are constituted under the law of contract with no legal capacity and legally separated from their members or employers who pay pension contributions for their employees. Other types of pension schemes are not existent or not allowed by domestic regulations on private pension funds.

The major data source for all the calculations and derivation of national accounts indicators regarding the S.12 sector is the database of the Serbian Business Registers Agency (SBRA) which comprises the register of all institutional units engaged in financial intermediation together with the full set of the annual financial statements of each enterprise. The coverage and quality of the data can be considered good and all available data are regularly at the disposal of SORS by the middle of year following the reference year. Apart from annual financial statements, for calculations related to banks and NBS, the detailed report on all the bookkeeping accounts is available. Data on interest, loans and deposits required for FISIM calculation and its sectorial allocation are obtained regularly on quarterly basis directly from NBS. The main statistical data source on financial corporations is the *Annual Survey on Financial Institutions* (KGI-02). This survey, whose main purpose is collection of data needed for compilation of regional accounts, covers also data on capital and current transfers and trade margins on foreign exchange (for commercial banks). Moreover, this Survey includes a special module for the CPA breakdown of intermediate consumption used for calculations of GVA at constant prices and compilation of SUT.

2.3.5 Unincorporated enterprises and self-employed persons

Serbian and European statisticians are faced with identical problems when calculating macroeconomic aggregates for unincorporated enterprises (UIE) – sole proprietorships and partnerships: fragmentation and high numbers, high "mortality rate" of enterprises and and high yearly frequency of newly started businesses, lack of stability regarding principal activity and employment, etc. Both in Europe and in our country, this section presents a chronic source of so-called non-observed economy and in statistical surveys carried out by national statistical

institutions, sole-proprietors are characterized by a typical low response rate and a relatively lower quality and availability of data compared with incorporated enterprises. These problems are partly due to the very nature of the unincorporated business, i.e. the fact that the personal property of the sole-proprietor and his business assets are not separated. However, the greatest problems regarding statistics are of administrative and legal nature. Firstly, it is the fact that double-entry book keeping is not compulsory for unincorporated enterprises and they are not obligated to provide detailed financial reports that serve as the basis for the calculations of macroeconomic aggregates for incorporated enterprises and other legal entities obligated to submit financial reports to the respective authorities. Therefore, statisticians are compelled to make estimations, based on a relatively modest amount of data submitted by sole-proprietors to tax authorities. The estimates made by the SOR are based on the Hungarian model of calculation of the basic national accounts indicators for unincorporated enterprises. This model, for its part, is based on the French experience of statistical treatment of unincorporated enerprises.

The SORS has at its disposal certain, not a small, number of financial statements of UIEs (around 17000). These valuable data, together with the data on the taxable income, the number of employees and salaries of employees employed in UIEs at the disposal of the Tax Administration, have been used as a foundation for carrying out calculations. In addition, the calculations also use indicators derived from the financial statements of micro and small incorporated enterprises related to turnover, intermediate consumption and GVA, as well as the results of other statistical surveys. In calculating the number of employees employed in UIEs, the data from the Labor Force Survey, which are used in the European countries as the primary data source on employment, including informal employment, was used as a supplement to tax administration data.

It should be emphasized that any assessment as this carries with it a greater or lesser degree risks concerning reliability and precision, however, bearing in mind the availability of data as well as the specifics of UIEs in Serbia, the results are considered the best that can be done at the moment. We expect that the years ahead will increase both the amount and the quality of available data, which will lead to better and more precise results.

For the purpose of calculating GDP, the register of entrepreneurs, i.e., the database for the Business Registers Agency, is used as an approximation of the economically active population of UIEs. About 260.000 UIEs operate in Serbia compared to about 100.000 active companies (mainly limited liability companies in the sector of non-financial incorporated enterprises). With regard to taxation of profits, there are two basic taxation systems for sole proprietors:

• Lump-sum tax system (administrative estimation system) covering about 110.000 sole-proprietors (including taxi drivers and lawyers).
• Actual profit system, covering the rest (cca 150.000 sole proprietors).

Unincorporated enterprises can be divided into three different groups with regards to financial reporting and bookkeeping requirements:

- *Lump-sum system* – no bookkeeping required and no business records collected by the tax administration. Administratively determined (estimated) taxable income.
- *Actual simplified profit system* – single-entry bookkeeping and only profit and loss account (simplified form), which is not submitted to the SBRA or to the Tax Administration but only serves to determine the taxable income and social contributions of sole-proprietor. For this group of UIEs, the SORS has only data on taxable income, income tax and social contributions provided by the Tax Administration. Also, the Tax Administration provides data on employees employed by sole-proprietors and wages and salaries of these employees;

- *Actual regular profit system* – double-entry bookkeeping and full set of business accounts (balance sheet, profit and loss account and statistical annex with breakdown of costs and other bookkeeping items). Around 17.000 UIEs are within this group and their financial statements represent the second most important data source for the calculation of national accounts indicators for UIEs.

Since it does not have the necessary financial statement data on revenues and expenditures that are commonly used for incorporated enterprises, national account indicators are estimated using the so-called income approach. The income approach calculates the gross added value as a sum of mixed income of the owners of UIEs and compensation of employees emplyoed in UIEs. The calculation process can be divided into three phases, with simultaneous calculation of the regional and national aggregates of national accounts.

Phase 1 - Estimation of mixed income of sole-proprietors

The first step is to calculate the mixed income of an UIEs. The mixed income of sole-proprietors are estimated on the basis of the average gross salary of employees by municipalities determined by the SORS. As an important control parameter, the average annual amount of mixed income is used, based on the data from financial statements of sole-proprietors (around 17,000 who submit their financial statements to the SBRA) and which usually amounts around average annual earinings of employees in the Republic of Serbia. By multiplying the number of sole-proprietors for each municipality and corresponding municipal averages of gross wages and salaries, the mixed income is directly determined for each municipality, and then aggregates at the level of the districts and the region. Subsequently, the aggregated data per district is distributed to the activities (two-digit NACE) using data on the taxable income of the sole-proprietors plus taxes and social contributions which is used as the approximation of mixed income. In other words, for each district, the total amount of mixed income is allocated to activities in proportion to the amount of the taxable income by activities used as the distribution key.

Phase 2 - Estimation of the number of employees and compensation of employees

The number of employees in UIEs is estimated on the basis of data on formal employment obtained from the Tax Administration and LFS data. The total number of workers employed by UIEs obrained from LFS, which includes both formal and informal employment, is allocated to activities and regions according to the structure of formal employment (from the Tax administration). In this way, the largest part of the non-observed economy related to unregistered workers is implicitly already included in the calculation of gross value added. The average annual earnings of workers employed by sole-proprietors is determined at the level of average annual earnings calculated using data from financial statements of UIEs (which usually ranges in the amount of minimum wage). By multiplying the number of employees in UIEs and average earnings, the total value of wages and salaries is obtained and distributed to activities and districts according to the structure of the earnings calculated on the basis of Tax administration data in a similar way as the distribution of mixed income sole-proprietors is carried out.

Phase 3 - Estimation of the gross value added of unincorporated enterprises

In accordance with the income approach, the gross value added is calculated as the sum of mixed income of sole-proprietors and wages and salaries of their workforce. Value of production ie the output is calculated, therefore, "backwards", starting from the value adde to which the GVA/Gross Output ratios for micro enterprises and sole-proprietorhips is applied based on the data from the financial statements. By multiplying the gross value added for each activity with the corresponding

ratios, the output value is obtained and the intermediate consumption as the difference between the output and the gross value added.

In addition to sole-proprietorships, institutional units belonging to the households sector S.14 include self-employed persons without registered businesses such as outworkers, freelancers and other self-employed persons including farmers. Value of production of self-employed persons is estimated directly using the Tax administration's data on taxable income of natural persons. These data have become available to SORS only since 2016 and have been included for the first time in the GDP calculations in the new revision of 2018, which was one of the significant improvements that contributed to the comprehensiveness and quality of GDP calculation. Unincorporated farmers with their respective GVA are included in the GDP calculation via the economic accounts of agriculture.

* * *

The compiling procedures by NACE activities are presented in turn within the following sections (2.4 – 2.2).

2.4 Agriculture, forestry and fishing (NACE Rev.2 Section A)

Economic accounts for agriculture (EAA) make an integral part of the international statistical system and are created primarily for the purpose of monitoring and evaluating the effects of an agricultural policy. As a part of the Serbian statistical system, they are expected to provide a basis for analysing the production processes of the agricultural sector and the primary income generated by these activities in the country. They also ensure international comparability of the results, as well as comparisons with the results of other economic activities in the national economy.

Since economic accounts for agriculture are an integral part of the system of national accounts, they provide specific data on economic activities in agriculture, which could not be visible in the system of national accounts as they are either indirectly used in the calculations or form an integral part of the categories presented on the higher level. In addition, these accounts are regarded as complementary to agricultural statistics, in a manner that agricultural variables are consistent with the concepts and definitions of national accounts. Economic accounts for agriculture are intended to ensure a conceptual framework for integrating agricultural statistics and its economic implications, which means, first and foremost, contribution of agriculture to the economy.

The methodological frame for calculating economic accounts for agriculture ensured ESA 2010 – European System of National and Regional Accounts, Commission Regulation (EC) No 138/2004 of the European Parliament and of the Council of 5 December 2003 on the economic accounts for agriculture in the Community, Commission Regulation (EC) No 306/2005 of 24 February 2005 amending Annex I, Commission Regulation (EC) No 909/2006 of 20 June 2006 amending Annexes I and II, as well as the Manual on Economic Accounts for Agriculture and Forestry, Rev.1.1.

The calculation of the economic accounts for agriculture in the Republic of Serbia was carried out for the period 2007-2017 and is in accordance with the concepts and rules stipulated by the Regulation (EC) No 138/2004 of the European Parliament and of the Council of 5 December 2003 on the economic accounts for agriculture in the Community with annexes.

In the current statistical system of the Republic of Serbia no special surveys are implemented to provide direct data in value terms for the calculation of items and elements of the economic accounts for agriculture; however, the indirect data from regular statistical surveys of the Statistical Office of the Republic of Serbia envisaged to measure different areas of the economy (agricultural production, industry, prices, and price indices etc.) are used for this purpose. Also, administrative data are used;

in the first place, data on subsidies in agriculture (data from the Ministry of agriculture, forestry and water menagement, Agency for payments in agriculture and the Ministry of finance).

Hence, calculation of the economic accounts for agriculture in Serbia covers the total agricultural production and both family holdings and legal entities and unincorporated enterprises are covered. Apart from analytical procedures imposed on primary statistics, alternative indirect methods are needed to be applied for some EAA items such as intra-unit consumption, intermediate consumption as well as consumption of fixed capital for which there is no direct statistical data. The indirect methods rely upon the assumptions and developed models with input coefficients based on respective expertise and technical standards.

In this process a large number of agricultural statistical data is available regardless of whether they have been compiled by the SORS or obtained from external sources. They can be split into two main groups:

- Regular statistical surveys, and
- Administrative and other data sources.

The following list shows the available data sources, their EAA relevance with corresponding input variables for the calculations, including the institutions in charge of data provision.

Box 3. EAA elements and the most relevant data sources

Data source	EAA item	Input variable for the EAA calculation	Institution in charge
Agricultural Statistics			
Crop production statistics	Output	Sown areas, harvested areas, average yield, total production	SORS[1]
Livestock production statistics	Output, Gross fixed capital formation in livestock	Number of livestock by species and categories, including the number of beehives, livestock turnover by species, average weight per head, production of milk (from cows, sheep and goats), eggs, honey and wool	SORS
Annual survey on family holdings	Output, Intermediate consumption, Gross fixed capital formation in livestock	Harvested areas, average yield, total production, intra-unit consumption, production costs by elements	SORS
Annual survey on legal entities dealing with agricultural production	Output, Intermediate consumption	Balance of wheat and maize for legal entities, production costs by elements	SORS
Slaughtering statistics	Output, Gross fixed capital formation in livestock	Number of heads slaughtered and the average weight at slaughter (only for legal entities)	SORS
Monthly reports on purchase and sale of agricultural products	Output, Intermediate consumption	Monthly data on purchase and sale of agricultural products (quantities and values)	SORS
Agricultural price statistics	Output, Intermediate consumption, volume measures	Output absolute prices and indices, Input absolute prices and indices	SORS
Results of research projects, bio-technical coefficients, experts' estimates	Output, Intermediate consumption, Gross fixed capital formation in livestock, *"missing prices"*	Bio-technical coefficients such as seed consumption per ha, live/carcass weight coefficient, calving percentage, etc.	Faculty of Agriculture, IAS[2], CCIS[3]
Other statistics and data sources			
External trade statistics	Output, Intermediate consumption	Export and import (quantities and values)	SORS

Data source	EAA item	Input variable for the EAA calculation	Institution in charge
Industry statistics	Output, Intermediate consumption	Industry production (quantities and values)	SORS
Producer price indices (PPI)	Intermediate consumption at constant prices	Producer price indices on product level	SORS
Consumer price index (CPI)	Intermediate consumption at constant prices	Consumer price indices on product level	SORS
Data on compensatory payments in agriculture	Basic prices, Factor Income	Subsidies on production, other subsidies on production, capital transfers	MoA[4], DAP[5] and MF[6]

Calculation methods

Calculation of crop output relies upon the data of agricultural production statistics, such as the data on produced (harvested) quantities of crops. These data are obtained on the basis of the estimated area and the average yields for each crop provided by agricultural production statistics. When it comes to calculating animal production, use is made of data on the number, weights, balance and slaughtering of animals and poultry, as well as data on the production of animal products (milk, eggs, wool, etc.).

For valuation of agricultural production (output), use is made of average producer prices of agricultural products.

Producer prices of agricultural products are calculated on a monthly and annual basis, based on sales data of agricultural products from own production of legal entities engaged in agricultural production (sales prices) and data on purchases of agricultural products from family holdings, performed by the authorized units (purchaser prices).

Calculation of the output of inseparable non-agricultural secondary activities includes the following activities:

- Processing of cereals into flours, shredded wheat, etc.
- Processing of fruits and vegetables into juices, brandy, marmelade, etc.
- Processing of grapes into dried grapes, wine, etc.
- Processing of milk into cheese, butter, joghurt and other dairy products
- Processing of meat, and
- Agricultural services.

Intermediate consumption refers to all goods and services used as inputs in the production process, such as seeds and planting material, energy and lubricants, fertilizers and other means for improving soil quality, plant protection products, veterinary expenses, animal feed, maintenance of materials and equipment, maintenance of buildings, agricultural services and other goods and services (costs of renting buildings, equipment and machines without personnel to carry out agricultural production, agricultural extension services fees, subscriptions, fees for membership in professional associations, chambers of commerce, etc.).

Goods used for intermediate consumption are valued at purchaser prices at the time they enter into the production process.

As the balancing item of output and intermediate consumption, the gross value added of agriculture is obtained.

The calculation of the subsidies in agriculture was conducted so as to allow their classification according to the requirements of the methodology on economic accounts for agriculture. Since the method of monitoring and recording of projected and paid subsidies in agriculture by the Agency for Payments in Agriculture and the Ministry of agriculture, forestry and water menagement, is based on a completely different classification, it is necessary to examine in detail the contents of each of the support measures in agriculture and then execute its reclassification according to the requirements of the EAA (division into subsidies on products and other subsidies on production). For this purpose the OECD methodology for the assessment of support to agriculture was used[4].

Data on taxes in agriculture are still not available in the frame of EAA.

More detailed information about EAA can be found in the following document:
http://www.stat.gov.rs/en-US/oblasti/nacionalni-racuni/ekonomski-racuni-poljoprivrede

2.5 Mining and quarrying (NACE Rev. 2 Section B)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. From 2016, data on mining and quarrying for coal mines are collected by SBS survey on the main electricity producer EPS in which two main coal mines are operating. Data on electricity production of thermal electric plants are separately estimated from production of coal mines whose production is used as intermediate consumption by the electricity production units.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.6 Manufacturing (NACE Rev. 2 Section C)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Also, for the main petrochemical producer “NIS”, the detailed SBS profiling survey is used as the main data source with detailed breakdown of its operations.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.7 Electricity, gas, steam and air conditioning supply (NACE Rev. 2 Section D)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. As it is mentioned above for the NACE section B - Mining and quarrying, for the main electricity producer EPS, the main data source is SBS profiling survey.

[4] OECD (2008): OECD’s Producer Support Estimate and Related Indicators of Agricultural Support: Concepts, Calculations, Interpretation and Use (The PSE Manual), OECD Trade and Agriculture Directorate, Paris.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.8 Water supply; sewerage, waste management and remediation activities (NACE Rev. 2 Section E)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.9 Construction (NACE Rev. 2 Section F)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.10 Wholesale and retail trade; repair of motor vehicles and motorcycles (NACE Rev. 2 Section G)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.11 Transportation and storage (NACE Rev. 2 Section H)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.12 Accommodation and food service activities (NACE Rev. 2 Section I)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.13 Information and communication (NACE Rev. 2 Section J)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.14 Financial and insurance activities (NACE Rev. 2 Section K)

2.14.1 National Bank of Serbia (S.121/NACE 64.11)

The output, IC and GVA of the NBS, as the only unit of the subsector S.121 – Central Banking, is calculated using the cost method in accordance with the paragraph 3.63 of ESA2010 and the 448/98 Council Regulation on calculation and allocation of FISIM. Financial transactions of NBS (loans, deposits and accrued interest) with the units of subsectors S.122 and S.125 as FISIM producers are not included in the FISIM calculation. Output of central banks comprises all the operating expenditures and costs including fees and commissions payable, personnel costs and consumption of fixed capital. Output and IC do not include any kind of income or costs from financial operations (interest, dividends), non-operating and extraordinary income or expenditures. Commissions and fees for directly measured services invoiced by the central bank to other units is implicitly allocated to these units as the part of their operating costs (intermediate consumption).

The second part of the total central bank output (sum of costs less commissions and fees) which is not sold (for which there where no explicit charges) is allocated to the intermediate consumption of subsectors S.122 (Deposit-taking corporations except the central bank) and S.125 (Other financial intermediaries, except insurance corporations and pension funds) – in proportion to the respective value added of each of these subsectors. To equilibrate the accounts of subsectors S.122 and S.125, the amount of their respective intermediate consumption of the service provided by the central bank is counterbalanced by a current transfer (classified under D.759, "Other miscellaneous current transfers") received from the central bank, for the same amount.

2.14.2 Other monetary intermediation (S.122/NACE 64.19)

2.14.2.1 Calculation of gross output, intermediate consumption and GVA

This is the most important subsection within the sector S.12 – Financial Corporations in terms of volume of GVA generated, employment and contribution to the national and regional GDP. It

comprises depository financial intermediaries (commercial banks)engaged in monetary intermediation (by accepting deposits and credit creation). The monetary intermediation industry in national accounts has special features regarding measuring production value and other NA indicators, because the largest part of the output of these institutional units comes from interest margin or, in the terminology of the NA, *Financial Intermediation Services Indirectly Measured* (FISIM). Calculation and sectorial allocation of FISIM are based on the methodological framework defined by *Council Regulation 448/98*, *the Commission Regulation 1889/2002* and the *ESA 2010 Chapter 14*.

The production value of these units is calculated as the sum of FISIM, income from fees and commissions receivable, trade margins on foreign exchange and securities and other operating income (mainly rentals and other auxiliary financial services). Almost all NA indicators are derived directly from the financial statements (Profit and loss account and Statistical report) except for FISIM (NBS report on sectorial breakdown of loans, deposits and interest) and trade margins on foreign exchange which are obtained through the *Annual Survey on Financial Institutions (KGI-02)*. Data on capital and current transfers of these institutions are also obtained via this annual Survey. As for the data on net income (trade margins) from securities dealing, they are provided by NBS and included in the calculation of the value of production.

Detailed data on various components of IC is available in the Statistical report which represents a regular component of the full set of financial statements of banks. Intermediate consumption of these units includes, apart from usual materials and industrial and non-industrial services, commissions and fees payable as well as the part of the central bank output (sum of costs less commissions and fees) which is not sold (for which there were no explicit charges). As was mentioned, this part of the central bank output is allocated to subsectors S.122 (Deposit-taking corporations except the central bank) and S.125 (Other financial intermediaries, except insurance corporations and pension funds) in proportion to the respective value added. Non-operating and extraordinary expenditure are excluded from IC. Another important source of data for the calculation of intermediate consumption is already mentioned in the KGI-02 survey, which provides detailed data on intermediate consumption according to the statistical classification of products (SRA). These data are of particular importance for the calculation of gross added value at constant prices as well as for the compilation of the supply and use tables. The main items for the calculation of the national accounts indicators for the subsector S.122 are shown in the following table.

Table 4. Other monetary intermediaries (S.122/NACE 64.19)

1	**Gross Output (2+3+4+5+6)**
2	**FISIM**
3	Commisions and fees receivable
4	Trade margins on security brokerage and dealing
5	Trade margins on foreign exchange
6	Other operating income
7	**Intermediate consumption (8+9+10)**
8	Fees and commisions payable
9	Other operating costs (except Personnel costs and Depreciation)
10	Central Bank services
11	**Gross Value Added (1-7)**

2.14.2.2 Calculation and allocation of FISIM

The calculation of FISIM is based on the reference rate method as prescribed in the above mentioned FISIM regulations. The internal reference rate (IRR) is regarded as a „pure“ economic rate of interest excluding any kind of risk premium or direct payment for the financial service delivered. On the side of loans, FISIM represents the difference between interest receivable and the interest cost of funds

(loans) calculated at a reference rate. On the side of deposits, FISIM is the difference between interest payable at the reference rate on the deposits and interest actually payable to depositors. That means that depositors receive both the interest payable and financial services for maintaining a deposit with a deposit-taking financial corporation. This „invisible", implicite charge (as the difference between higher reference rate and interest rate on deposits) represents FISIM on deposits which together with FISIM on loans gives the total FISIM:

FISIM = FISIM on deposits:

(deposits*internal reference rate) – (paid interest on deposits) +

FISIM on loans:

(interest receivable on loans) – (loans*interest reference rate)

Reference rate calculation

The internal reference rate used is the average interbank rate on loans weighted by the levels of stocks of loans between banks and, interest with and within subsectors S.122 and S.125 (Other financial intermediaries, except insurance corporations and pension funds). Allocation of FISM to the user sectors is made using data on the stocks/deposits by institutional sector and corresponding accrued interest on loans and deposits. The interest rate for each institutional sector is calculated as the ratio of annual accrued interest and average stocks of deposits/loans (averaged on twelve months period) for that sector. FISIM in accordance with the aforementioned equation is calculated as the difference between the sector specific rate and IRR which is then applied to the stocks of loans and deposits. The total FISIM by institutional sector is obtained as the sum of FISIM on loans granted to the institutional sector and of FISIM on deposits on the type of loans, i.e. institutional sectors, FISIM may have the character of intermediate consumption or households final consumption.

FISIM attributable to households is broken down into the following categories which determine its impact on GDP and GNI:

1. Intermediate consumption of households in their capacity as owners of dwellings (FISIM on dwelling loans is treated as IC of owners of dwellings and as such decrease GVA of Households sector and GDP);
2. Intermediate consumption of households in their capacity as owners of unincorporated enterprises (FISIM on loans to unincorporated enterprises is treated as IC of these enterprises and as such decrease their GVA);Final consumption of households (FISIM on consumer debt excluding mortgages and dwelling loans is considered as part of final consumption and not as intermediate consumption).

The estimation of FISIM for the Households sector and its distribution on IC and HFC is based on the breakdown of loans to households (stocks and interest) into the following corresponding categories:

1. Dwelling loans;
2. Loans to households as owners of unincorporated enterprises;
3. Other loans to households.

Moreover, deposits of households are broken down into deposits of households as owners of unincorporated enterprises and deposits of individuals and treated accordingly. For each of above mentioned categories of loans, data on accrued interest and stocks are directly available and the respective interest rates are calculated as the ratio of annual accrued interest and average stocks of loans. These are then subtracted from the previously determined IRR and multiplied with the stocks of loans which gives the value of FISIM for the households sector broken down by specific type of

financials services and correspondingly treated in the national accounts system (as IC or HFC). FISIM on deposits for two above mentioned categories of deposits is calculated as difference between the interest rate on deposits and IRR which is then multiplied with average stock of deposits.

FISIM allocated to Government sector and NPISH is included in intermediate consumption of these institutional sectors and as such in the calculation of their non-market output and final consumption. FISIM allocated to the sector of Non-financial corporations is further broken down by NACE industries using gross output of individual industry as the distribution key and then subtracted from gross output as a part of intermediate consumption together with other industrial or non-industrial services. The same distribution key (gross output) is used for distribution of FISIM related to unincorporated enterprises.

Exports and Imports of FISIM are estimated using the same formula but with one important difference. Instead of IRR the external interbank reference rate is used. The external reference rate is calculated as the ratio of interest on loans plus interest on deposits between resident FIs and non-resident FIs, to the stock of loans plus the stock of deposits between resident FIs and non-resident FIs. Several reference rates are used for different groups of currencies and the loans and deposits are split both by institutional user sectors and by groups of currencies in which they are denominated. Thus, exports of FISIM are calculated as sum of of FISIM on loans granted to non-residents and FISIM on the deposits of non-residents. This figure is relatively insignificant in the Republic of Serbia because resident banks are almost exclusively oriented to resident clients and almost all cross-border transactions are interbank related with FISIM value set to zero. Imports of FISIM consists of FISIM on loans of resident units granted by non-resident financial intermediaries and FISIM on deposits of resident units in non-resident financial intermediaries. Calculation of exports and imports of FISIM is conducted by NBS and estimates regularly transferred to the SORS for further processing in the NA system. The main users of imported FISIM are Non-financial corporations (around 96%) and Government sector (around 4%).

Investment funds (S.123 and S.124)

of the institutional sector. Observed from the perspective of the user sector, depending

The output of the investment funds is calculated in a specific way due to the nature of these institutions which are in fact notional institutional units. Namely, investment funds in Serbia are almost exclusively open-ended non-incorporated (common) funds[5] constituted under the law of contract and managed by management companies with no paid employees. They are not recognized as independent legal entities and are treated as pools of assets with no legal capacity but they are legally separated from the shareholders and companies that manage them. However, according to the *Law on investment funds* and bookkeeping regulation, the fund can incur costs (which diminish the net worth of the fund) and operating income such as rentals and this fact must be treated in line with NA principles of recording of the financial transactions.

Thus, the GVA of investment funds is calculated as other operating income (excluding income from interest, dividends and other income from investment in financial assets) minus value of operating costs (cost of services of the managing company, costs related to the purchases and sales of securities, costs of custodial services and other operating costs) which are imputed to investment funds as their intermediate consumption. Intermediate consumption also includes part of FISIM which is allocated to financial institutions (excluding S.121, S.122 and S.125).

[5] In 2013 only one close-ended investment fund was operating.

2.14.3 Other financial intermediaries, except insurance corporations and pension funds (S.125/NACE 64.9)

This subsector comprises financial lease and all other money lending activities outside the banking system including factoring services.

According to the business accounting regulations, financial lease contracts are considered as loans for the acquisition of fixed assets. So, the lease "rental payments" comprise repayment on principal and interest payment including FISIM as the service charge for financial leasing services provided by lessors (financial leasing companies). Similarly to commercial banks, this FISIM part of the rental payments is treated as intermediate consumption or HFCE of institutional units acting as lessees (depending on their sectorization). FISIM on financial leasing services is calculated in the same way as FISIM on loans of commercial banks. Apart from FISIM, the output of financial leasing companies comprises: commissions and fees and other operating income mainly rentals and trade margins from sales-type leases i.e. trade margin on property (mostly equipment and motor vehicles) bought and then leased out for a higher price than initial costs of purchased property.

The main activity of factoring companies represents the purchase of a business's outstanding accounts receivable from commercial enterprises, extending credit by rediscounting the receivables, and the provision of guarantees that cover late or defaulted payments. At this moment the format and content of financial reports for factoring companies is exactly the same as for the non-financial corporations so the calculation of GO and IC is based on the same items and formula as given earlier for the non-financial corporations. Thus, the output is measured as net income from sales of goods and services, which in this case consists predominately of factoring fees and commissions, (with cost of goods for resale subtracted which in case of these companies is insignificant). Output includes also other operating income such as rentals but excludes any kind of non-operating or extraordinary income. But for these units, apart from fees and commissions from factoring, the main source of the output is actually the discount interest on the purchased invoices which is deducted in advance. This interest includes FISIM which is added to the above mentioned elements of output. In case of these companies, due to the lack of precise data, FISIM is calculated as a simple interest margin i.e. as the difference between interest payable and interest receivable as disclosed in their financial statements.

Intermediate consumption of units belonging to the subsector S.125, comprises, apart from usual materials and industrial and non-industrial services, commissions and fees payable so as the part of the central bank output (sum of costs less commissions and fees) which is not sold (for which there where no explicit charges). As it was mentioned, the part of the central bank output is allocated to subsectors S.122 and S.125 in proportion to the respective value added.

The main data sources for calculation of the national accounts indicators for the units belonging to the subsector S.125 are the financial statements and the KGI-02 survey which, among other things, contains data on the sectoral distribution of loans of financial leasing companies and value of purchased receivables by factoring companies with associated interest income. This data is used to calculate FISIM. Also, as has already been pointed out, this survey also contains inquiries on the structure of intermediate consumption according to the statistical classification of products, which is important for constant price calculations and compilation of supply and use tables.

2.14.4 Auxiliary financial services (S.126/NACE 66) and Captive financial institutions and money lenders (S.127/NACE 64.20, parts of 64.30 and 64.92)

Output and IC for units belonging to these subsectors are calculated in the same manner as for the non-financial corporations, i.e. as net income from sales of goods and services with cost of goods for resale subtracted. Output includes also other operating income such as rentals but excludes any kind of financial, non-operating or extraordinary income or expenses. However, there are some differences. Namely, in the case of securities brokerage and dealing the output of companies engaged in these activities includes next to commissions and fees also the net margin on sales of securities.

Output of pension fund managing companies comprises commissions for management of funds and fees charged on pension contributions and services provided to the members of the fund. Output of investment fund managing companies comprises commissions and fees for management of the funds, portfolio management, consulting and other operating income. As was mentioned, at this moment, the subsector S.127 consists solely of holding companies because the other types of these institutions are either not existent, non-observable or not yet permitted by domestic legislation on financial institutions.

2.14.5 Insurance and pension funds (NACE 65)

2.14.5.1 Insurance and Reinsurance (NACE 65.1 & 65.2)

For life insurance, non-life insurance and reinsurance, the output of insurance services (also known as the service charge component) is measured following the rules of ESA2010 methodology and algorithm prescribed in the Annex on Insurance and Commission Regulation 295/2008 (Annex V) as follows: gross earned premiums plus premium supplements (portfolio investment income) plus other operating income minus gross claims payments minus gross change in the provision for outstanding claims and minus changes in other insurance provisions. Equalization provisions which insurers set aside to cover irregular or unforeseeable large claims in future years or special, irregular risks (including catastrophe risks) are treated as part of provisions for outstanding claims and as such included in the algorithm for calculation of output of insurance services. Transactions between direct insurance insurers and reinsurers are not consolidated (nor between reinsurers and retrocessionaires), and the output of reinsurance services is measured in the same way as the output of direct non-life insurance. The only difference is that reinsurance commissions payable by reinsurers to ceding direct insurers (active reinsurance commission allowances) which are subtracted from the value of output of reinsurers i.e. they are treated not as operating costs but as an reduction of output of reinsurance services or negative reinsurers premiums[6].

Claims management expenses are not included in claims incurred and represent the part of IC together with the acquisition, management costs, costs related to the investments of the technical reserves and other operating costs (excluding consumption of fixed capital CFC, personnel costs and taxes on production). Apart from the regular operating costs (including a part of the FISIM allocated to the insurance business), intermediate consumption of the insurance companies also includes value of reinsurance services consumed by direct insurers which are summarized as the *reinsurance balance.* Reinsurance balance as a component of intermediate consumption *is* calculated as follows: premiums transferred to reinsurers, +/- share of reinsurers in the change of provisions for the unearned premiums, minus share of reinsurers in claims payable, +/- share of reinsurers in the change of provisions for outstanding claims, +/- share of insurers in the change of actuarial and other technical provisions, minus reinsurance commissions.

Almost all data necessary for calculating the national accounts indicators are directly taken from the financial statements of the insurance companies. In the financial statements, more precisely in the statistical annex, there is also table with distribution of premiums and claims by institutional sectors, which is of great importance for the proper calculation of GDP and the compilation of sector accounts. In addition to the financial statements, the constant price calculations and the supply and use table use the KGI-02 survey, which collects detailed data on the structure of intermediate consumption according to the statistical classification of products.

[6] The same principle is applied to retrocession services.

In the following table, the calculation of GO and GVA for insurance businesses is presented

Table 5. Insurance and Reinsurance (NACE 65.1 & 65.2)

1	**Gross premiums earned (2+3-4-5+6+7-8-9+10-11)**
2	Gross life insurance and coinsurance premiums written
3	Gross non-life insurance and co-insurance premiums written
4	Premiums transferred to co-insurers (-)
5	Increase in provisions for unearned direct premiums (+)
6	Decrease in provisions for unearned direct premiums (-)
7	Gross reinsurance and retrocession premiums written
8	Active reinsurance commission allowances (-)
9	Increase in provisions for unearned reinsurance premiums (+)
10	Decrease in provisions for unearned reinsurance premiums (-)
11	Bonuses and rebates (-)
12	**Premium supplements**
13	**Gross claims incurred (14+15 - 16)**
14	Gross claims payments
15	Gross change in the provision for outstanding claims
16	Subrogation receivables
17	**Changes in other technical reserves (16+17-18)**
18	Long-term provisions
19	Increase in other technical provisions (+)
20	Decrease in other technical provisions (-)
21	**Other operating income (22+23)**
22	Operating income directly linked to the insurance business
23	Other operating income n.e.c.
24	**OUTPUT (1+12-13-17+21)**
25	**REINSURANCE BALANCE (26+27-28+29-30-31+32-33-34+35)**
26	Direct premiums transferred to the reinsurers
27	Reinsurers premiums transferred to the retrocessonnaires
28	Reinsurers share of the gross change in the provision for unearned premiums (increase)
29	Reinsurers share of the gross change in the provision for unearned (decrease)
30	Reinsurers share of the gross claim payments
31	Reinsurers share of the gross change in the provision for outstanding claims (increase)
32	Reinsurers share of the gross change in the provision for outstanding claims (decrease)
33	Reinsurers share of the gross change in other technical provisions
34	Passive reinsurance commissions receivable
35	Portfolio investment income of reinsurers on their share of the gross technical provisions of the enterprise
36	**OTHER INTERMEDIATE CONSUMPTION**
37	**GROSS VALUE ADDED (24 - 25 – 36)**

2.14.5.2 Pension funding (NACE 65.3)

The output of the pension funds is calculated on the basis of the Annex 7 of the Council Regulation 295/2008. Pension funds in Serbia are organized as open-ended non-incorporated (common) funds constituted under the law of contract and managed by management companies with no paid employees. They are not recognized as legal persons and are treated as pools of assets with no legal capacity but they are legally separated from the members and companies that manage them. In the production account the production value is defined as follows: pension contributions less insurance

premiums payable plus investment income plus other income plus insurance claims receivable less total expenditure on pensions less net change in technical provisions.

Intermediate consumption of the pension funds comprises payments for managing services of the fund managing companies, costs of services provided to the members of the fund, other operating costs and fees charged on contributions which are transferred to the fund managing companies. Intermediate consumption of pension funds also includes part of the FISIM allocated to financial institutions (excluding S.121, S.122 and S.125). The change in gross technical provisions represents the balancing item with no income appropriated to general reserve and zero value of GVA (i.e with gross output equated with intermediate consumption).

In the following table, calculation of national accounts indicators for pension funds is presented:

Table 6. Pension funds

1	Pension contributions receivable from members
2	Pension contributions receivable from employers
3	Incoming transfers from membership changes
4	Other pension contributions
5	Fees charged on contributions and transferred to fund managing companies
6	**TOTAL CONTRIBUTIONS (1+2+3+4+5)**
7	Interest receivable
8	Dividends
9	Rentals and rents
10	Other investment income
11	**PREMIUM SUPPLEMENTS (7+8+9+10))**
12	Regular pensions payments
13	Insurance premiums payable
14	One-off payments
15	Outgoing transfers
16	Other payments
17	**TOTAL EXPENDITURE ON PENSIONS (12+13+14+15+16)**
18	Net change in technical provisions
19	**OUTPUT(6+11-17-18)**
23	**INTERMEDIATE CONSUMPTION**
24	**GROSS VALUE ADDED (19-20)**

2.15 Real estate activities (NACE Rev. 2 Section L)

Data sources for calculation of output and intermediate consumption are the same as for other activities with some exceptions. In terms of significance, relatively small part of the total value of output is produced by the unincorporated enterprises but the biggest part belongs to the actual and imputed rents calculation which is presented in the description of the expenditure approach of the GDP calculation (subsubsection 5.7.3).

So, the most important categories in the activities - NACE 68 are the value of housing services. Here, two different categories can be distinguished. The first is the value of housing services of the own-occupiers of dwellings calculated by user-cost method, and the second is the actual rentals resulting from either market or non-market production of housing services. In table 3.44 the basic structure of imputed rents is shown and in the 3.45 structure of actual rents.

Table 7. Calculation of imputed rents of dwellings

1. P.2 Intermediate consumption
2. K.1 Consumption of fixed capital
3. D.29 Other taxes on production
4. B.2n Net operating surplus

P.1 Output (1 + 2 + 3 + 4)

Table 8. Actual rents of dwellings

1. Market rent
2. Non-market rent

P.1 Output (1 + 2)

2.16 Professional, scientific and technical activities (NACE Rev. 2 Section M)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method.

2.17 Administrative and support service activities (NACE Rev. 2 Section N)

For the institutional units in this NACE section data sources and methods are exactly the same as described in the subsection 3.4.1 on non-financial corporations. The main data source is the database of financial statements of incorporated enterprises and for the unincorporated enterprises an independent estimate is made as described in subsection 3.4.5. Apart from the adjustments stated above no specific corrections are made on this NACE section.

The output of the units that are classified in the general government sector (according to the ESA 2010 rules) is calculated by the input cost method

2.18 Public administration and defence; compulsory social security (NACE Rev. 2 Section O)

The basic characteristic of these units is that they are non-market producers.This activity includes the units registered in the following acitivites:

- 841 - Administration of the State and the economic and social policy of the community
- 842 - Provision of services to the community as a whole
- 843 - Compulsory social security activities

Output in these activities is calculated according to the ESA 2010 methodology based on the input-cost approach, using the following formula:

Output = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid – Other subsidies on production received[7] *+ Operating surplus*[8]

Due to the underestimated figures declared in the financial statements or Treasury data, consumption of fixed capital is indirectly estimated based on the experience of other countries (primarily neighbouring countries).

As already mentioned the basic sources of data are administrative sources provided by Treasury Administration, the annual financial statements of all the units belonging to the government sector.

2.19 Education (NACE Rev. 2 Section P)

This acitivity is comprised of units that could be treated either as market or non-market producers and, consequently, output is compiled as market or non-market output. Non-market producers are public educational units mainly financed from budget resources, whereas market producers are educational units financed thorugh the sale of their services.

For the non-market producers the methodology and data sources are the same as described in section 2.18 Public administration and defence; compulsory social security. For market producers the data sources are financial statements and in the case of unincorporated units Tax Administration data as described in subsection 2.3.5.

2.20 Human health and social work activities (NACE Rev. 2 Section Q)

This acitivity is comprised of units that could be treated either as market or non-market producers and, consequently, output is compiled as market or non-market output. Non-market producers are public health institutions mainly financed from budget resources, whereas market producers are health institutions financed thorugh the sale of their services.

For the non-market producers the methodology and data sources are the same as described in section 2.18 Public administration and defence; compulsory social security. For market producers the data sources are financial statements and in the case of unincorporated units Tax Administration data as described in subsection 2.3.5.

2.21 Arts, entertainment and recreation (NACE Rev. 2 Section R)

The basic characteristics of these activities are the provision of services to households, and a large number of units belonging to the sector are enterprises within the institutional sector of non-profit institutions serving households (NPISHs). For the calculation of non-market output the input-cost method is applied. For the non-market producers the methodology and data sources are the same as described in section 3.21 on public administration. For market producers the data sources are financial statements and in the case of unincorporated units the tax administration data as described in subsection 3.4.5.

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[7] It is considered that government units do not receive subsidies, i.e. funds received from government are treated as intra-governmental transfers.

[8] By convention, operating surplus for the government units is equal to zero.

2.22 Taxes on products, including VAT

Taxes are compulsory unrequited payments made by institutional units to the general government. Taxes on production and imports are in national accounts divided into taxes on products and other taxes on production.

Taxes on products are taxes which are payable on goods and services in proportion to value or quantity and are paid when goods and services are produced, imported or purchased. The most important taxes on products (VAT, excise duties and all import duties and taxes) are estimated by direct data sources at accrual value. The data source for the estimation of taxes is the Report on Gross Payment, Return and Distribution of the Public Revenues (Report T) provided by the Treasury Administration of the Ministry of Finance and in national accounts the cash flow of these taxes is time lagged to obtain accrual values[9]. Considering that only taxes actually received are recorded, tax data are not adjusted with the amount of taxes not collected.

Value added tax – VAT

For the purpose of harmonization of tax policies with the standards of the European Union, the Republic of Serbia introduced the *Law on value added tax* which, in the territory of the Republic of Serbia, applied from 1 January 2005, and which replaced the turnover tax.

The general rate of VAT levied on taxable turnover of goods and services or imports of goods is 20% and the special VAT rate is 10%. There is also a special tax procedure for small taxpayers; for farmers (5% of the value of delivered agricultural and forest goods and services made, if they are in the VAT system).

In order to apply the accounting principle, in accordance with the ESA 2010 recommendations, time adjustment cash method is applied, as follows:

- one-month time adjustment is applied for domestic products;

- 8-day time adjustment is applied for imported products.

Excise duties

Excise duties are calculated and paid for certain types of products (defined by law) produced in or imported into the Republic of Serbia. The excise duty for the goods produced in Serbia is calculated at the time when excise goods become available on the market. The excise duty for the imported goods is calculated on the date of occurrence the import duty liabilities.

In order to apply the accounting principle, one-month time adjustment is performed.

Taxes and duties on imports excluding VAT

Taxes and duties on imports include import duties (custom duties, custom charges and charges for custom recording), and taxes on imports excluding VAT and import duties. All taxes and duties on imports have to be paid within 21 days, therefore the one month time adjustment is performed.

2.23 Subsidies on products

Subsidies on products are unrequited payments of the government to resident market producers with the aim to support market producers regarding the level of market prices and thus directly affecting and supporting production. These subsidies are typical in agriculture and food production.

[9] One month time lag is used for all taxes on production except for VAT on imported products for which 8-days time lag is used.

The main data sources for subsidies are budgetary data of the central government provided by relevant departments, local governments and government of Autonomous Province of Vojvodina, as well as the financial statements of the non-financial corporations. The exception is the subsidies in agriculture which are based on data of Economic Accounts of Agriculture.

Chapter 3 THE EXPENDITURE APPROACH

3.1 Introduction

GDP by the expenditure approach represents the sum of final uses of goods and services by resident institutional units plus exports less imports of goods and services. The total is obtained as the sum of final consumption expenditure by households, non-profit institutions serving households (NPISH) and general government on goods and services; gross capital formation (capital expenditure on produced fixed assets, changes in inventories and acquisitions less disposals of valuables); and net exports of goods and services.

Final consumption expenditure is expenditure on goods and services used by households, NPISHs and government to satisfy individual and collective needs. Actual individual final consumption includes, besides household final consumption expenditure (HFCE), social transfers in kind from government and non-profit institutions serving households to household sector.

Household final consumption expenditure (HFCE) covers the purchase of all goods and services to meet the needs and demands of their members, it includes goods and services received as income in kind, in lieu of cash, and goods derived from own production. It does not include the purchase of dwellings or expenditures on valuables (antiques and some jewellery), which are part of capital formation, nor any expenditure on goods or services for use in a business.

Valuation of household final consumption expenditure follows ESA 2010 principles: HFCE is measured at purchasers' (market) prices which are the price the purchaser actually pays at the time of the purchase. The majority of data sources used to compile the HFCE estimates are valuated in purchasers' prices. For sources which are not valuated in market prices, a recalculation to purchasers' prices is carried out (e.g. data obtained from Department for Electricity Distribution on household expenditure for electricity are without VAT, therefore to get the final data, the appropriate VAT rate is applied).

Transactions and other flows are recorded on an accrual basis in the national accounts, i.e. when economic value is created, transformed or extinguished, or when claims and obligations arise, are transformed or cancelled. Goods and services are in general recorded when the payables are created, that is, when the purchaser incurs a liability to the seller. This implies that expenditure on a good is recorded at the time its ownership changes; expenditure on a service is recorded when the delivery of the service is completed.

The values of data items obtained from HBS are in some cases underestimated or considered to be less reliable. In such cases HBS data are supplemented or even completely replaced with data from other sources or estimation models, if these are considered to be more precise and reliable. Estimation models are used for following items:

- imputed and actual rentals for housing (user-cost approach),
- consumption of food, alcoholic and non-alcoholic beverages (commodity flow and food balance sheets),

- purchase of vehicles (calculation model),
- narcotics, prostitution (internationally recommended demand side based approach, or in case of prostitution supply side based approach),
- the estimation of some items which are based on additional administrative sources such as Electric Power Industry of Serbia, Annual report of Energy Agency and Agency for Electronic Communications.

All of these models are calculated annually.

3.2 Household final consumption expenditure (HFCE)

In compiling estimates of household final consumption expenditure, the concepts and definitions of the European System of Accounts (ESA 2010) are followed.

Household final consumption expenditure predominantly covers consumer spending on goods and services. However, national accounting concepts require the inclusion of income in kind (employees may receive goods and services either free of charge or at very low prices as part of their wages), imputed rent for owner-occupied housing services and the consumption of own production (for example, food).

HFCE data are compiled, starting with the domestic concept and moving to the national concept. Total final consumption expenditure has to have import of services to Republic of Serbia added and export of services deducted, in order to arrive at household final consumption for national accounts. The consumption expenditure which takes place in the rest of the world is regarded as an import of services to the Republic of Serbia. Consumption expenditure in the Republic of Serbia by households resident in the rest of the world is regarded as export of services.

The product structure of HFCE is classified by the Classification of Individual Consumption by Purpose (COICOP). Also, for product-by-product reconciliations between supply and use, the CPA classification (European Classification of Products by Activity) is applied.

HFCE is currently recorded at four-digit level of COICOP in current and constant prices (previous year equal 100), and chain-linked volume measures (reference year 2010)

In compiling estimates of HFCE, a number of data sources are employed. In accordance with Eurostat's Tabular Approach to HFCE, all data sources are organized in groups (columns) – Household Budget Survey (HBS); Retail Trade Survey (RTS); other statistical surveys and administrative sources (AS); and alternative estimation models (AEM), taking into account the estimation of exhaustiveness for particular COICOP categories.

The final results of the Household final consumption expenditure are produced by the procedures of the standard Eurostat Tabular Approach, starting with a large number of diverse statistical and administrative data sources and relying on very different methods.

Household final consumption expenditure – data sources and metodhs

I Surveyed data	
1.	Household budget survey (HBS)
2.	Retail trade survey (RTS)
3.	Other branch statistics surveys - SS (Agriculture, Prices, Manufacturing, Export-import, Transportation, Energy, Construction etc.)
4.	Ad hoc surveys (Education, Health and Other services)
II Administrative data (AD)	
5.	National Bank of Serbia
6.	Ministry of Finance
7.	Department for Electricity Distribution
8.	Energy Agency of the Republic of Serbia
9.	National Health Insurance Fund
10.	Institute of Public Health
11.	Regulatory Agency for Electronic Communications
12.	Ministry of Interior
13.	Public Utility Companies
III Estimation models and exhaustiveness adjustments	
14.	Commodity flow and food balance sheets - CFM (food and non-alcoholic beverages, alcoholic beverages, tobacco)
15.	User cost approach for estimation of dwelling services - UCA
16.	Demand side based approach - DSA (narcotics)
17.	Supply side based approach - SSA (prostitution)
18.	Alternative estimation models – AEM (models based on combination of various data sources, applied to resolving current problems which cannot be solved by using standard procedures)
19.	Own-account output of agricultural products
20.	Income in kind
21.	Various kinds of HFCE services
IV Final balancing adjustments	
22.	Final balancing adjustments

Commodity flow method

For estimating household expenditures on food, the Commodity Flow Method (CFM) was applied for more than thirty foodstuffs. The whole process starts with building up food balance sheets (UN-FAO) for various foodstuffs. The food balance sheet shows for each food item the sources of supply and its utilization. The total quantity of foodstuffs produced in a country (Agriculture and Manufacturing statistics data)[10] added to the total quantity imported (external trade data)[11] and adjusted for any change in stocks that may have occurred since the beginning of the reference period[12] gives the supply available during that period. On the utilization side a distinction is made between the quantities exported (external trade data), fed to livestock, used for seed, processed for food use and non-food uses, lost during storage and transportation, and food supplies available for human consumption at the retail level (percentage shares of disposable foodstuffs for these different types of uses are obtained as averages from the Food Balances Sheets of similar European countries[13] (FAOSTAT for different foodstuffs). As final result of these calculations, when from the total supply all uses have been subtracted, one gets the obtained amounts of certain foodstuffs available to be used as food. Obtained quantities of foodstuff are then allocated to industrial use, restaurants, collective households and individual households consumption by applying use proportions of particular products in industry, restaurants and hotels, collective and individual consumption (based on Catering statistics, Manufacturing statistics and Trade statistics data). Furthermore, the sum of the quantity of

[10] Manufacturing production by products and data from Agriculture on produced or yield quantities of particular products.

[11] External trade by BEC classification.

[12] In the absence of reliable data sources, stock change is the balancing item to the total supply of particular foodsuffs obtained from economics accounts of agriculture data, agricultural statistics or data from the Ministry of Agriculture.

[13] Average for different foodstuffs of food balance sheets of 25 European countries for following use categories: fed to livestock, seed, processed for food use and non-food uses, lost during storage and transportation (waste) and other uses are used as coefficients for the same use categories in Serbian food balance sheets.

individual and collective consumption, are divided into purchased, own consumption and consumption out of market (based on proportions from HBS data, and data from Agricultural Economic Accounts). Each of these three different types of consumption quantities are then multiplied with three different prices (Price statistics data: average annual retail prices for purchased quantities, basic prices for own consumption, and medium price between retail and basic price for consumption out of market). At the end the percentage share of the non-covered part of food (from food manufacturing preparation e.g. frozen fruit and vegetables) from the total purchased quantities (from HBS) is applied to the calculated value. Thus, final values are obtained for goods that are bought, retained for own consumption or goods that are acquired as a result of the purchase of a friend. Value for food and non-alcoholic beverages groups are obtained by summing up the respective foodstuff values.

Finally, taking into account HBS and RTS data for the estimated categories , the final estimates are checked.

Since the universal procedure and main sources for CFM was explained, each class within this COICOP group will be explained from the point of finitial inputs for the commodity flow, certain details and differences in sources.

3.2.1 Detailed calculations by COICOP items

COICOP code		Description
01.0.0.	Food and non-alcoholic beverages	This division is sub-classified into two groups: food and non-alcoholic beverages. Each of them is further broken down to classes, and they are described below.
01.1.1	Bread and cereals	Within this class, food balance sheet and commodity flow estimates are separately made for wheat flour, other bakery products and rice. Obtained estimates (quantities and values) are compared and checked with HBS data.
01.1.2	Meat	Food balance sheets and commodity flow method are applied separately for beef and veal, pork, lamb and goat, and poultry meat, as well as edible offal. Information on slaughtering, sale and stocks is compiled from regular agriculture surveys
01.1.3	Fish and seafood	As a starting point for the estimation fish and seafood, data from agricultural statistics (amount of fish catches) and manufacturing data are used. The obtained data were corrected for the estimated amount of the NOE part of the amount of caught fish.
01.1.4	Milk, cheese and eggs	Separate food balance sheets and commodity flows are made for milk, dairy products, cheese and eggs. The basis for the estimation of milk consumption is agricultural data, manufacturing data and HBS. Consumption of eggs (quantities) is obtained from agricultural data.
01.1.5	Oils and fats	Data from manufacturing, agriculture, foreign trade statistics, HBS and data from the financial statements are the starting point for the estimation of oil and fat consumption.
01.1.6	Fruit	The basic method used is a commodity flow model that starts from the UN-FAO food balance model based on data on agriculture statistics, foreign trade statistics and manufacturing statistics. Separate estimates are made for apples, grapes, citrus and other fruits
01.1.7	Vegetables	The basic method used is a commodity flow model that starts from the UN-FAO food balance model based on data on agriculture statistics, foreign trade statistics and manufacturing statistics. Separate estimates are made for potatoes, beans, tomatoes and other vegetables.
01.1.8	Sugar, jam, honey, chocolate and confectionery	Data from manufacturing statistics, foreign trade statistics and financial statements are primary sources. Data from HBS and retail trade statistics are used as a secondary source.
01.1.9	Food products n.e.c.	Data from manufacturing statistics, foreign trade statistics and financial statements are primary sources. Data from HBS and retail trade statistics are used as a secondary source.
01.2.1	Coffee, tea and cocoa	Manufactured quantities of roasted coffee, finishing and packaging of all kinds of teas as well as various cocoa based products, from manufacturing statistics, are used as an initial data in the food balance sheets for this class.
01.2.2	Mineral waters, soft drinks, fruit and vegetable juices	Manufacturing of mineral or spring waters is the basis for compiling first food balance sheets within this class. For estimation soft drinks manufacturing data on spring water and other refreshing non-alcoholic beverages are used. Finally for fruit and vegetable juice, manufactured quantities of various different juices are used as starting point for the food balance sheet. Summing up values of these three commodity flows, the value for the class mineral waters, soft drinks, fruit and vegetable juices is obtained.
02.0.0.	Alcoholic beverages and tobacco	This section is sub-classified into three divisions. The first is alcoholic beverages, the second is tobacco and the third is narcotics.
02.1.0	Alcoholic beverages	This COICOP group is estimated by applying CFM as in the preceding groups. The main sources are manufacturing statistics, import-export data and RTS data. Estimations are carried out separately for spirits (including own consumption), wine (including own consumption) and beer.
02.1.1	Spirits	Beside initial data on manufactured quantities of different types of spirits, special attention is paid to handmade fruit brandy for own consumption (which has significant share in total consumption). In addition to HBS, agricultural data on fruit processing on family farms as well as data from agricultural economics accounts are used for the estimation of handmade fruit brandy for own consumption.

COICOP code		Description
02.1.2	Wine	The usual procedure is applied for the estimation of wine consumption, as was the case in the estimation of spirits. Besides manufacturing statistics data on produced quantities of different types of wine, own production of wine on family farms has a significant share.
02.1.3	Beer	Unlike alcohol and wine, beer has a simplified calculation based on data from manufacturing statistics on produced quantities of beer, because there is no production for own consumption
02.2.0	Tobacco	Various sources are used for the estimation of tobacco, such as HBS, RTS, manufacturing data, exports-imports data, Tax Administration data, as well as domestic and international surveys data on tobacco smoking behaviour.
02.3.0	Narcotics	The estimates are based on information on the number of addicts (drug users), standard doses of use, prices, etc.
03.0.0	Clothing and footwear	This division is sub-classified into two groups. The first one is clothing, cleaning, repair and hire of clothing and the second one is footwear, including repair.
03.1.1	Clothing materials	Main data source for estimating clothing materials is HBS, with adjustments made as a result of comparison with RTS.
03.1.2	Garments	Expenditure on clothes is based on financial statements and RTS. By applying the structure from HBS on RTS data, separate estimates are made for garments for men, women, infants and children. Adjustments for non-observed retail sales on flea markets are added, based on other sources of data (external trade data, websites, media, including expert estimates).
03.1.3	Other articles of clothing and clothing accessories	The main data source for estimating other articles of clothing and clothing accessories is HBS and RTS data.
03.1.4	Cleaning, repair and hire of clothing	HBS is initial source for estimating this class.
03.2.1	Shoes and other footwear	The data source for estimating expenditure on footwear is HBS. The estimate is verified against data from other sources. Separate estimates are made for men's, women's and children's footwear, therefore expenditure of shoes and other footwear is the result of summing up those three categories of expenditures. Adjustments are made in comparison with RTS data.
03.2.2	Repair and hire of footwear	Expenditure on shoe repair is derived from HBS.
04.0.0	Housing, water, electricity, fuels	This COICOP division is sub-classified into five groups, which are further broken down to more classes, and are calculated separately.
04.1.1	Actual rentals for housing	Information about the number and stratification of dwellings is obtained from the 2011 Census of Population, Households and Dwellings. Real estate agencies data on dwelling rents are used. To estimate the total cost of all rented dwellings, the number of dwellings in each stratum is multiplied with average rent, and thereafter added up to obtain the total sum for Republic of Serbia.
04.2.1	Imputed rentals for housing	The imputed (owner-occupied dwellings) rent takes a share of over 90% of total rents according to the Population Census of 2011. The user cost approach consists of estimating the following costs: intermediate consumption, other taxes on production, consumption of fixed capital and net operating surplus. Intermediate consumption consists of expenditures on routine maintenance and repairs plus insurance premiums less insurance claims. Expenditures on routine maintenance and repairs of owner-occupied dwellings are estimated on the basis of the construction survey and HBS data.
04.3.1	Materials for the maintenance and repair of the dwelling	Expenditures which tenants and owner-occupiers incur for minor maintenance and repair are estimated as households' consumption. RTS data are the main data source for this class.
04.3.2	Services for the maintenance and repair of the dwelling	The data source is HBS.
04.4.1	Refuse collection/ Sewage collection/ Water supply/ Other services relating to the dwelling n.e.c.	Estimates of household payments for water supply, refuse collection and sewage collection are based on information provided by several Public Utility Companies. Adjustments are made based on comparison with other data sources, including HBS data and financial statements.
04.5.1	Electricity	Estimation of expenditure on electricity is based on the Department for Electricity Distribution (EDEP) data. Each year the Department sends data on quantities and on values of delivered energy to households. The COICOP item electricity is obtained by applying appropriate VAT rates on the used amount of delivered electricity.
04.5.2	Gas	The main data source for estimating consumption of gas is the Annual report of the Energy Agency of the Republic of Serbia. The report contains information on the retail prices and quantities of the gas supplied to households.
04.5.3	Liquid fuels	HBS data are the initial source for estimation liquid fuels. Balance of energy data are used as a control method.
04.5.4	Solid fuels	The data source for solid fuels is energy balances and the HBS. Additional estimates for own consumption of firewood are obtained on the basis of the Economic Accounts for Agriculture and HBS.
04.5.5	Heat energy	Estimates on the heating energy are obtained based on the Balance of Energy and HBS data, with adjustments based on a comparison with additional data from public utility companies.
05.0.0	Furnishings, household equipment and maintenance	This section is sub-classified into six groups, which are calculated separately. The divisions cover various household goods such as furniture, household equipment and appliances and their repairs.
05.1.1	Furniture and furnishings	RTS data are used for estimating expenditures of households on furniture and furnishings and carpets and other floor coverings. Adjustments for non-observed retail sales are made based on additional estimates which make use of HBS, manufacturing, external trade statistics, retail trade data etc.
05.1.2	Carpets and other floor coverings	RTS data are used for estimating expenditures of households on furniture and furnishings and carpets and other floor coverings. Adjustments for non-observed retail sales are made based on additional estimates which make use of HBS, manufacturing, external trade statistics, retail trade data etc.

COICOP code		Description
05.1.3	Repair of furniture, furnishings and floor coverings	The main source for repair of furniture, furnishings and floor coverings are data from HBS.
05.2.0	Household textiles	RTS data and external trade data are used to estimate expenditure on household textiles.
05.3.1	Major household appliances whether electric or not	Estimates for major household appliances are based on RTS data and are verified with the external trade statistics data.
05.3.2	Small electric household appliances	Small electric household appliances estimates are based on RTS and external trade statistics data.
05.3.3	Repair of household appliances	Repairs of household appliances are estimated from HBS data.
05.4.0	Glassware, tableware and household utensils	RTS data are used as main data source for estimate of expenditure on glassware, cutlery and non-electric kitchen utensils and articles. Adjustments are the result of a comparison with export statistics data.
05.5.1	Major tools and equipment	HBS, RTS and import-export data are used to estimate expenditures on tools and equipment for houses and gardens. Equipment for houses and gardens is mostly imported.
05.5.2	Small tools and miscellaneous accessories	For estimation small tools and miscellaneous accessories HBS data are used, with adjustment from RTS data added.
05.6.1	Non-durable household goods	The estimation of expenditure for goods for routine household maintenance is done based on HBS data.
05.6.2	Domestic services and household services	The main source for this expenditure class is HBS data.
06.0.0	Health	This COICOP division includes direct payments by households for medical products, outpatient and hospital services. Payments by government are classified as government final consumption or more specifically as social transfer in kind and a part of actual individual consumption.
06.1.1	Pharmaceutical products	Estimation of this COICOP class is the result of the combination of different sources: financial statements of providers of health services, RTS, National Health Insurance Fund data, as well as HBS data and other sources.
06.1.2	Other medical products	From RTS data on turnover medical products, therapeutic appliances and equipment are obtained.
06.1.3	Therapeutic appliances and equipment	The main source for this expenditure class are HBS data and RTS data.
06.2.1	Medical services	The estimation of expenditures of these services is based on HBS, financial statements of health institutions and The Institute of Public Health of Serbia “Dr Milan Jovanović Batut” data.
06.2.2	Dental services	The estimation of expenditures of these services is based on HBS, financial statements of health institutions.
06.2.3	Paramedical services	Data from The Institute of Public Health of Serbia on the number of provided paramedical services and the HBS structure are used as main indicators for this COICOP class.
06.3.0	Hospital services	Most hospital services are provided “*free of charge”* through government social transfers. Expenditure on private hospital services is paid directly. Expenditure reimbursed (or paid direct) by private insurers is included. The volume of total health services is based on the annual survey on budgetary users and financial statements of various health centres.
07.0.0	Transport	This division is sub-classified into three groups, and a number of classes within each group, which are separately calculated. The division covers various household goods and services such as purchases of vehicles, operation of personal transport equipment and transport services.
07.1.1	Motor cars	The estimate of the purchases of vehicles (new cars and imported used cars) is based on official registration documents (total number and number of first time registered passenger cars from the Ministry of Interior) and the commodity flow method based on external trade (import) data and professional magazines information (number of new and used purchased cars). RTS and HBS data are also available, but HBS data are underestimated, while within the RTS it is rather difficult to separate purchases intended for household consumption and purchases intended for business purposes. Special attention has been paid to estimating of cars that entrepreneurs use for personal purposes, separate estimates are made for the part which refers to GFCF, and the part included in HFCE. Also, additional estimates are made for expenditures on purchase and maintenance of company cars used for private purposes.
07.1.2	Motorcycles	Estimates for motor cycles are based on RTS data and the number of registered motorcycles (Ministry of Interior data), with some breakdown by engine capacity. Data from external trade (on import and export of motor cycles by different engine capacity) are taken into account as well.
07.1.3	Bicycles	The main source for estimating bicycles are HBS data and external trade statistics data.
07.2.1	Spare parts and accessories for personal transport equipment	The estimates of expenditure on spare parts and accessories for personal transport equipment are based on RTS data.
07.2.2	Fuels and lubricants for personal transport equipment	RTS data are the main data source for estimating consumption of fuels and lubricants for personal transport equipment. The data are reduced by the amount of intermediate consumption, and augmented by the value of income in kind.
07.2.3	Maintenance and repair of personal transport equipment	Estimation of expenditures on maintenance and repair of personal transport equipment is based on RTS data and HBS data.
07.2.4	Other services in respect of personal transport equipment	Estimation of expenditures on maintenance and repair of personal transport equipment is based on RTS data and HBS data.
07.3	Transport services	The estimates of households expenditure on transport services, provided by rail, road (intercity and urban), air and other modes of transportation are obtained from surveys undertaken in the framework of transport statistics and from financial statements of the providers of these services. The estimate relating to business travel is made separately and this part is excluded from the total revenue of passengers transport. Also, the expenditures relating to the COICOP item package holidays are excluded.
07.3.1	Passenger transport by railway	Starting point for the estimation of passenger transport by railway are transport statistics data on railway transport related to passenger-kilometres, transported passengers as well as revenue from passenger transport. Revenue from passenger transport by railway is diminished with the amount of business travel.

COICOP code		Description
07.3.2	Passenger transport by road	For the estimation of passenger transport by road, transport statistics data on passenger-kilometres, transported passengers as well as revenue from passenger transport are used.
07.3.3	Passenger transport by air	Transport statistics data on air transport related to passenger-kilometres, transported passengers as well as revenue from passenger transport are the main sources for estimation this COICOP class.
07.3.4	Passenger transport by sea and inland waterway	Inland waterway transport is rare in Serbia. For its estimation HBS data are used as the main source.
07.3.5/6	Combined passenger transport/Other purchased transport services n.e.c.	The main data sources for the estimation of combined passenger transport is HBS data, with adjustments made based on comparison with data from financial statements of providers of these transport services.
08.0.0	Communication	This COICOP division consists of the household expenditures on three groups: postal services, telephone and telefax equipment and telephone and telefax services.
08.1.0	Postal services	The estimates of expenditure on postal services are obtained from transport statistics data. Within transport statistics, all data relating to post activities are taken from the public enterprise Post of Serbia.
08.2.0	Telephone and telefax equipment	The estimation of expenditure on telephone and telefax equipment is based on RTS and HBS data.
08.3.0	Telephone and telefax services	Data from transport statistics (taken from the companies that provide telecommunication services: "Telekom Srbija", "VIP mobile", "Orion telekom", "Telenor") and the Regulatory Agency for Electronic Communication and Postal Services) are used for the estimation of expenditures on fixed, mobile and internet services.
09.0.0	Recreation and culture	This COICOP division comprises very diverse household expenditures on goods and services. It is divided into six groups and several classes which are separately calculated.
09.1.1	Equipment for the reception, recording and reproduction of sound and pictures	The estimates of expenditure are based on HBS data and external trade statistics data.
09.1.2	Photographic and cinematographic equipment and optical instruments	The estimates of expenditure are based on HBS data and external trade statistics data.
09.1.3	Information processing equipment	RTS data are main source for estimation expenditure of information processing equipment. Results from a regular statistical survey on ICT usage by households/individuals on the number of households that have computers as well as average price of computers, are used as additional data for cross-checking.
09.1.4	Recording media	HBS data and external trade statistics data are main data source for estimation recording media.
09.1.5	Repair of audio-visual, photographic and information processing equipment	Estimation of household expenditure on repair of audio-visual, photographic and information processing equipment is based on HBS data and external trade statistics data.
09.2.1	Major durables for recreation and culture	Consumption of major durables for outdoor recreation is estimated on the basis of RTS data.
09.2.2	Musical instruments and major durables for indoor recreation	RTS is main data source for estimation expenditures on musical instruments and major durables for indoor recreation. Adjustments are result of comparison with external trade statistics data.
09.2.3	Maintenance and repair of other major durables for recreation and culture	HBS data are used for estimation expenditures on maintenance and repair of other major durables for recreation and culture.
09.3.1	Games, toys and hobbies	The expenditure estimates of these COICOP classes are based on HBS, RTS data and external trade statistics data.
09.3.2	Equipment for sport, camping and open-air recreation	The expenditure estimates of these COICOP classes are based on HBS, RTS data and external trade statistics data.
09.3.3	Gardens, plants and flowers	The expenditure estimates of these COICOP classes are based on HBS, RTS data and external trade statistics data.
09.3.4/5	Pets and related products/Veterinary and other services for pets	The expenditure estimates of these COICOP classes are based on HBS, RTS data and external trade statistics data.
09.4.1/2/3	Recreational and sporting services/ Cultural services/ Games of chance	Estimation of recreational and sporting services is based on data from financial statements of providers of these services.
09.5.1	Books	The estimates of household expenditure on newspapers, books and stationery are based on HBS and RTS data.
09.5.2	Newspapers and periodicals	The estimates of household expenditure on newspapers, books and stationery are based on HBS and RTS data.
09.5.3	Miscellaneous printed matter	The estimates of household expenditure on newspapers, books and stationery are based on HBS and RTS data.
09.5.4	Stationery and drawing materials	The estimates of household expenditure on newspapers, books and stationery are based on HBS and RTS data.
09.6.0	Package holidays	The estimates of expenditure on package holidays are based mainly on HBS data. Air company data and data of tourism statistics are also used. Package holidays are estimated gross, i.e. as all inclusive holidays (all-inclusive packages) or individual tours including travel, food, accommodation, guides etc.
10.0.0	Education	Household expenditure within this COICOP division is divided in four types of education services.
10.1.0	Pre-primary and primary education	The coverage of this COICOP group relates to tuition fees paid to elementary schools and other educational establishments. Estimates of expenditures on pre-primary and primary education services are based on market output of general government (related to education). These are checked against data from the regular survey of education statistics on the number of children in educational institutions of preschool education and the number of pupils in primary schools.
10.2.0	Secondary education	Expenditures under this item relate to tuition fees paid to secondary schools and other educational establishments. The estimates of expenditure on secondary education are based on market output of

COICOP code		Description
		general government and ad hoc survey data. The total number of secondary schools and pupils are available, with private secondary schools taking a small share in the total. For private schools estimates are based on annual average tuition fees.
10.3.0/4.0	Post secondary non-tertiary education/Tertiary education	This item includes post-secondary education of different duration. Expenditures under this item relate to tuition fees paid to universities and other educational establishments. The number of private universities is not small in Serbia. Also, a considerable part of students on the government universities that pay tuition fees. The estimates of expenditure on tertiary education are based on market output of general government and ad hoc surveys data, and separate estimates are based on annual average fees for private universities and fees paid to the government universities taking into account the number of students at the appropriate type of university (from education statistics).
10.5.0	Education not definable by level	This covers expenditures on items such as evening classes and similar courses provided for general education and training rather than for obtaining educational qualifications. The estimates of expenditure for these services are based on HBS, education statistics and on financial statements of provider of these services. Additional estimates are made for various trainings (language courses, computer courses, etc.) that companies pay for their employees.
11.0.0	Restaurants and hotels	This COICOP division is sub-classified into two groups (catering and accommodation services), which are separately calculated.
11.1.1	Restaurants, cafés and the like	This COICOP class includes all restaurant services, even if the restaurant is located within another activity, for example in a theatre, at a bus station etc. “Take-away” sales of food and beverages from food premises and street stalls are also included. Tourism statistics data on total catering turnover are broken down to lower levels using the structure from HBS and the tourism survey.
11.1.2	Canteens	Estimates of household expenditures on canteens are the result of the applied structure from HBS to annual turnover in catering (tourism survey).
11.2.0	Accommodation services	As for catering services, the estimate of accommodation services is based on tourism statistics, HBS and financial statements (of providers of accommodation services) data. Separate estimates relating to consumption of non-resident tourists are made in the framework of net purchases abroad estimation. Data on foreign and domestic tourists' arrivals and overnight stays (from tourism statistics) are used as quantitative indicators.
12.0.0	Miscellaneous goods and services	This COICOP division is sub-classified into seven very diverse groups which are further broken down to many classes, all separately calculated.
12.1.1	Hairdressing salons and personal grooming establishments	Household expenditures on hairdressing salons and personal grooming establishments are estimated based on financial statements of providers of these services and on HBS data.
12.1.2	Electric appliances for personal care	HBS data are the main source for the estimation of expenditures on electric appliances for personal care. After comparing results with the RTS data, adjustments are made.
12.1.3	Other appliances, articles and products for personal care	The main data source for estimation expenditures on the other appliances, articles and products for personal care are RTS data.
12.2.0	Prostitution	The estimates of prostitution are based on the Ministry of Interior data, on information obtained from the Internet, newspapers, TV programs, etc.
12.3.1	Jewellery, clocks and watches	Expenditure on jewellery, clocks and watches etc. and related repair services is estimated on the basis of HBS and RTS data.
12.3.2	Other personal effects	HBS data and RTS data are the main source for estimation expenditure on other personal effects.
12.4.0	Social protection	This COICOP class covers household payments for such services as child care and child day care centres, and for residential homes for elderly services and for caring for individuals in their own homes. Hence, separate estimates are made for child care services and other social protection services. Estimation is based on HBS data and data about the number of child care and elderly homes and the number of their users. Ad hoc surveys data are used as an additional source.
12.5.1	Insurance	The estimates are based on a sample survey conducted by the NBS and on data on premiums and claims from financial statements of insurance companies.
12.6.1	FISIM	The distribution of FISIM to user-sectors was carried out as part of the revision for 2013. Using the NBS data on interbank loans and interest rates, the internal reference rate was calculated and the distribution of FISIM conducted.
12.6.2	Other financial services n.e.c	Using NBS data on fees and commissions, the distribution of other non-FISIM components (to user-sectors) of the output of banks was carried out. The part referring to HFCE is included. Bank charges are derived from estimates of fees and charges paid to banks by the household sector on the basis of data from NBS.
12.7.0	Other services n.e.c.	Financial statements together with ad HBS data are main data sources for the estimation of other services n.e.c.
13.0.0	Resident households expenditure in the rest of the world and non-resident expenditure on the economic territory	HFCE data by national concept are obtained by subtracting the expenditures of non-resident households on the Serbian territory and by adding the expenditures of resident households abroad. Estimates for both purchases of residents abroad and non-residents on the domestic territory are based on the BoP data (“travel” item). This item is divided into personal and business parts and only the personal part is included for HFCE. For the distribution of total non-residents’ expenditures on the economic territory among COICOP items a special tourists survey and other information about tourism are used.

3.3 NPISH final consumption expenditure

The sector of non-profit institutions serving households (NPISH) consists of units which have independent legal status and perform services for households. These units are not under government control or financing; the main source of their financing are voluntary contributions (in cash or in kind) and membership fees. The main kinds of NPISH units are:

- Trade units
- Professional and learned societies
- Political parties
- Churches and religious societies
- Social, cultural, recreational or sports clubs
- Charities, relief and aid organization

The Business Register of SORS does not contain a breakdown of units by institutional sectors. Hence, there is no survey on NPISHs, nor any breakdown according to COPNI. The main data source on NPISH is annual financial statements, which contain data on expenditures of NPISHs.

Value of the final consumption expenditure of NPISH is based on the calculation of non-market output provided free of charge. The value of total output of NPISH is calculated according to the cost method, as the sum of compensation of employees, intermediate consumption, the consumption of fixed capital and other taxes on production. The non-market output is obtained by deducting market output and output for own final use from total output. Output for own use includes the output of software for own use and R&D output. Market output are regarded as market sales of goods and services of NPISHs.

According to convention, final consumption expenditure of NPISH is considered as individual consumption that is transferred to actual final consumption of households.

Benchmarks and extrapolations are not used in the estimation of final consumption of NPISH.

3.4 Government final consumption expenditure

Government final consumption expenditure represents current expenditures by general government units on services to the community. General government final consumption expenditure is divided into expenditures for collective services and expenditures for individual services. Individual services are related to expenditures for health, recreation, culture and religion, education and social protection, whereas all other expenditures are considered to be collective services. Services provided by general government units are free of charge or charged at prices which cover only a small proportion of costs, therefore it is considered that output of the government sector has no directly observable market value, but is defined to be equal to the sum of the production costs:

Output = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid – Other subsidies on production received[14] *+ Operating surplus*[15]

The final consumption expenditure of general government is estimated as output subtracted by receipts from sales of goods and services provided by government units (market output) and output for own final use plus social benefits in kind.

[14] It is considered that government units do not receive subsidies, i.e. funds received from government are treated as intra-governmental transfers.

[15] By convention, operating surplus for the government units is equal to zero.

Final government consumption expenditure = Output – Sales of goods and services[16] + Social transfers in kind

The general government sector consists of units which provide goods and services to the community or to individual households, primarily financed by compulsory levies on other sectors (taxation), while sales of goods and services in the market constitute a less significant source of revenue. The general government sector consists of direct budgetary users (such as ministries, local municipalities, social security funds) and of indirect budgetary units, as well as of the non-financial and financial corporations that are classified into general government sector in accordance with the ESA 2010 rules.

General government final consumption expenditure is estimated using the same data sources as used for the components of the production and generation of income accounts of the general government sector.

The main data sources are:

- data from the Treasury Administration;
- annual financial statements

The Treasury Administration provides data on revenues and expenditures for central government bodies and agencies, whereas annual financial statements of government units provide data on revenues and expenditures of non-market non-profit institutions classified in the general government sector.

All information needed for the estimation of output and final consumption components are provided in the mentioned data sources (the exception is consumption of fixed capital, which is estimated indirectly).

3.5 Gross Fixed Capital Formation

3.5.1 Sources and methods

Gross Fixed Capital Formation (P.51g) is measured by the total value of a producer's acquisitions, less disposals, of fixed assets during the accounting period. The acquisitions are made by resident business entities aimed at obtaining new, as well as increasing the value or replacement of the existing capacities. GFCF refers only to the assets that have come into existence as outputs from processes of production, and that are themselves used repeatedly or continuously in other processes of production over periods of time longer than one year. The fundamental point of distinction between intermediate consumption and gross fixed capital formation is whether commodities are used up during the course of a particular period or whether they yield benefits beyond that period. Furthermore, all fixed assets are covered whether they are bought in the country or abroad, acquired by barter, received as capital transfer in kind, produced and retained for own use, or obtained via financial lease.

As opposed to fixed assets obtained via financial leasing, where the lessee acquires almost the same rights as those of the owner, the assets obtained by operational leasing (equipment and property lease) are not regarded as investments. Expenditures on acquisition of durables purchased by households are also excluded from gross fixed capital formation. In the case of households as consumers, all expenditure except the purchase of dwellings is treated as final consumption expenditure, whether or not it yields future benefits. Therefore a purchase of a motor vehicle by a household (but not by an associated unincorporated enterprise) is treated as final consumption expenditure, whereas the same

[16] Sales of goods and services include market output, output for own final use and payments for non-market output.

purchase by a business is classified as gross fixed capital formation. In addition, the reduced value of fixed assets resulting from their consumption and obsolescence or holding losses on capital goods as well as exceptional and catastrophic losses due to floods, fire, drought, epidemic diseases with bred animals, war devastations, etc., is not considered as decrease in investments.

The compilation of GFCF is carried out for the transactions presented in box below.

Box 9. Gross Fixed Capital Formation – transactions

ESA code	Transaction
P.51g	Gross fixed capital formation
P.511	Acquisitions less disposals of fixed assets
P.5111	Acquisitions of new fixed assets*
P.5112	Acquisitions of existing fixed assets
P.5113	Disposals of existing fixed assets
P.512	Costs of ownership transfer on non-produced assets

* Also included major improvements to fixed assets, large land meliorations, used equipment purchased abroad as well as second-hand passenger cars purchased from natural persons.

Among the transactions listed above, most of the attention in GFCF is paid to Acquisitions of new fixed assets (P.5111). Investments in new fixed assets include acquisitions of capital goods that have not been subject to purchase or exchange between direct users of these goods (made directly from contractors, manufacturers of equipment, or fixed assets produced under own arrangements). The integral components of this category distinguished by their investments purpose are as follows:

- investments in construction and acquisitions of new facilities,
- investments in renovations, reconstructions or enlargements of existing fixed assets,
- maintenance of the level of existing capacities (with impact on the intensification and rationalization of work processes).

Investments with the purpose of increasing the capacity or significantly extending the life of an existing asset are distinguished from ordinary repairs and maintenance (intermediate consumption) but the choice is not always clear-cut, as any repairs, like improvements, could be said to improve the performance or extend the life of an asset. Therefore, estimates rely to a large extent on the recording practices adopted by businesses for distinguishing between these two items, because in this case the company accounting rules and the system of national accounts are very similar. There is no threshold to separate major repairs from regular maintenance but the accounting definitions clearly draw the distinction.

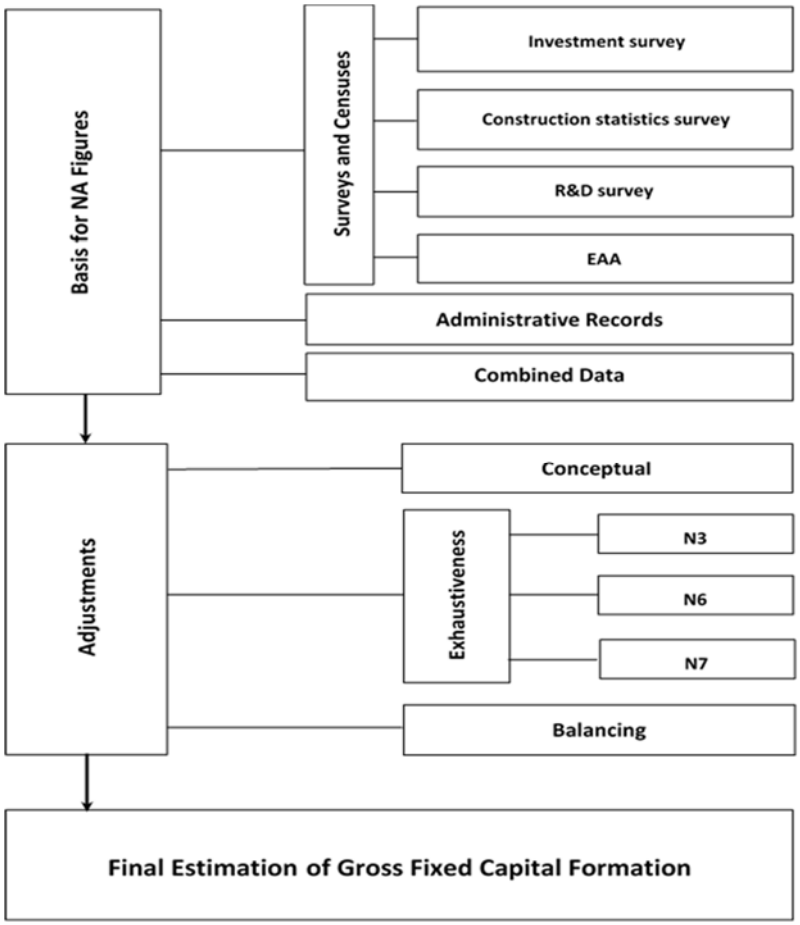
Annual data on Gross Fixed Capital Formation are compiled within a matrix scheme including three classifications, conform to the concepts and requirements of the European System of Accounts (ESA 2010):

- classification of fixed assets (AN.11),
- industrial classification of economic activities (NACE Rev. 2) and
- classification of institutional sectors (S1).

The breakdown of the acquisitions less disposals of fixed assets in the cross-classification tables provides a detailed picture of the investment activity in the country. In general, according to the aforementioned classifications, the most substantial part of GFCF is realized in the sector of non-financial corporations - more than 70% on average. Within types of fixed assets, almost half of the total relates to machinery and equipment (weapons systems included), whereas observed by activities, the highest share in the creation of GFCF has the section of manufacturing - practically one-fourth of the final figure comes from this sector.

A review of the detailed GFCF compilation procedures including data sources used and their adjustments to national accounts purpose are summarised below in the calculation scheme (Figure 1).

Figure 1 GFCF – main data sources and estimation methods used



Compilation of GFCF is performed in several stages:

- taking-over data from statistical surveys and administrative data in an aggregate form,
- methodological adjustments,
- adjustments for completeness,
- balancing adjustments to GFCF as a result of reconciliation procedures between the production and expenditure sides of GDP, as well as the balancing procedures within the SUT.

The importance of available sources and procedures for the final capital-goods demand estimation is illustrated through the following quantitative breakdown:

- approximately 70% - investments statistics,
- almost 10% - other reliable statistics, administrative sources and combined data,
- the remaining portion - estimated, essentially with reference to the exhaustiveness issues and conceptual and balancing adjustments.

Given the multi-source character of the investments and the fact that it represents a kind of statistics of synthesis, a wide range of data collection techniques are used in GFCF compilation procedure. Primary and supplementary statistics carried out by the SORS (codes of statistical questionnaires included) as well as administrative data used in compiling investment estimates are listed in the following box:

Box 10. Overview of data sources used for the GFCF compilation

	Data source	Questionnaire code	Indicators
1	***Investment survey***	**INV-01**	acquisitions and disposals of fixed assets by type
	Other branch statistics surveys		
2	***Construction statistics***		
	Annual survey on construction works	**GRADJ-11**	construction production value; construction activity by types of constructions according to Classification of Types of Construction; type of construction works; data on investor, etc.
	Monthly survey on building permits	**GRADJ-10**	data on issued building permits: type of construction, its size and location of constructions, value, data on investor (legal or physical entity), number of dwellings, etc.
	Semi-annual survey on prices of dwellings of new construction	**GRADJ-41**	price structure of new construction dwellings: price of construction, price of land and other costs
3	***Research and Development Survey***		
	Survey on research and development for enterprises and centres of excellence	**IR-1**	expenditures by type (current costs, investment costs), by sources of funds (domestic investing and from abroad); number of employees in R&D, number of researchers in HC and FTE; by occupation, by level of education, gender, age; output: R&D works and papers (projects and studies), by scientific fields and type of research and by ordering parties; published R&D articles and monographies; inventions and patents, small patents etc.
	Survey on research and development for faculties, R&D institutes	**IR-2**	expenditures by type (current costs, investment costs), by sources of funds (domestic investing and from abroad), by primary socio-economic objectives
	Survey on research and development for non-profit organizations – associations	**IR-3**	expenditures by type (current costs, investment costs), by sources of funds (domestic investing and from abroad), by primary socio-economic objectives
4	***Labour market statistics***		
	Monthly survey on employees and their salaries and wages	**RAD-1**	averages wages and salaries by activities
	Survey on registered employment		number of employees by activities (registered employment data)
	Labour Force Survey	**LFS**	number of employees by activities (formal/informal employment data)
5	***Retail Trade Survey***		
	Monthly retail trade turnover	**TRG-10**	data on turnover of goods in retail trade - division 47, NACE Rev. 2
	Quarterly Survey on retail trade	**TRG-16**	data on turnover of goods in retail trade - division 47, NACE Rev. 2
	Quarterly Survey on wholesale and retail trade, and repair of motor vehicles and motorcycles	**TRG-16M**	data on turnover of goods in wholesale and retail trade, and repair of motor vehicles and motorcycles - division 45, NACE Rev. 2

	Data source	Questionnaire code	Indicators
6	***External Trade***		
	Unified customs document on the imports and exports of goods – Custom Declaration (Single Administrative Document)		value of exports and imports of goods; imports of capital goods by physical entities
7	***Economic Accounts for Agriculture***	**EAA**	livestock number and turnover, by species and categories; data on number of beehives/colonies of bees, average weight per head, production of milk, wool, eggs and honey; consumption of own-produced livestock products and obtained milk products; quantities and values of agricultural products; value of plants, orchards and vineyards; land preparation costs and costs of care of young plants and vineyards; construction assets and equipment purchased within the section of agriculture, forestry and fishing, etc.
Administrative data			
8	***Financial Statements Data (SBRA)***		data on intangible assets, real estate, plant and equipment and biological assets
9	***Treasury Administration Data (Ministry of Finance)***		data on changes in fixed assets by types
10	***Ministry of Defence***		government expenditure in military equipment
11	***Balance of Payments (NBS)***		data on exports and imports of goods and services

The primary data source for calculating components of gross fixed capital formation is the Annual survey on investments in fixed assets (INV-01 form), which has been conducted by the SORS since 1966. The survey was upgraded and harmonized in accordance with international statistical standards and methodologies, i.e. with the European System of Accounts 2010 (ESA 2010) and System of National Accounts (SNA 2008). The additional sources, used for survey coverage checking and data validation, are the information from the statistical annex of the annual accounting statements of enterprises and accounting statements of direct and indirect budgetary units of general government.

Reporting units are all economic subjects in the country that are direct investors, regardless of the type of ownership. Full coverage is ensured for large and medium-size legal entities. The data collection is sample based for micro and small legal entities as well as for unincorporated enterprises obliged to submit annual financial statements. The coverage extension by including unincorporated enterprises (UIEs) obliged to prepare financial statements significantly improved the estimate of GFCF in that area by activity and by product. However, investments in fixed assets of physical persons and unincorporated enterprises that are not subject to submitting annual financial statements are calculated based on available data of the statistical surveys in the area of construction, agriculture, external and domestic trade, etc.

The questionnaire includes detailed product levels of produced fixed assets, separately for acquisitions of new and existing assets and for disposals of existing assets. A new classification of fixed assets is incorporated in the questionnaire to gather information in the light of the ESA 2010 concepts and definitions of GFCF transactions and products. Furthermore, the following items: transaction costs, own-account production of GFCF goods, capital transfers in kind and the value of fixed assets acquired under hire-purchase and financial leasing (the total value of capital goods is recorded when the owner takes possession) are encompassed, as well. The questionnaire comprises, also, acquisitions and disposals of non-produced non-financial assets showing land transaction costs and major land improvement work separately. In addition, the acquisitions less disposals of valuables are included while exceptional and catastrophic losses excluded from the questionnaire.

Investments in fixed assets are reported in the questionnaire at purchaser's prices at the moment of acquisition of capital goods, regardless of whether the payment has been effected and whether they have been finalised. The value of effected purchased investment includes producer price, trade

margin, charges incurred in taking delivery of the asset such as transport costs, assembling costs, costs for studies, projects, investment proposals, expertise, technical inspection, property transfer costs, as well as all indirect duties, taxes and fees (excluding revaluation). Value added tax is included only in case when the concerning economic subject is not entitled to VAT deduction, i.e. most of gross fixed capital formation is valued without VAT. When fixed assets are produced, i.e. constructed under own arrangement and used for own needs, they are valued at basic prices. The decreased value of fixed assets resulting from sale is expressed by the value of sales agreement, with property transfer costs deducted.

The GFCF composition from the inquiry provides direct investment data of units covered by the survey. After the basic data checks, survey results are directly applied in the estimation process and there is no specific method to adjust them, except for non-response. The overall response rate is relatively high and is on average slightly below 90%. Coverage, measured as the ratio between INV-01 data and the final national accounts figure reaches around 70% on average. However, even though the investment survey supplies the major part of data it is necessary to employ additional statistical surveys and carry out various adjustments to provide data required for the system of national accounts. Apart from analytical procedures imposed on primary and supplementary official statistics, in GFCF compilation alternative collection methods are needed to be applied to some administrative sources, particularly for items such as military equipment or other specifics fixed assets in general government sector.

Data sources and calculation methods vary depending on the type of fixed asset, but also on the institutional sector as well as on the industry in which the capital goods are acquired. Considering that the estimates of GFCF cover expenditure by both legal entities/incorporated enterprises (IEs) and unincorporated enterprises (UIEs), the investments compilation is split between the two categories applying different methods and computation procedures and using different data sources for each part. A summary of procedures needed for transition from private accounting and administrative concepts to ESA 2010 NA concepts are provided in the following box:

Box 11. Gross Fixed Capital Formation – overview of additional compilation procedures

Conceptual adjustments	*R&D expenditure adjustments* - based on compulsory set of tables used as bridge between data sources and national accounts
	Capitalization of own-account software production – based on average output per IT expert and 50% deduction rule
	Own account construction - usage of market prices and ratio of construction costs to the other cost (excluded cost of land underlying the construction assets) per square meter
	Construction assets of religious communities conceptual adjustments - based on price structure of construction assets
Exhaustiveness	*Non-response* - respondents mean imputation (N7 type of exhaustiveness adjustments)
	Construction assets adjustments of households – based on LIM (N3 type of exhaustiveness adjustment)
	Addition to the investments in *construction assets of small and micro enterprises* – based on appropriate coefficient of investments (N6 type of exhaustiveness adjustment)
	Churches and religious communities construction assets imputations – based on LIM (N3 type of exhaustiveness adjustment)
	Ownership transfer cost – a fixed percentage, ranges from 3.0% to 4.5%, applied on the value of the fixed assets sold (N7 type of exhaustiveness adjustment)

3.5.2 Detailed estimation methods used by AN code

Gross fixed capital formation encompasses a large range of different types of fixed assets, which are integrated by type of fixed assets into six subgroups:

- dwellings,
- other buildings and structures,
- machinery and equipment,
- weapons systems,
- cultivated biological resources,
- intellectual property products.

The classification of fixed assets applied to Serbian national accounts conforms to the international standard ESA 2010. Determining certain type of investments is of utmost importance from the point of economic policy creation and directing development trends for a national economy. Generally speaking, investments in machinery, equipment, software, etc. are expected to increase the national production capacity, while investments in traffic infrastructure, construction of dwellings and some other buildings increase the social wealth and create the precondition for an efficiency of all other investment categories. The following subsections provide more details on each of the GFCF component and their estimation.

3.5.2.1 Dwellings

GFCF in dwellings constitutes a major entry in investment policy. The exhaustiveness of dwellings investment estimates is particularly required for the country's wealth monitoring and estimation purpose, especially in the area specifically concerned with the household sector, as well as for compliance with international standards and methodology purposes. Within types of construction assets almost one fourth of the total investments relates to dwellings. Furthermore, the major part of these investments are realized in the household sector comprising more than half of total dwellings investments.

GFCF in dwellings encompass investments in buildings, or designed parts of buildings, used exclusively or primarily as residences or as casual housing (e.g. for leisure time purpose), such as family houses, dwelling buildings at rural holdings, villas, country houses, mountain huts, hunting facilities, etc. Houseboats, barges, mobile homes and caravans used as principal residences of households are also included, as are public monuments identified primarily as dwellings and residential buildings for communities. Dwellings acquired for military personnel are included because they are used for the production of housing services, in the same way as dwellings acquired by civilian units.

All expenditure on the construction of new dwellings and improvements to existing dwellings are included (ordinary repairs and maintenance are not counted as capital formation). Architects and quantity surveyors fees are also treated as part of gross fixed capital formation. The costs of clearing and preparing the site for construction are part of the costs of new dwellings (and other buildings and structures) and are therefore included in the value of the buildings.

The GFCF figures include items of equipment which are integral to the completed dwelling, namely all permanent fixtures customarily installed in residences (e.g. central heating boilers and devices, elevators, water supply and electricity network, etc.) but moveable equipment installed by tenants and owner-occupiers is included in household or intermediate consumption. For existing dwellings only the costs incurred in transferring ownership are included in GFCF. These are so-called agency charges, which cover the remuneration received by brokers and agents for intermediation and sales of available housing assets.

Incomplete dwellings are included to the extent that the ultimate user is deemed to have taken ownership, either because the construction is on own-account or as evidenced by the existence of a contract of sale or purchase. In the case of the construction of dwellings (as a building or other structure) extending over several accounting periods, the output produced each period is treated as being sold to the purchaser at the end of the period: i.e. recorded as fixed capital formation by the purchaser rather than work-in-progress in the construction industry. The output is treated as being sold to the purchaser in stages. When the contract calls for stage payments, the value of the output are approximated by the value of stage payments made each period. Where there is no certainty as to the ultimate purchaser, the incomplete output produced each period is recorded as work-in-progress.

Data on housing investments are compiled from the investment survey and construction statistics. Both categories of expenditure - acquisitions of new and existing dwellings and the value of alterations and additions to existing dwellings are within the scope of these surveys.

The main data source for legal units is the Annual survey on investments in fixed assets covering large and mid-sized enterprises on a census basis and small and micro-enterprises on a sample basis. However, even though the survey ensures that the major part of data for incorporated enterprises is obtained, it is necessary to carry out the following adjustments to provide data on GFCF in dwellings, which are essential for the system of national accounts: imputation for non-response (N7 type of adjustments); transfer costs, based on a fixed percentage for dwellings – 4.5% applied on existed residential buildings sold in accounting period (N7 type of adjustments); and additional adjustment of around 25% for small and micro enterprises based on comparison between LFS and financial statements data on number of employees and on the coefficient of investment per worker in the microenterprises derived from the investment survey (N6 type of adjustments).

Figures on individual housing construction and reconstruction are based on information from the construction statistics department. Estimated corrections to the construction statistics data are listed as follow: an adjustment of more than 20% for other costs (permits, design costs etc.) is applied on construction works done, based on data on price structure per square meter of dwellings; an additional adjustment of about 25% for small and micro enterprises based on comparison between LFS and FS data on number of employees is applied on UIEs (N3); and imputation of investments in construction works obtained from EAA.

The substantial part of the total housing construction (30% on average) are supplementary estimated (conceptual and exhaustiveness imputations) to meet the shortfall on the 70% statistical coverage of all dwelling investments established by the two aforementioned researches. Eventually, these adjustments are reassessed based on available census data. Census results reflect the most comprehensive, detailed, and therefore the most reliable data source for housing construction and a special model for the assessment of dwellings investments based on it has been elaborated exhaustively in SORS.

3.5.2.2 Other buildings and structures

GFCF in other buildings and structures account for a substantial proportion of total gross fixed capital formation in the country, with the average share in final investments figure ranging from 30% to 40%. In terms of quantity, the dominant part (about 80 percent) of total gross fixed capital formation in construction assets relates to other buildings and structures investments type. The portions of the other buildings and structures GFCF in total investments vary somewhat depending on the form of ownership and sub-industry involved. Observed by activities, the largest share is noted in the section of manufacturing, while most of these investments are derived from the non-financial sector.

Considering the fact that the detailed results of the Annual survey on investments in fixed assets are the main data source and the starting point for this aggregate compilation, it was of great importance to incorporate a new classification of fixed assets into the investment questionnaire in line with

international statistical standards and methodologies. With regard to the AN.11 classification of fixed assets, there are several changes within the fixed assets categories that have been introduced:

- improvements to land are treated as a fixed asset (separately from the natural assets that represent the value of the land in its unchanged state), and has been added to the category buildings and structures,
- the costs of ownership transfer on all land are included with land improvements, but shown separately in the questionnaire due to practical reasons of accurate reporting. Land has been included as well into the questionnaire, together with these transfer costs.

The major part of this category refers to the investments in non-residential buildings and other structures. This group comprises purchases and constructions of new non-residential buildings and other structures. Costs of planning, and other investment related charges are included. The value of additions, alterations, improvements and renovations undertaken on existing non-residential buildings and other structures also appears in this category. The separate asset categories which appear on the survey are the following:

- *Buildings other than dwellings* include whole buildings or parts of buildings not designed as dwellings (warehouses and industrial buildings, commercial buildings, buildings for public entertainment, hotels, restaurants, schools, hospitals, prisons[17] etc.). Fixtures, facilities and equipment that are integral parts of the structures are included. For new buildings, costs of site clearance and preparation are included. Public monuments identified primarily as non-residential buildings are also covered.
- *Other structures* cover structures other than buildings, including the cost such as investments, extensions of and major improvements on tangible fixed assets making part of the infrastructure (like public roads, public utilities, dams, dikes and public vehicles) Long-distance pipelines, communication and power lines; local pipelines and cables, ancillary works; constructions for mining and manufacture; and constructions for sport and recreation are accounted in this category as well as the costs of site clearance and preparation. Public monuments for which identification as dwellings or non-residential buildings is not possible are included as are shafts, tunnels and other structures associated with mining mineral and energy resources, and the construction of dykes, flood barriers etc. intended to improve the quality and quantity of land adjacent to them. The infrastructure necessary for aquaculture such as fish farms and shellfish beds is also included. In the case of the construction of civil engineering works extending over several accounting periods these aggregates are always directly registered as investment. In other words, work in progress is not recorded for these assets. These assets are always assumed to be produced under a contract involving interim payments. Therefore they are directly recorded as investments. Gross fixed capital formation in buildings and civil engineering works are equally divided to the previous years by stages of construction.
- *Land* improvements are the result of actions that lead to major improvements in the quantity, quality or productivity of land, or prevent its deterioration. Activities such as land clearance, land contouring, creation of wells and watering holes that are integral to the land (could not be physically separated from land itself) in question are to be treated as resulting in land improvements. Activities such as the creation of seawalls, dykes, dams and major irrigation systems which are in the vicinity of the land but not integral to it, which often affect land belonging to several owners and which are often carried out by government, result in assets that are to be classified as structures. Land improvements represent a category of fixed assets distinct from the non-produced land asset as it existed before improvement. Land before improvements are effected remains a non-produced asset and as such is subject to holding

[17] Prisons, schools and hospitals are regarded as buildings other than dwellings despite the fact that they may shelter institutional households

gains and losses separately from price changes affecting the improvements. In cases where it is not possible to separate the value of the land before improvement and the value of those improvements, the land is allocated to the category that represents the greater part of the value. Estimation on expenditures on land improvement is the accepted result from the INV-01 survey for the observed part of the economy, without further adjustments.

- *Ownership transfer costs* comprise all costs associated with acquiring and disposing of land. By convention, they are included within land improvements. Ownership transfer costs include the various fees which are incurred by either the buyer or seller of real estate, namely legal fees on transfer, real estate sales commissions, stamp duties on transfer and other government charges. In the Republic of Serbia the costs of ownership transfer on land are directly derived from investment questionnaires without further corrections, as well. Since the costs of transferring the ownership of land can seldom be estimated independently of the costs of transferring the ownership of the buildings and installations on that land, the aggregate costs of transferring the ownership of land and real estate are considered to be part of gross fixed capital formation in buildings and structures.

Data on other buildings and structures investments are compiled from the investment survey and construction statistics. Both categories of expenditure - acquisitions of new and existing dwellings and the value of alterations and additions to existing dwellings are within the scope of these surveys.

The main data source for legal units is the investment survey which ensures the substantial part of the data. In order to be harmonized with the national accounts standards following adjustments are applied to primary data on other building and structures investments: imputation for non-response (N7 type of adjustments); transfer costs, based on a fixed percentage for other buildings and structures - 4.0% applied on existed construction assets sold in period observed (N7 type of adjustments); an additional adjustment of about 25% for small and micro enterprises based on comparison between LFS and financial statements data on number of employees and on the coefficient of investment per worker in the microenterprises derived from the investment survey (N6 type of adjustments).

Figures on structures construction in households are based on information from construction statistics department. Estimated corrections to the construction statistics data for UIEs are summarised as follow: an adjustment of more than 20% for other costs (permits, design costs etc.) is applied on construction works done, based on data on price structure per square meter; an additional adjustment of approximately 25% for small and micro enterprises based on comparison between LFS and FS data on number of employees is applied on UIEs (N3 type of adjustments); imputation of investments in construction works obtained from EAA.

Summarizing, conceptual and exhaustiveness imputations contribute in total buildings and structures investments with 5% on average.

3.5.2.3 Machinery and equipment

Gross fixed capital formation in machinery and equipment by producers consists of the value of their acquisitions of new and existing machinery and equipment less the value of disposals of their existing machinery and equipment. The value of alterations and major improvements undertaken on existing machinery and equipment also constitutes part of the category.

Machinery and equipment in the Republic of Serbia make up almost half of total investments. By far the largest part comes from non-financial enterprises – about 80% of total GFCF in equipment. Observed by activities, the highest share (over 30%) in the creation of investments in machinery and equipment is observed in the section of manufacturing.

In the SORS investments statistics equipment is broken down by origin into domestic and imported, and further into 10 categories of investment goods. The main groups of machinery and equipment

assets consist of transport equipment, machinery for information, communication and telecommunications equipment (ICT), and other machinery and equipment. Tools that are relatively inexpensive and purchased at a relatively steady rate, such as hand tools, may be excluded. Also excluded are machinery and equipment integral to buildings that are included in dwellings and non-residential buildings. Machinery and equipment other than weapons systems acquired for military purposes are encompassed; weapons systems form another category but in SORS it is shown within category Other machinery and equipment.

Machinery and equipment such as vehicles, furniture, kitchen equipment, computers, communications equipment, etc. that are acquired by households for purposes of final consumption are not fixed assets and their acquisition is not treated as gross fixed capital formation.

Gross fixed capital formation is not recorded until the ownership of the equipment assets is transferred to the unit that intends to use them in production. Thus, new machinery and equipment that has not yet been sold forms part of additions to inventories of finished goods held by the producers of the assets. Similarly, imported machinery and equipment is not recorded as gross fixed capital formation until it is acquired by the unit that intends to use it. Assets which are purchased under a financial lease arrangement are treated as involving an effective change of ownership, and are therefore recorded as gross fixed capital formation by the lessee, not the lessor.

The annual investment survey, as the main data source, gives detailed but preliminary figures for equipment investments. A significant part of the total investments in machinery and equipment (approximately 20%) are subsequently estimated to meet the shortfall of the 80% statistical coverage of all machinery and equipment investments established by the above mentioned research. The additions come from: administrative sources, combined data sources for UIEs investments, exhaustiveness adjustment covered by N7 type of imputations - non-response, transfer costs, based on a fixed percentage for machinery - 3.5% applied on existed equipment sold in accounting period (N7 adjustment type) etc.

Accounting statements for enterprises and also the foreign trade statistics are used in order to crosscheck and verify the results of the investment survey related to these assets.

3.5.2.4 Weapons systems

The adoption of the updated conceptual framework of the ESA 2010 entails a different treatment in the national accounts for the category government expenditure on military equipment. Expenditures on weapons systems that meet the general definition of assets have been capitalized. Weapons systems include vehicles and other equipment such as warships, submarines, military aircraft, tanks, missile carriers and launchers, etc., which are used repeatedly, or continuously in the production of defence services for more than one year, even if their peacetime use is simply to provide deterrence. Most single-use weapons they deliver, such as ammunition, missiles, rockets, bombs, etc., are treated as military inventories.

The Ministry of Defence regularly supplies the investment questionnaire with information on investments in dwellings and other buildings and structures. Machinery and equipment other than weapons systems acquired for military purposes, but of a kind that could be used for civilian purposes of production, have been included in questionnaire, as well.

In order to comply with the ESA 2010, SORS collects additional information on the acquisition of military equipment, which is not covered by the investment survey. For that purpose, an agreement with the Ministry of Defence ensuring that these data will be provided to SORS on a regular basis has been reached. Total expenditures on acquisition of weapons systems come from extracts from accounting statement by the Ministry. These numbers are used to come to a final estimate of GFCF for weapons systems.

Investments in weapons systems are shown within the category Other machinery and equipment, allocated as a new item of gross fixed capital formation but not displayed separately.

3.5.2.5 Cultivated biological resources

Cultivated assets comprise livestock and plantations, which are used repeatedly and continuously for more than one year to produce other goods and services. Cultivated biological resources are broken-down by two components – tree, crop and plant resources yielding repeat products (growing of new plants, forestation of rocky and barren land, and forestation by planting, vineyards) and animal resources yielding repeat products (breeding stock, dairy cattle, sheep reared for wool and draught animals). The largest part of cultivated resources belong to the section of agriculture, forestry and fishing - more than 90% of the total, while observed by institutional sectors, households contribute, on average, with 60% in creation of this assets item.

Investments in *plantations* include the value of seedlings planted in nurseries or upkeeping the existing ones, the cost of preparing land for new plantations, which are built within the year and the cost of treatment and care of young plantations (up to 3 years). Purchases and own account production of vineyards, orchards, fruit-trees, shrubs etc. is contained in this category, which produce goods for more than one year. Forests purchased and produced for environmental, tourism, recreation or hunting, trapping and game propagation purposes are contained as well. Purchases and production of forests for logging are excluded as well as annual crops (these data are to be accounted as inventories).

The investment estimates for *livestock* are based on the average value of the weight measured in kilograms of the increased number of livestock between the end and beginning of the accounting period. Gross fixed capital formation in livestock is equal to the total value of all mature animals and immature animals produced on own account by users of the livestock, less the value of their disposals. Disposals consist of animals sold or otherwise disposed of, including those sold for slaughter, plus those animals slaughtered by their owners. Exceptional losses of animals due to major outbreaks of disease, contamination, drought, famine, or other natural disasters are recorded in the other changes in the volume of assets account and not as disposals. Animals bred solely for slaughter do not represent fixed assets.

The principal source for GFCF estimation of cultivated assets are the Economic Accounts for Agriculture (EAA). Within EAA, the value of plants is estimated by using the data of average number of plants per ha and the average purchasers' prices. Land preparation costs and costs of care of young plants are estimated by the price that enterprises calculate for their services. The data on the average weight of cattle by categories from Survey on livestock numbers is used for the estimation of livestock. Starting from 2008 Survey on livestock numbers was implemented within the Agricultural holdings survey and within the Agricultural production survey in 2014. This survey provides the data on livestock numbers and turnover, by species and categories, as well as data on number of beehives/colonies of bees, production of milk, wool, eggs and honey, consumption of own-produced livestock products and obtained milk products. The sample covers about 1.5% agricultural holdings in the territory of the Republic of Serbia based on the results from the Census of agriculture 2012.

Data on sale and purchase of agricultural, forestry and fishing products are obtained from the Monthly report on realized agricultural products from own production of agricultural enterprises and cooperatives and from the Monthly report on purchase of agricultural products from individual holdings. These reports also provide the data on quantities and values of agricultural products. The value of delivered products is calculated according to selling producers' prices and the value of purchases is computed according to purchaser's prices, which organizations pay to individual holdings, for acquired products.

Supplementary data source for cultivated capital goods is the investment survey (INV-01), which refers not only to incorporated enterprises and cooperatives in agriculture, but also cover all other

activities in the country. Apart from the adjustments for non-response no specific corrections are made on these data.

3.5.2.6 Intellectual property products

Intellectual property products are the result of research, development, investigation or innovation leading to knowledge that the developers can market or use for their own benefit in production for more than one year. They are characterized by the fact that most of their value is attributable to intellectual endeavour.

It is estimated that the share of IPP value in total investments considerably exceeds figure of 10%. In terms of quantity, non-financial enterprises account for a most substantial proportion of gross fixed capital formation in IPP.

Data on IPP investments are mainly compiled from the R&D and investment surveys. A major part of the total IPP (30% on average) is supplementary estimated (conceptual and exhaustiveness imputations) to meet the shortfall of about 70% of the statistical coverage of all intellectual property products investments established by the two aforementioned researches.

A distinction is made between five main types of gross fixed capital formation in IPP:

- R&D,
- mineral exploration and evaluation,
- computer software and databases,
- entertainment, literary or artistic originals,
- other intellectual property products.

Within this type of fixed assets, most of the estimated investments relate to the computer software and R&D activities.

3.5.2.6.1 Research and development

The adoption of the updated conceptual framework of the ESA 2010 entails a different treatment in the national accounts for the category expenditures for research and development. The major change is considering these expenses as capital formation on fixed assets, instead of the current treatment as intermediate consumption.

Research and development consists of the value of expenditures on creative work undertaken on a systematic basis in order to increase the stock of knowledge, including knowledge of man, culture and society, and use of this stock of knowledge to devise new applications (cost of unsuccessful R&D is covered as well as freely available R&D). This does not extend to including human capital as assets.

Total value of R&D expenditures is estimated slightly below 5% of the total GFCF. The major part of investments in research and development is created in the section of education. The main data source used is the annual survey on R&D conducted by the SORS, following the principles laid down in the Frascati Manual. The following units are covered by R&D survey:

- R&D institutes, organizations, businesses and institutions whose primary activity is R&D;
- R&D units that are part of a businesses;
- Tertiary education institutions, whose activity is education and R&D;
- Non-profit organisations - associations that are engaged in R&D.

The survey measures total expenditures on research and development by economic activities and by institutional sectors. Data are available on employment, value of scientific works, gross salaries, material costs, investment costs, etc.

Much of the information collected through the surveys of the FM can be used in estimating R&D as capital formation, but changes are needed to make them consistent with national accounts concepts. In fact, the compulsory set of tables used as bridge between data sources and national accounts shows precisely how to move from FM headings and measure output of the performance of R&D as well as R&D GFCF. In particular the first table below concerns the calculation of output of R&D and the second one is used for the derivation of capital formation estimates for R&D. The following tables show a simplified list of headings used in implementation of R&D expenses:

Table 12. Output of R&D

Year :_____	**S11**		**S12**		**S13**		**S14**		**S15**		**TOTAL**	
	+	-	+	-	+	-	+	-	+	-	+	-
Frascati Manual Intramural expenditures on R&D												
Subtract payments for licences to use intellectual products (principally R&D assets, such as patents) that should be recorded as GFCF												
Subtract expenditure on own-account production of software												
Add payments to postgraduate students not included in FM data												
Subtract capital expenditures												
Add other taxes on production not included in FM data												
Subtract other subsidies on production												
Add extramural purchases of R&D that should be recorded as intermediate consumption. Applies only to R&D industry												
Sub-Total (1 to 8): current expenditures												
Add estimate of consumption of fixed capital plus a return to capital (for non-market producers only consumption of fixed capital):												
- Option 1: As percentage of current expenditures (line 9) or compensation of employees												
- Option 2: As cost of capital services measured with a PIM												
Adjustment for exhaustiveness												
Other adjustments												
Balance : Output of R&D												

The data on R&D gross domestic expenditure as obtained from research and development statistics, within the FM framework, is the starting point to derive an estimate of R&D output. FM intramural expenditures comprise of labour costs, material and other current costs and capital expenditures. In order to avoid double counting two items have been subtracted from intramural expenditures on R&D:

- capital expenditures (gross expenditures on fixed assets used in the R&D such as land and buildings, instruments and equipment, computer software, etc.),
- expenditure on own-account production of software used in R&D.

Data on the last item obtained from the R&D survey are adjusted by coefficients based on the ratio between the total estimated and reported amounts in the investment survey of that category. In order to calculate current expenditures, the following general rule is applied: all expenditures on purchases

of R&D or on R&D production by market producers in the Scientific Research and Development industry (Division 72 ISIC Rev. 4) should be recorded as intermediate consumption. When a unit classified to NACE 72 works as a sub-contractor to another unit performing R&D, there is the possibility of double counting the value of capital formation. To avoid this, acquisition of the intermediate R&D product performed by the sub-contractor is recorded as intermediate consumption – as a component of the final product rather than a capital asset. That information is obtained from research and development statistics. For additional estimation of capital services, the ratio of the estimated value of gross operating surplus to current expenditures of an industry specializing in R&D is applied to the intramural expenditures on R&D. An estimate of consumption of fixed capital is obtained as percentage of current expenditures (option 1 mentioned in the template). Other taxes on production and other subsidies on production are, also, derived based on appropriate ratios identified for market producer in NACE 72 - Scientific research and development services division, i.e. the cost structure from the financial statements of the NACE activity code 72 is applied on current expenditures of total R&D activity.

Furthermore, as the R&D surveys do not provide all the required data for exports and imports estimation, alternative data sources are used (the imports and exports of R&D services are captured through a Balance of Payments Survey). Trade margins have not been included. They are considered to be close to zero. There are very few, if any, expenditure taxes on the output of the R&D industry, and this item is dropped. There is no expenditure subsidies applied to R&D services as products, and this item has been dropped as well. Furthermore, subcontracted R&D is subtracted from the output of R&D services. The following table illustrates the R&D investments computation procedure:

Table 13. GFCF of R&D

Year : _____	**S11**		**S12**		**S13**		**S14**		**S15**		**TOTAL**	
	-	+	-	+	-	+	-	+	-	+	-	+
R&D output												
Add imports of R&D												
Add trade margins												
Add taxes on products												
Subtract subsidies on products												
Subtract extramural purchases of R&D that should be recorded as intermediate consumption. Applies only to R&D industry												
Subtract acquisitions of R&D not expected to provide a benefit												
Subtract changes in inventories of finished R&D												
Subtract exports of R&D												
Add net purchases of R&D between domestic sectors												
Sub-Total												
Balance: Total GFCF of R&D												
Add/subtract capital transfers of R&D assets between sectors in capital account												

Sector allocation of R&D is based on FM surveys - covered are business, government and non-profit units as well as higher educational institutes such as universities.

3.5.2.6.2 Computer software and databases

Computer software consists of computer programs, program descriptions and supporting materials for both systems and applications software. Gross fixed capital formation in computer software includes both the initial development and subsequent extensions of software as well as acquisition of copies that are classified as assets. Databases consist of files of data organized in such a way as to permit resource-effective access and use of the data. Databases may be developed exclusively for own use or for sale as an entity or for sale by means of a licence to access the information contained.

The total value of investments in software and databases are estimated at more than 5% of the total GFCF on average. Software and databases purchased on the market is valued at purchasers' prices, while software developed in-house is valued at its estimated basic price or at its costs of production if it is not possible to estimate the basic price.

A distinction is made between two main components of gross fixed capital formation in software and databases: purchased and own account part. The purchased part are compiled from the investment survey while software for own use development calculation bases on employment and earnings statistics, both including appropriate exhaustiveness adjustments. Software produced for internal use is result of independent estimates explained in more detail in following section.

Software for own use

National accounting standards entail the capitalization of own-account software production. However, businesses rarely capitalize their own-account software production in practice, and so it is difficult to get a reliable estimate of own-account software investments directly from investment survey (in practice, this data source proved to be insufficient).

The production of own-account software is measured as the sum of production costs. These costs consist of compensation of employees (labour cost), intermediate inputs, indirect business taxes and consumption of capital, etc. Due to lack of data, production costs are estimated, in general, by grouping them into two parts: labour costs and non-labour costs.

In order to estimate own-account software production it needs to be clarified what the difference between production of software professionals and own-account software production is. Software production of software professionals refers to the total amount of software produced by all the software professionals, which includes both software to be used internally (own-account software) and software to be sold. Own-account software production refers to the total amount of software produced in-house by software professionals for internal use. It thus excludes the software production linked to software to be sold. Almost all the software is produced by software professionals. However, non-professional staff also produces some software. The volume of software production by non-professional staff are expected to be relatively small and it is ignored.

The steps of estimating own-account software investment at macro level are summarized as follows:

- estimation of the labour costs of own-account software is equal to labour costs of software professionals (number of software professionals multiplied by average compensation), excluding labour costs linked to the production of software to be sold and labour costs linked to other activities (maintenance, management, etc.)
- addition of the non-labour costs of own-account software (intermediate consumption, consumption of capital, etc.) including net operating surplus.

The number of software professionals is obtained from LFS (code 213 of ISCO 88). Considering that own-account software is produced in all industries, the number is broken down by group of

economic activity including the government sector (also obtained from LFS). Compensation of software professionals includes wages, salaries, social contributions (including imputed social contributions) and all supplementary labour costs. The total labour costs of total software production by software professionals is estimated by multiplying the number of software professionals with average compensation in NACE 62 (Computer programming, consultancy and related activities). To calculate the labour costs of own-account software production, the Task Force on Software Measurement proposes that an adjustment factor of 50% could be used as a preliminary solution to estimate the time spent on software development by computing professionals (i.e. it is assumed that software professionals for the development of own-account software spend 50 percent of their working time).

SORS implemented the 50 percent deduction rule by multiplying the total number of IT experts (from LFS) with the average output per employee and then applying the factor 0.5. The user cost method for estimating parts of the output (such as compensation of employees, non-labour costs and net operating surplus) is applied. Non-labour costs are calculated as sum of estimated current expenditure, consumption of fixed capital and taxes on production. Current expenditures consist of average monthly expenditures for a single IT expert (meal allowances, computer parts, internet, rent and electricity, etc.) while consumption of fixed capital was estimated for software and computers. The objective is to estimate a market price for this own account production, so net operating surplus is included, using the cost structure of the computer services industry. Taxes on production and net operating surplus are calculated as a certain percentage of other non-labour costs and output, respectively.

3.6 Changes in inventories

3.6.1 Introduction

Due to inflation (extremely high in the Republic of Serbia in certain years), corporate accounting and reporting standards are specific particularly regarding valuation of inventories. In the national accounts, this category is revalued according to the principles of ESA 2010. However, some of the changes in inventories related to military inventories (AN.124) are still missing due to the inability to obtain data from the Ministry of defence of the Republic of Serbia. The calculation of inventories is based on the IMF Working Paper *"Changes in Inventories in National Accounts*[18]*"* and is applied on series of data starting from 1995. In addition, definition and classification given in *"Eurostat-OECD compilation guide on inventories"*[19] have been followed. Changes in inventories (P.52) are recorded in SORS by institutional sector, by industry (NACE 2-digit) and by four types of inventories: materials and supplies, work-in-progress, finished goods and goods for resale. However, this breakdown is not explicitly shown in the published national accounts, given that only the total figure is published. The level of GDP is determined from the output side, and thus the statistical discrepancy represents the difference between the output and the expenditure approach.

[18] https://www.imf.org/external/pubs/ft/wp/2003/wp03120.pdf

[19] https://ec.europa.eu/eurostat/documents/3859598/8228095/KS-GQ-17-005-EN-N.pdf/12e80726-35a3-46a9-869a-8f77ca3be742

3.6.2 Data sources and methods

The primary source used to estimate inventories for each institutional sector are the financial statements, in particular its statistical annex that provides information about the level of inventories at the beginning and at the end of the year by type of inventories at NACE 4-digit level. As an additional sources branch statistics data are used, especially SBS, Manufacturing, Agriculture, Domestic trade and Construction.

3.6.1.1 Non-financial corporations (S.11)

Large enterprises (full format accounts) are required to report their inventories by type: materials and supplies (ADP 0045); work in progress (ADP 0046), finished goods (ADP 0047), goods for resale (ADP 0048), immovable property intended for sale (ADP 0049) and advance payments on stocks (ADP 0050). That is not case for all SMEs (abridged format is applied for those governed by special regulations of the law) for which only the total of inventories (ADP 0044) is known. Therefore, an assumption is made that for each industry class (NACE 4-digit) composition of the inventories of SMEs (abridged format) is the same as that of large enterprises (full format). It should be noted that part of the missing inventories of SMEs only hold about a fifth of total inventories in the economy, so that a relatively large margin of error in the breakdown by type of inventories for this group will nevertheless have a little impact on the breakdown of the total inventories. Furthermore, a number of corrections on the business accounting and classification of their activities are made for several large enterprises to ensure consistency with ESA 2010 classifications and transactions. Newly introduced SBS profiling survey enabled better quality of estimates for all NA indicators of these enterprises, including opening and closing stocks of inventories, by types of inventories.

3.6.1.2 Financial corporations (S.12)

Besides financial statements of NBS and some holding enterprises, the main data sources for changes in inventories of financial corporations sector (S.12) is the complex annual report for banks and insurance companies (KGI-02). The major part of the changes of inventories of this sector is the result of productive activity of the Institute for Manufacturing Banknotes and Coins that is specialised part of the National Bank of Serbia that deals with manufacturing of banknotes and coins as well as all documentation necessary for the operation of one country. The data on inventories of the Institute are provided to SORS on a very detailed level by types of inventories and material content (group of products) of each type of inventories.

3.6.1.3 General government (S.13)

Main data sources for general government sector beside financial statements of enterprises are financial statements of budgetary users. Budgetary users provide their inventories by type: material and supplies (sum of ADP 1026 – inventories of material and ADP 1027 – inventories of supplies), finished goods (ADP 1023) and goods for resale (sum of ADP 1022 – stockpiles and ADP - 1024 goods for resale). The number of units of this sector has increased over the last years due to a revision of the market/non-market boundary.

3.6.1.4 Households (S.14)

Concerning the unincorporated enterprises of households, there are about 200,000 of them in Serbia, but it should be emphasized that only 20,000 of them have an obligation to submit an annual report to the SBRA. Based on the information available from these 20,000 reports for the evaluation of changes of inventories, extrapolation is carried out for the whole population of unincorporated enterprises. For each divisions (NACE 2-digit), an output/inventories ratio (so called “acceleration coefficient”) is calculated for micro enterprises (SMEs) and available unincorporated enterprises for each type of inventories. The underlying assumption is that stocks of inventories is an industry specific characteristics (and it is the same for unincorporated business and micro size enterprises

within the same industry). Comparing calculated coefficients for micro enterprises with total and micro unincorporated enterprises, taking into account the acceleration coefficient applied in the previous year, the smallest coefficient of acceleration is chosen. The opening and closing stocks, by type of inventories and NACE divisions is estimated applying simple equation, output for S.14 for current and previous year times selected acceleration coefficients.

Agriculture is one of the most significant activities in the economy of the Republic of Serbia, and therefore the inventories of agriculture are very important in calculating P.52. They are dominant in the sector of households, and often determine the sign of the change in total inventories. Due to their specificity, a model within the economic accounts for agriculture has been developed to calculate the inventories.

3.6.1.5 Non-profit institution serving households (S.15)

Direct information on the inventories of this sector is available via financial statements. The total amounts involved are much smaller compering to the other sectors.

3.6.3 Valuation of inventories

In Serbian accounting, general accounting methods applied for recording inventories are "First In First Out" (FIFO) or average cost method (according to the average price principle). The latter method is the more common one. For calculating holding gains/losses, SORS uses the FIFO model that is presented in the IMF Working Paper mentioned above. Valuation of the changes in inventories is compiled by inflating the opening stock to a mid-point in time, and by deflating the closing stock to a valuation at the same point in time. Therefore, for all economic activities, a December price index is used to derive the beginning/end of the year inventory values, which are then revalued to the year average prices. The calculated difference between the two results is considered to be NA measure of change in inventories, enabling the holding gains/losses to be derived as the differences between the nominal changes in inventories and the estimated changes (NA measure) in inventories in current prices.

Holding gains/losses from inventories represent the change of their value, due only to changes in prices of goods in store. In principle, holding gains/losses used to adjust output and intermediate consumption are calculated as the difference between the price of acquisition and the average price of each type of inventories. Outputs of the respective sectors and industries are reduced by the amount of these holding gains/losses on production inventories and inventories of goods for resale. Holding gains/losses from inventories of materials and supplies are added to intermediate consumption.

The same valuation method of changes in inventories is applied to all five institutional sectors. The exception is the estimation of the changes of inventories of the economic accounts of agriculture, which will be explained in detail later.

The calculations take place at the 2-digit level of the NACE Rev.2 (divisions). For each type of inventories, suitable price indices are used to measure holding gains/losses:

- for changes of inventories of materials and supplies:
  - ✓ Producers' prices index (PPI) of intermediate goods except energy is applied for all division except
  - ✓ for divisions 41, 42 and 43 where is applied PPI of materials for incorporating in construction
- for finished goods and work-in-progress:
  - ✓ PPI of agricultural and fishing products is applied for divisions 01,02 and 03
  - ✓ PPI of appropriate activity is applied for proper divisions from 04 to 33
  - ✓ PPI of electricity, gas, steam and air conditioning supply is applied for division 35

- ✓ PPI of water collection, treatment and supply is applied for divisions 36-39
- ✓ Price indices of catering services is applied to 55 and 56 divisions
- ✓ Total PPI is applied to all remain divisions of NACE,

- for goods for resale:
  - ✓ Consumer price index for goods except electricity and water is applied to all divisions.

The model for estimation changes of inventories in the EAA involves the use of data from two main data sources:

- surveys from agriculture production statistics from which data on harvested areas and production on annual basis are derived,
- reports from domestic trade statistics, data on monthly traded quantities (sale of agricultural products by legal entities from their own production and purchases from the agricultural holdings by legal entities).

These data are then used for estimating sales and stocks at the end of the reference period, assuming that production of the observed year Y corresponds to traded quantities in the third and fourth quarters of that year and the first two quarters of the following year. Consequently, the first two quarters of the next year (Y+1) correspond to the ending stocks of the previous year (observed year, Y). The monetary value of the ending stocks is obtained by applying the average price of the product for the observed year, Y.

The average "producers' prices" used in the above model are calculated based on the prices captured by SORS from the perspective of purchasers on a monthly basis. In fact, basic data for calculating average producer prices of agricultural products (quantities, values and average prices of purchased and sold agricultural products) are submitted monthly to SORS by legal entities buying agricultural products directly from agricultural holdings as well as by legal entities selling products from their own production. Compilation of EAA changes in inventories is based on NACE Rev.2. The list of activities, which defines the agricultural industry, corresponds, in principle, to division 01 of that classification: Crop and animal production, hunting and related service activities.

At the end due to balancing procedure, values for S.11, S.14 (part on unincorporated enterprises) and S.15 were corrected. Structure of exhaustiveness for each sector is applied for balancing in current prices, while for balancing in constant prices structure of formal economy (financial statements), different for each of three sectors, is applied

Total inventories make up about two percent point of GDP in 2017, with movements between 1 to 3 percent points in the period 2005-2017, excluding extreme cases caused by high variability of agricultural production.

3.7 Acquisitions less disposals of valuables

Valuables are assets that are not used primarily for production or consumption, that do not deteriorate over time under normal conditions and that are acquired and held primarily as a store of value.

Valuables comprise the following types of good:

- precious stones and metals, excluding monetary gold;
- antiques and other works of art;
- other valuables, such as jewellery, made from precious stones and metals, and collectors' items.

Considering that the annual investments survey contains explicit information on acquisitions and disposals of valuables, these data are directly extracted from the questionnaire in order to provide

statistics for this aggregate. No supplementary estimation for possible changes in valuables has been made with respect to part of economy, which is not covered by the inquiry. Survey results, after basic data checks, are directly applied in the estimation process and there is no specific method to adjust them, except for non-response.

3.8 Exports and imports of goods

3.8.1 Sources and methods

SORS is responsible for compiling and disseminating external trade statistics in goods. The data are compiled by the External Trade Statistics Division of SORS. The sole data source for external trade statistics in goods are customs declarations, both for exports and for imports of goods. Since January 2004, the Single Administrative Document (SAD, completely harmonized with EU standards, has been used. Customs offices and authorized forwarding agent firms submit all documents to the Customs Administration. SORS takes over the customs declarations, prepared for automatic data processing, from the Customs Administration and it engages in their further statistical control and processing.

The data are then passed on to the balance of payments (BoP in the National Bank of Serbia (NBS. The balance of payments is compiled according to the IMF's methodology BPM6 (Balance of Payments and International Investment Position Manual, sixth edition, 2009. Data are disseminated at monthly and annual level, in EUR million and USD million. In 2014, for national accounts purposes, NBS started to compile external trade data in RSD in order to avoid any inconsistencies between BoP and NA data that could arise from the possible use of different exchange rates.

The procedure is used in BoP statistics to take into account the CIF to FOB adjustment for imports as well as adjustments based on coverage (merchanting, goods without customs declarations, goods sent abroad for processing, returned goods, non-monetary gold, etc.. The CIF/FOB correction is calculated as a fixed 3.1 percent (estimate provided by SORS of the CIF value for all years.

Table 14 below shows reconciliation between exports of goods data according to international merchandise trade statistics (IMTS, compiled by SORS, and total exports of goods on a balance of payments basis, compiled by the NBS.

Table 14. Reconciliation between IMTS and BoP data on exports of goods

Exports of goods according to the BoP (1) = (2) + (5) + (8)
General merchandise on a BoP basis (2) = (3) – (4)
Of which re-export:
Exports of goods according to external trade statistics (3)
Coverage adjustment (4)
Net exports of goods under merchanting according to the BoP (5) = (6) – (7)
Goods acquired under merchanting (negative exports) (6)
Goods sold under merchanting exports (7)
Non-monetary gold (8)

The reconciliation between imports of goods data according to international merchandise trade statistics (IMTS), compiled by SORS, and total exports of goods on a balance of payments basis is done in similar way as in the case of exports of goods, as shown in table 15 below.

Table 15. Reconciliation between IMTS and BoP data on imports of goods

Imports of goods according to the BoP (1) = (2) + (6)
General merchandise on a balance of payments basis (2) = (3) – (4) – (5)
Imports of goods according to external trade statistics (3)
Coverage adjustment (4)
Adjustment for classification[1)] (5)
Non-monetary gold (6)

[1)] CIF/FOB adjustment made in the BoP statistics on the basis of coefficient estimated by SORS

After reconciliation between IMTS and BoP data has been made, final BoP data on exports and imports of goods are provided to the national accounts division of SORS. The data on external trade in goods, compiled by the external trade statistics division of SORS, are used in the national accounts after their adjustment to the totals for exports and imports derived from the BOP statistics. As shown in the tables 16 and 17 below, additional adjustments have been made in the national accounts in order to take into account non-observed economy (exhaustiveness adjustments).

Table 16. National accounts data on exports of goods

Exports of goods according to the BoP (1)
Exhaustiveness adjustment according to NA (2)
Exports of goods according to the NA (3) = (1) + (2)

Table 17. National accounts data on imports of goods

Imports of goods according to the BoP (1)
Exhaustiveness adjustment according to NA (2)
Imports of goods according to the NA (3) = (1) + (2)

3.8.2 Coverage and definitions

Coverage according to external trade statistics in goods

Since January 2010, external trade statistics data have been collected, processed and published pursuant to the general trade system. The general trade system ensures better adjustment of change of ownership that is applied in ESA 2010 and BPM6 (*Balance of Payments Manual and International Investment Position Manual, sixth edition, 2009.* It is a wider concept and in exports and imports it covers all goods entering the economic territory of the Republic of Serbia or leaving it, with the exception of goods in transit. Also excepted are transactions of temporary character (goods for exhibitions, test samples, etc.. Back data according to the general trade system are available from 2004.

The coverage of external trade statistics is defined by the kinds of customs procedures. No statistical threshold is applied in collecting data on exports and imports of goods, i.e. every single export and import shipment for which SAD is filled out is covered, irrespective of statistical value and net mass.

With regards to categories of goods included in / excluded from external trade statistics, Serbian external trade statistics follows the international recommendations given by *International Merchandise Trade Statistics: Concepts and Definitions 2010 (Series M, No 52, Rev. 3).*

The registration of external trade data by trading partner country is made according to the principle of the country of destination in exports and the country of origin in imports. The country of destination is the country in which the goods are released into free circulation for consumption or further processing. The country of origin is the country of goods production.

The value of goods in external trade is shown on the basis of prices contracted. The statistical value, which is used for the external trade data, is the value calculated at the Serbian border. It is a FOB value for exports and a CIF value for imports (the invoiced value of goods plus transport and insurance costs to the border of Serbia). When in exports the delivery of goods is agreed abroad, the costs of goods transport, insurance and forwarding from the border of Serbia to the place of delivery abroad are subtracted from the invoiced value. If the delivery of goods is in Serbia, the invoiced value is increased with the costs of goods transport, insurance and forwarding from the place of delivery to the Serbian border. Regarding the re-export of products obtained in inward processing, the statistical value consists of the total value of imported goods for processing, services and domestic goods used in reproduction, as well as the other costs incurred in the customs area of the Republic of Serbia. The statistical value of imported goods presents the basis for assessing the amount of import duties. In re-imports after outward processing the statistical value includes the total value of temporary exported goods, services, incorporated foreign material, as well as the other costs incurred (relative to the goods abroad). The value is calculated according to the official RSD exchange rate, as established on the last working day in the week that precedes the week when the customs duty and other import taxes are established. According to these exchange rates as applied to determine the basis for assessing the amount of import duties, the costs of transport, insurance, transhipment etc. are calculated.

Coverage according to ESA 2010

- *The transactions listed in ESA 2010, paragraph 3.165*

  In line with ESA 2010, statistical data on the exports and imports of goods include the following transactions between residents and non-residents in: (a) non-monetary gold; (b) silver bullion, diamonds and other precious metals and stones; (c) paper money and coins not in circulation and unissued securities (valued as goods, not at face value); (d) electricity, gas and water; (e) livestock driven across frontiers; (f) parcel post; (g) government exports including goods financed by grants and loans; (h) goods transferred to or from the ownership of a buffer stock organisation; (i) goods delivered by a resident enterprise to its non-resident affiliates, except for goods for processing; (j) goods received by a resident enterprise from its non-resident affiliates, except for goods for processing; (k) smuggled goods; (l) other unrecorded shipments, such as gifts and those of less than a stated minimum value. With respect to k) smuggled goods, an adjustment is made on the export side to take into account smuggling of tobacco. Adjustments for smuggling of tobacco are made for years from 2002 to 2013. In addition, data on imports of goods for the period 1995-2017 are adjusted for illegal import of drugs.

- *The exclusion of all the cases listed in ESA 2010, paragraph 3.166*

  In line with ESA 2010, the following goods are excluded from the exports and imports of goods: a) goods in transit through the Republic of Serbia; b) goods consigned to or from Serbian embassies or other enclaves inside the national frontiers of another country; c) transportation equipment and other movable kinds of equipment which leave a country temporarily, without any change of economic ownership, e.g. construction equipment for installation or construction purposes abroad; d) equipment and other goods which are sent abroad for processing, maintenance, servicing or repair; this applies also to goods processed to order abroad when a

substantial physical change in the goods is involved; e) other goods which leave a country temporarily, being generally returned within a year in their original state and without change of economic ownership; f) goods on consignment lost or destroyed after crossing.

Steps taken to record external trade statistics in goods at change of economic ownership irrespective of corresponding physical movement

The following steps, in line with ESA 2010 requirements, are taken in the BoP statistics to record exports and imports of goods at change of economic ownership irrespective of corresponding physical movement:

- *Goods for processing without change of ownership* are excluded from the balance of payments statistics in goods of the NBS, based on specific customs procedures used in international merchandise trade statistics (IMTS).
- In line with ESA 2010, *migrants' personal effects* (personal property that accompanies people changing residence) are excluded from the balance of payments statistics because there is no change in ownership.
- *Returned goods* are excluded from the balance of payments statistics of the NBS.
- *Goods under merchanting* are excluded from the external trade statistics of SORS. However, in line with ESA 2010, the balance of payments statistics records goods under merchanting separately as a negative export when acquired by a resident from a non-resident, and as a positive export when sold by a resident to a non-resident. The difference between sales over purchases of goods for merchanting is shown as the item "net exports of goods under merchanting".
- *Transactions in non-monetary gold* between residents and non-residents that enter or leave the economic territory are included in the external trade statistics of SORS. In line with ESA 2010 / BPM6 all transactions in non-monetary gold between residents and non-residents are recorded even when there is no physical delivery to the new owner—for example, when the non-monetary gold is held at a gold exchange. However, these transactions are of no relevance in Serbian case, i.e. no adjustment is made in the BoP statistics related to non-monetary gold.
- *Goods temporarily exported or imported* (i.e. display equipment for trade fairs and exhibitions; art exhibits, commercial samples and pedagogic material; means of transport, containers and equipment connected with transport; etc.) are excluded from exports and imports of goods if at the time of their dispatch/admission it is known that their intended stay in the receiving country is temporary and after their stay they can be returned in the same state.

Steps to ensure the correct scope of external trade statistics in goods in line with ESA 2010

The following paragraphs provide details on area where further steps are needed to improve the coverage of external trade statistics in goods in line with ESA 2010 requirements.

- *Goods that cross borders as a result of deliveries between affiliated enterprises* are included in the IMTS of SORS, irrespective of whether a change of ownership occurs. On the other hand, in line with ESA 2010, BoP statistics should record a trade in goods transactions only if it can be determined that there is a change of ownership between a resident and a non-resident. So far, no steps have been taken in order to determine if there has been a change of economic ownership, i.e. no adjustments have been made in the BoP statistics to IMTS data.
- For the moments, there are no available data on *goods supplied or acquired by carriers away from the territory of residence of the operator* that are sold directly to non-residents in foreign countries (e.g. oil, natural gas, fishery products, maritime's salvage).

- In line with ESA 2010 recommendations, *ships, aircraft, railway rolling stock, gas and oil drilling rigs and production platforms, and other movable equipment not tied to a fixed location*, which do not cross frontiers, should be included in exports or imports if changes of ownership occur. However, as these transactions are not recorded by customs they remain beyond the scope of IMTS. Due to lack of alternative data sources they are not included in the BoP statistics of the NBS.
- *Goods lost or destroyed after leaving the exporting country but before entering the importing country and after ownership has been acquired by the importer* are recommended to be excluded from the IMTS of the importing country but to be separately recorded. BPM6 includes such goods as imports. In addition, *goods lost or destroyed after leaving the exporting country but before entering the importing country, when ownership has not been acquired* should be recorded in IMTS but no goods transaction should be recorded in BPM6. For the time being, the external trade statistics of SORS do not provide data which would allow the required adjustments in the BoP statistics.
- As mentioned above, in line with ESA 2010 and BPM6, *goods supplied to another economy for processing without change of ownership* and returned to the economy of the owner after processing are not recorded in the B statistics of the NBS, compiled according to BPM6. It means that goods sent abroad for processing are recorded on a net basis, as opposed to a gross basis in the 1993 SNA and the ESA 95. Under the new methodology applied since 2014, data on exports and imports of goods were revised downward by these amounts.

  However, the incompleteness of statistical information on the value of the domestic content in products owned by a non-resident, and/or value of the foreign content in products owned by a Serbian resident, imposes a need for introduction of specific survey that could provide information necessary for correct exclusion of goods sent abroad for processing without change of ownership.

3.9 Exports and imports of services

3.9.1 Sources and methods

The sole data source for the exports and imports of services is the balance of payments statistics, compiled by the NBS. International trade in services covers the provision of services by residents of the Republic of Serbia to non-residents and vice-versa, regardless of whether they are provided in the country or abroad.

Since 2014, for compilation of international trade in services statistics, the NBS applies methodology set in IMF's Balance of Payments Manual 6th Edition (BPM6 and UN's Manual on Statistics of International Trade in Services 2010 (MSITS 2010.

Monthly data on exports and imports of services, compiled by the NBS and expressed in USD values, are provided to SORS. For national accounts needs, the data are recalculated in RSD values using monthly exchange rates, which are reported to the IMF by the NBS.

3.9.2 Coverage

Table 18 below provides the overview of the main categories of services for which export and import flows are recorded within the framework of BoP statistics, compiled by the NBS.

Table18. The scope of the services components according to BPM6

Category of services
Manufacturing services on physical inputs owned by others
Maintenance and repair services n.i.e.
Transport
Travel
Construction
Insurance and pension services
Financial services
Charges for the use of intellectual property n.i.e.
Telecommunications, computer, and information services
Other business services
Personal, cultural, and recreational services
Government goods and services n.i.e.

Chapter 4 THE TRANSITION FROM GDP TO GNI

4.1 Gross national income concept

Gross national income (GNI) is an income concept that seeks to measure the income of the nation generated by its production and its ownership of factors of production less the incomes paid out for the use of the factors of production owned by the rest of the world (RoW), i.e. this aggregate is obtained by adding primary income receivable from the rest of the world (compensation of employees and property income) to GDP and by subtracting primary income payable to the rest of the world (compensation of employees and property income) from GDP. Table 4.1 below shows details of the transition from GDP to GNI, conducted by SORS.

Table 18. Transition from gross domestic product to gross national income

ESA code	Transactions and balancing items
B.1g	**Gross Domestic Product**
D.1	*Plus: compensation of employees (1) = (2) – (3)*
	From the ROW (2)
	To the ROW (3)
D.2	*Minus: taxes on production and imports (not relevant for non-EU countries) (4)*
D.3	*Plus: subsidies (not relevant for non-EU countries) (5)*
D.41	*Plus: interest (6) = (7) – (8)*
	From the ROW (7)
	To the ROW (8)
D.42	*Plus: Distributed income of corporations (9) = (10) – (11)*
	From the ROW (10)
	To the ROW (11)
D.43	*Plus: reinvested earnings on foreign direct investments (12) = (13) – (14)*
	From the ROW (13)
	To the ROW (14)
D.441	*Plus: property income attributed to insurance policy holders (15) = (16) – (17)*
	From the ROW (16)
	To the ROW (17)
D.45	*Plus: rents on land and sub-soil assets to/from the ROW (18)*
B.5g	**Equals: gross national income**

Statistical Office of the Republic of Serbia (SORS) is responsible for compilation and dissemination of GNI figures. The Balance of payments is compiled and published by the National Bank of Serbia (NBS). The NBS provides SORS with all available BoP data on primary income transactions with the rest of the world and SORS uses these data for GNI estimation.

The balance of payments is compiled according to the IMF's methodology BPM6 (Balance of Payments and International Investment Position Manual, sixth edition, 2009). Data are disseminated at monthly and annual level, in EUR million and USD million. For the time being, BPM6 data are available for period 2007 – onwards.

The value of transactions is recalculated from original currencies into the reporting currency by applying the official middle exchange rates of the National Bank of Serbia (NBS) on the transaction date. The main data sources for compiling the balance of payments are: reports submitted to the NBS and data of the Statistical Office of Republic of Serbia.

Information on property income relevant for calculation of GNI are obtained from the BoP primary income account. The primary income account includes collections and payments with respect to compensation of employees and income with respect to investments (direct, portfolio and other investments). Direct investment income includes total profit of legal persons, i.e. dividends and reinvested earnings. Investment income excludes the value of FISIM which is included into trade in services. The main sources of data are the International Transaction Reporting System (ITRS) performed through commercial banks and the NBS, reports on credit-financial transactions and direct reporting.

The residence concept applied in the balance of payment statistics is in line with BPM6 methodology. Residents of the Republic of Serbia are physical and legal entities which have a center of economic interest and residence in the Republic for a period longer than one year. For the purpose of the BoP residents are defined as follows:

- legal entity registered in accordance with regulations and headquartered in the Republic;
- entrepreneur - physical entity registered in the Republic and pursuing a legally allowed activity as a form of profession for the purpose of making profit;
- branch of a foreign legal entity entered into the register with the competent body in the Republic;
- physical entities residing in the Republic, except for physical entities with temporary residence abroad for over a year;
- physical entity - foreign citizen residing in the Republic on the basis of residence permit, and/or work visa for over a year;
- state body and organization, beneficiaries of budget funds of the Republic, beneficiaries of funds of mandatory social insurance organizations, and beneficiaries of local government budget funds;
- diplomatic, consular or other representative office abroad financed from the budget of the Republic, domestic citizens employed in these offices, as well their family members.

Non-residents of the Republic of Serbia are all others not listed above.

4.2 Compensation of employees

According to ESA 2010, compensation of employees (D.1) is defined as the total remuneration, in cash or in kind, payable by an employer to an employee in return for work done by the latter during an accounting period. In the context of BoP statistics, payments to the ROW relate to non-resident employees of resident employers and payments from the ROW to resident employees of non-resident employers. Compensation of employees (D.1) is made of the following components: wages and salaries (D.11) and employer's social contributions (D.12).

The ITRS of the NBS is the only source of data on compensation of employees exchanged with the rest of the world. Consequently, it is also the only source of data used in order to identify resident employees working for non-residents as well as non-resident employees working for residents. The identification is based on separate codes included in the ITRS code list which enable distinguishing resident from non-resident employees.

All transactions related to cross-border flows of compensation of employees are recorded on cash basis.

Compensation of employees exchanged with the rest of the world are recorded in the BoP primary income account on net basis, i.e. the amounts recorded do not include employers' social contributions. In order to obtain compensation of employees on gross basis, SORS makes the estimation of employers' social contributions payable to the RoW applying the tax rate of 15%. On the other side, data on employers' social contributions receivable from the RoW is obtained from the BoP secondary income account.

Compensation of employees received from the ROW includes compensation of employees received by resident employees of foreign diplomatic, consular and other representative bodies of foreign countries or international organizations in Serbia. On the other hand, compensation of employees paid to the ROW includes compensation of employees paid to non-resident employees of Serbian diplomatic, consular and other representative bodies abroad.

4.3 Taxes on production and imports paid to the Institutions of the EU

Not relevant regarding the current status of Serbia as EU candidate country.

4.4 Subsidies granted by the Institutions of the EU

Not relevant regarding the current status of Serbia as EU candidate country.

4.5 Cross-border property income

Property income (D.4) includes interest (D.41), distributed income of corporations (D.42), reinvested earnings on foreign direct investments (D.43), other investment income (D.44) and rents on land and sub-soil assets (D.45). Table 4.2 below shows components of cross-border property income exchanged with rest of the world. No separate estimates have been made in relation to rents on land and sub-soil assets.

Table 19. Cross-border property income

Property income received from the ROW (1)
Interest
Distributed income of corporations
Reinvested earnings on FDI
Other investment income
Rents
Property income paid to the ROW (2)
Interest
Distributed income of corporations
Reinvested earnings on FDI
Other investment income
Rents
Net property income to/from the ROW (1) = (2) – (3)

4.5.1 Interest

According to ESA 2010, interest (D.41) is property income receivable by the owners of a financial asset for putting it at the disposal of another institutional unit. It applies to the following financial assets:

- deposits
- debt securities
- loans
- other accounts receivable

Main data sources on cross-border interest flows recorded in the BoP of the NBS are:

- External loans database of the NBS
- Securities database of the Central Securities Depository and Clearing House (CSD)
- ITRS of the NBS

Information on interest on loans are obtained from the external loans database, maintained by the NBS. The database also provides data on interest income on foreign direct investment as well as interest on financial leases.

Information on debt securities interest are obtained from the ITRS and are cross-checked using data from securities database maintained by the Central Securities Depository and Clearing House (CSD). According to ESA 2010, interest on debt securities comprises interest on short-term securities (bills and similar short-term instruments) and interest on long-term securities (bonds and debentures). In Serbia, almost all interest on debt securities is related to long-term securities, both on the credit and debit side. Investment of non-residents in short-term debt securities is not allowed by Serbian law on foreign exchange operation. On the other hand, negligible amounts were recorded regarding interest on investment of Serbian residents in short-term debt securities.

Information on interest on deposits, bank overdrafts, payments of default interest and other interests flows are obtained from the ITRS.

Data on interest flows are collected on a cash basis.

Table 4.3 below shows components on cross-border interest flows recorded in the BoP statistics of the NBS. The information on interest are broken down with regard to the functional categories of investment. Interest on direct investment is further broken down by three categories of direct investment (direct investor in direct investment enterprise; reverse investment; and investment between fellow enterprises). Interest flows on short-term and long-term debt securities are both recorded under income on portfolio investment item. A split between incomes related to these two items is made.

Table 20. Interest to/from the ROW

Interest received from the ROW (1)
Interest on direct investment
Interest on portfolio investment
Short-term debt securities
Long-term debt securities
Interest on other investment
Interest on reserve assets
Interest paid to the ROW (2)
Interest on direct investment
Direct investor in direct investment enterprise
Direct investment enterprises in direct investor (reverse investment)
Between fellow enterprises
Interest on portfolio investment
Short-term debt securities
Long-term debt securities
Interest on other investment (3) = (4) – (5)
Memorandum item: Interest before FISIM (4)
Financial Intermediation Services Indirectly Measured - FISIM (5)
Interest on reserve assets
Net interest flows to/from the ROW (6) = (1) – (2)

Interest is recorded before the deduction of taxes levied on it. Interest received and paid is recorded inclusive of grants for interest relief, irrespective of whether those grants are directly paid to financial institutions, or to beneficiaries.

As shown in table 4.4 below, the correction to interest paid to the rest of the world is made to offset the FISIM effect of trade. As for the interest received from rest of the world, no correction is made as it is regarded that export of FISIM services is negligible.

Table 21. Effect of the imports of FISIM on interest

Interest paid to the RoW with FISIM (1)
Correction of interest paid to the RoW for FISIM (2)
Interest paid to the RoW without FISIM (3) = (1) – (2)

The external loan database of the NBS serves as a source of data for the calculation of external FISIM. The estimates are based on individual cross-border loans (deposits are regarded to be of no relevance). FISIM is calculated in two phases.

First, a reference rate is calculated as a weighted average of interest rates on interbank loans (domestic banks are debtors, foreign creditors). In the calculations of the reference rate, both maturity and currency are taken into account.

Second, FISIM is calculated as the difference between interest payable by other sectors and interest calculated if the reference rate was used.

In this way calculated FISIM is excluded from interest paid to the rest of the world and is included in the imports of services.

4.5.2 Distributed income of corporations

In the balance of payments, the ITRS provides information on flows of distributed income of corporations (D.42). Distributed income of corporations consists of dividends (D.421) and withdrawals from the income of quasi-corporations (D.422). Table 4.5 shows the components of cross-border flows of distributed income of corporations, recorded in BoP statistics of the NBS.

Table 22 Distributed income of corporations

Distributed income of corporations received from the ROW (1)
Dividends
Withdrawal from the income of quasi-corporations
Distributed income of corporations paid to the ROW (2)
Dividends
Withdrawal from the income of quasi-corporations
Net distributed income of corporations to/from the ROW (3) = (1) – (2)

Within distributed income of corporations, almost negligible amounts have been recorded under withdrawals of income from quasi-corporations.

4.5.2.1 Dividends

The sole source of data on dividends is the ITRS of the NBS. Information on cross-border flows of dividends are recorded in the BoP under direct investment income on equity and investment fund shares. All distributed income of corporation is recorded under the first category of direct investment – investment by direct investor in its direct investment enterprises. As for portfolio investment income, no distributed income of corporations has been recorded under income on portfolio investment.

The data do not include shares issued to shareholders in payment of the dividend for the financial year, i.e. only paid dividends are included.

Dividends exclude super-dividends (dividends that are large relative to the recent level of dividends and earnings). Super-dividends are treated as the withdrawal of owner's equity from the corporation. That treatment is applied to corporations, whether incorporated or quasi-corporate and whether subject to foreign or domestic private control.

Data on dividends include only paid or received dividends at the moment when they are actually paid or received.

4.5.2.2 Withdrawals from the income of quasi-corporations

The ITRS is the sole data source for cross-border flows withdrawals from the income of quasi-corporations.

Withdrawals from the income of quasi-corporations are recorded before the deduction of current taxes on income, wealth, etc. Also, they are recorded on cash basis, i.e. at the moment when they are made by the owners.

4.5.3 Reinvested earnings (RIE) on foreign direct investment (FDI)

The National Bank of Serbia is in charge of estimating reinvested earnings on foreign direct investment (D.43).

In the framework of BoP statistics, data on reinvested earnings on foreign direct investment (FDI) are obtained from reports that companies, banks and other financial organizations submit directly to the NBS, as a part of the direct reporting system.

According to ESA 2010, a foreign direct investment enterprise is an incorporated or unincorporated enterprise in which an investor resident in another economy owns 10 % or more of the ordinary shares or voting power in an incorporated enterprise, or the equivalent for an unincorporated enterprise. Foreign direct investment enterprises comprise those entities that are identified as subsidiaries, associates and branches. A subsidiary is where the investor owns more than 50 %, an associate is where the investor owns 50 % or less, and a branch is a wholly or jointly owned unincorporated enterprise. The foreign direct investment relationship may be direct or indirect as a result of a chain of ownership. "Foreign direct investment enterprises" is a broader concept than "foreign controlled corporations".

In line with BPM6, direct investment is broken down into three categories – investment by a direct investor in its direct investment enterprise, reverse investment, and investment between fellow enterprises.

Indirect links within big company groups are captured through direct reports submitted by resident enterprises which are in direct investment relationship with non-resident entities, in Serbia and abroad. In both cases reporters are obliged to report not only for themselves, but also for all enterprises directly or indirectly owned by them.

The data from direct reports are cross-checked using data from consolidated reports submitted to the Serbian Business registries Agency (SBRA). The reports provide useful data on ownership and links between enterprises.

According to ESA 2010, reinvested earnings on foreign direct investment (D.43) are equal to the operating surplus of the foreign direct investment enterprise

> *plus* any property incomes or current transfers receivable,
>
> *minus* any property incomes or current transfers payable, including actual remittances to foreign direct investors and any current taxes payable on the income, wealth, etc., of the foreign direct investment enterprise

The main sources of data for outward and inward direct investment flows are ITRS reports, direct reporting, reports on credit-financial transactions and SORS which provides the NBS with information on the value of investment in goods.

The FDI register for both FDI Inward and FDI Outward flows is based on ITRS data and data existing in the direct reporting database. These data sources are supplemented with data from SBRA. This FDI register is used for reminders and will be used in the future for making a sample population. The FDI register is regularly maintained by the Balance of Payments Statistics Division.

No threshold is applied to FDI flows, i.e. every single FDI transaction is taken into account.

Data on dividends are obtained from the ITRS while data on RIE come from direct reports (Method II). As data on dividends and data on RIE are obtained from different sources, consistency is not ensured between the data source for profits and the data source for distributed earnings, i.e. the set of direct investment enterprises is not identical in both data sources.

1. Reinvested earnings on foreign direct investments are recorded when they are earned.

4.5.4 Other investment income

4.5.4.1 Investment income attributable to insurance policy holders

According to ESA 2010, investment income attributable to insurance policy holders (D.441) corresponds to total primary incomes received from the investment of insurance technical reserves. The reserves are those where an insurance corporation recognises a corresponding liability to the policyholders.

The calculation of this item is based on data provided by the NBS.

For the time being, there are no specific data sources on cross-border flows of investment income attributed to insurance policy holders, so this item is estimated indirectly using data on sectorial distribution of gross premiums written of domestic insurances business. Only the total of the premium supplements is available which is broken down to institutional sectors, including rest of the world, by gross premiums written.

4.5.4.2 Investment income payable on pension entitlements

According to ESA 2010, pension entitlements arise from one of two different types of pension schemes. These are defined contribution schemes and defined benefit schemes.

For the moment, no data on these flows are estimated in national accounts.

4.5.4.3 Investment income attributable to collective investment fund shareholders

Investment income attributable to collective investment fund shareholders, including mutual funds and unit trusts, consists of the following separate components: dividends attributable to collective investment fund shareholders (D.4431), and retained earnings attributable to collective investment fund shareholders (D.4432).

For the moment, no such flows have been estimated in national accounts.

4.5.5 Rent on land and sub-soil assets

Rent (D.45) is the income receivable by the owner of a natural resource for putting the natural resource at the disposal of another institutional unit. There are two different types of resources rents: rent on land, and rent on subsoil assets.

For the time being, national accounts show no explicit amounts for rents in the transition from GDP to GNI.

Chapter 5 GDP AT CONSTANT PRICES

5.1. General procedures

5.1.1. Introduction

The Statistical Office of the Republic of Serbia (SORS) compiles price and volume measures of gross domestic product (GDP) by the production and the expenditure approach The general methodological framework for the calculation is based on the principles and definitions of SNA (System of National Accounts 2008 - SNA 08) and the European System of Accounts (European System of National and Regional Accounts 2010 - ESA 10), as well as on international standards and recommendations for accounts at constant prices given in the Eurostat manual (Handbook on Price and Volume Measures in National Accounts). Available are time series from 1995 onward at prices of the previous year (PYP) and in chained linked volumes (CLV). Reference year is 2010.

The first results of annual GDP at constant prices, according to the concepts of the System of National Accounts ESA 1995, were published in 2005. The time series covered the period from 1999-2004. GDP was estimated by production approach, using single indicator method, with fixed base year 2002. It was calculated at the level of 16 sections and 60 divisions of the national Classification of Activities (in accordance with the international NACE Rev.1). In 2008, GDP time series have been extended backwards to 1997 and published.

In 2011, the expenditure GDP approach at previous year prices was published for the first time according to the concepts of the System of National Accounts. The data of the main expenditure aggregates at constant prices were available from 2003, at previous year prices and chain linked volume measures, by the main components (Household final consumption, NPISH, Government final consumption, Gross fixed capital formation, Changes in inventories, Acquisitions less disposals of valuables and Net export).

In 2012, SORS published the revised data of annual GDP calculations by production approach, for the period 2001-2010. The revision of the previously published data at constant prices resulted from the following:

1. The new national Classification of activities (KD2010) in accordance with the international NACE Rev. 2) was introduced what caused the changes in annual data at current prices (since 2000)
2. The transition from fixed base year to previous year prices calculations.

Data by production approach were available at previous year prices, for the level of 21 sections and 88 divisions by NACE Rev. 2, for the period 2001-2010.

Volume estimates, previously expressed in constant prices of a fixed base year, were calculated at prices of the previous year. The new system guaranteed up-to-date price structures in the calculation of period-on-period changes of volumes.

The calculation of GDP at previous year prices means that the previous year is taken as base year. In this way, the structural changes in relative prices that occurred between two consecutive years in an economy are taken into account. That provides the most (theoretically) correct results as it uses the most up-to-date prices to aggregate the volume estimates. The measurement of the real GDP movement in year t relative to year t-1 requires that GDP in both years is valued at the same prices. This means that GDP in year t at constant prices, i.e. previous year prices is compared with GDP of year t-1 at current prices. Time series calculated at previous year prices could not be used for real growth rate calculations since data are not comparable (each year is valued at previous year's prices).

To obtain comparable series, the method of chain-linking is applied, where indicators in the form of indices referenced to the previous year are chain-linked to a single reference year. The choice of the reference year does not affect the growth rate changes, as they always remain the same. Currently, the year 2010 is used as the reference year and series of data are constructed in such a way that the value of an individual aggregate at current prices from 2010 (reference year) is multiplied by the original volume growth rate for a particular year compared to 2010, to obtain money term value. The exception to the general procedure is in case where aggregates change signs over time as for them such a calculation provides counter intuitive results. This relates to changes in inventories, external trade balance and trading gain/loss resulting from changes in the terms of trade.

It should be noted that the chained volume measures translated into monetary terms should not be termed "constant prices". Constant prices are calculated with a fixed base or "movable" base year (prices of the previous year). Chained volume measures are only an instrument to solve the problem of comparability and should be called "chained volume measures, reference xxxx year.

Since September 2014 SORS had officially started to implement the new methodology of national accounts – ESA 2010, simultaneously with the EU member countries. For this purpose, it was necessary to have consistent time series of data on GDP (starting from 1995), calculated according to ESA 2010. Therefore, SORS had completed the revision of already published data for the period 1997-2012, and for the first time performed the GDP calculation for 1995 and 1996.

5.1.2. Outline of the production approach

GDP in volume terms by the production approach equals sum of value added by industries plus taxes on products less subsidies on products at constant prices.

Value added at constant prices for market producers is estimated as the difference between output at constant prices and intermediate consumption at constant prices.

Output at constant prices is estimated separately for 88 divisions of Classification of activities KD2010 (in accordance with the international NACE Rev. 2). For the majority of activities output at constant prices is obtained by deflating current price value by price indices. For a limited number of activities output at constant prices is estimated with extrapolation by volume indicators.

Intermediate consumption at constant prices is estimated using several methods: intermediate consumption of activity is calculated with deflation method using appropriate prices index if it is available; using IO ratio method or using input cost method.

Value added at constant prices for market producers is estimated as the difference between output at constant prices and intermediate consumption at constant prices.

For non-market activities volume estimates of value added are derived by the input cost method by summing up volume estimates of compensation of employees, consumption of fixed capital and net other taxes on production. Intermediate consumption is then added to this total to determine volume of output at constant prices.

The compilation of volume estimates of GDP by the production approach is described in detail in Chapter 3.

5.1.3. Outline of the expenditure approach

GDP in volume terms by the expenditure approach is measured as the sum of expenditure on goods and services for final consumption and gross capital formation by units of the national economy plus exports less imports of goods and services at constant prices. Final consumption is the sum of expenditure on goods and services by households, NPISH and general government. Gross capital formation is measured as the sum of expenditure on gross fixed capital formation, changes in

inventories and acquisitions less disposals of valuables. When calculating the GDP according to the expenditure approach at constant prices, the method of deflation is used for most aggregates, while for a few categories the extrapolation method is used. The weights in the base year are determined by the share of each category of use in GDP.

The compilation of HFCE at constant prices is performed at the four-digit (or 5-digit) level of the Classification of Individual Consumption by Purpose (COICOP). For the large majority of expenditures, volume estimates are obtained by deflating current price values by the consumer price index (CPI).

Final consumption expenditure of NPISHs, at previous year prices is estimated using the input cost approach by summing up all the cost components of final expenditure of NPISHs. Each cost component is estimated separately. The aggregate is chain-linked to obtain NPISH expenditure value with 2010 as reference year.

Government final consumption expenditure at previous year prices is estimated in a similar way as current price estimates. This means that constant price estimates have been performed using the input-cost approach by summing up all the cost components of government final consumption. Each cost component is estimated separately. The aggregate is chain-linked to obtain GFCE value with 2010 as reference year. Estimation is separately done for collective and individual consumption.

Gross fixed capital formation, changes in inventories, and acquisitions less disposals of valuables at constant prices are estimated by deflating current price values by price indices.

Estimation of exports and imports of goods at constant prices is done at two-digit (division) level of KD 2010, using indicators obtained from the price statistics, external trade statistics as well as indicators calculated in the national accounts.

Data on exports and imports of services at constant prices are broken down into three main groups: transport services, travel services and other services. Deflation is done separately for each of the three groups using appropriate indicators.

The compilation of volume estimates of GDP by the expenditure approach is described in detail in Chapter 4.

5.1.4. Publication timetable, revisions policy and dissemination of ANA

Official Release calendar is available on the SORS website approximately one month before the beginning of the year.

Dissemination of ANA data in the SORS takes place according to the following time table:

- End of the current year t - First estimation (GDP growth rate);
- t+60 days - GDP as a sum of four quarters;
- t+9 months - Preliminary estimation based on annual calculation;
- t+18 months - Final estimate based on the annual calculation.

Data are simultaneously released to all users in a Serbian and in an English version on the SORS website.

The data series from 1995 on GDP by the production and expenditure approaches, at current prices, previous year prices and as chain-linked volume measures (reference year 2010), in million RSD, as well as, structures and growth rates are available on the SORS website, in the Statistical Database, at the following address http://data.stat.gov.rs/?caller=09&languageCode=en-US

As a rule, national publishing is done at the same time (day) as data are transmitted to Eurostat.

In accordance with the Transmission program of data, SORS regularly transmits data to Eurostat on annual bases:

NAMAIN_T0101_Q	Gross value added at basic prices and Gross domestic product at market prices – quarterly data
NAMAIN_T0102_Q	Gross domestic product by expenditure approach- quarterly data
NAMAIN_T0110_Q	Population and employment – quarterly data
NAMAIN_T0101_A	Gross value added at basic prices and Gross domestic product at market prices – annual data
NAMAIN_T0102_A	Gross domestic product by expenditure approach - annual data
NAMAIN_T0110_A	Population and employment – annual data
NAMAIN_T0117_A	Final consumption expenditure of households by durability – annual data
NAMAIN_T0120_A	Exports of goods (fob) and services for EU and Extra EU – annual data
NAMAIN_T0121_A	Import of goods (fob) and services for EU and Extra EU – annual data
NAMAIN_T0301_A	Output by activities– annual data
NAMAIN_T0302_A	GFCF by activities– annual data
NAMAIN_T0501_A	Final household consumption expenditure of household by purpose – annual data
NAMAIN_T0502_A	Final consumption expenditure national concept - annual data
NASEC_T0800_A	Non-financial accounts by sector — annual
ESAP2GOV_0900_A	Detailed tax and social contribution receipts by type of tax or social contribution and receiving subsector including the list of taxes and social contributions according to subsectors of government sector
ESAP2GOV_NTL_A	Detailed tax and social contribution receipts by type of tax or social contribution and receiving subsector including the list of taxes and social contributions according to national classification - annual data
NAREG_T1001_A	Tables by region (NUTS level 2)
NAREG_T1002_A	Tables by industry and by region (NUTS level 2)
NAREG_T1200_A	Tables by industry and by region (NUTS level 3)
NAREG_T1300_A	Households accounts by region (NUTS level 2)

Apart from Eurostat, SORS regularly send updated questionnaires to the other international institutions (UN, OECD etc.).

The revisions performed in the National Accounts are in accordance with the principles recommended by the "General Revision Policy". In the annual calculations, major revisions are usually carried out. Major revisions present planned and significant changes in released published data, which are performed for one or more reasons:

- availability of new data that are collected at multi-annual frequency (5–10 years), such as censuses (population, agriculture, the economy), input-output tables, etc.;
- availability of new data sources (new statistical surveys or administrative data sources);
- changes of the base year – implementation of a new weighting system;
- changes in concepts, definitions and/or classifications (e.g. adoption of a new classification or changes in international statistical standards);
- improvements in methodological procedures;
- changes in regulations.

It is common practice that major revisions are not the consequence of one cause, but of a combination of them. This should be accepted as a good practice because in order to avoid too frequent revisions.

Major revisions affect a substantial part of time series and sometimes even the complete time series. Therefore, it is necessary to back-cast the data in order to obtain a comparable series of data. When determining the period for which data should be back-cast, costs and benefits of the recalculation are taken into account.

5.2. General information on main sources used

5.2.1. Introduction

This chapter briefly describes data sources used to compile national accounts aggregates at constant prices. It includes a variety of data from the statistical system as well as data from administrative sources.

These data could be classified into the several groups by type of data.

- Price indices: producer price index of manufactured goods for domestic prices, producer price index of agricultural products, consumer price index, agricultural input price index, external trade unit value index, imports and exports producers price index;
- Volume indices: index of physical volume of industrial and agricultural production, volume index of forest exploitation, index of physical volume of transport services;
- Values of construction works done, data on sales and purchase values of agricultural products, retail trade turnover values, wholesale trade turnover values, trade of motor vehicles turnover values, catering turnover values;
- Data on tourism
- Employment and earnings statistics.

For some aggregates, a composite price index is calculated; i.e. a weighted index specially compiled for the purpose of constant price calculation of NA aggregates for which the calculation is in detail explained in the chapter on GFCF at constant prices:

1. Composite price index for software,
2. Composite price index for R&D,
3. Composite price index for buildings and structures.

Data from administrative data sources:

From the National Bank of Serbia (NBS):

1. Stocks of deposits and credits at commercial banks
2. Insurance premiums data
3. Dinar Exchange Rates against Foreign Currencies – average for the period

From the Ministry of Finance:

1. Treasury Administration data - data on taxes on products and services, customs and subsidies
2. Revenues and expenditures (of the Republic budget, Autonomous Province of Vojvodina, local government, social security funds)

5.2.2. Price indices

5.2.2.1. Producer price index of industrial products

Producer's price indices measure changes of products and services' prices on the level of producers. These prices are the prices at which producers sell their products. Taxes and contributions are excluded. These indices are calculated for the division of industry (domestic market, import, export and total producers' price index of industrial products) and for agriculture.

Producer price indices for domestic market measures the changes in the level of producer prices of manufactured goods that are produced and sold by producers in the domestic (Serbian) market.

The list of products includes mainly standard products that over a longer period may be scanned. The products are chosen from each industrial area, with the highest sale in the domestic market. The selection of products is made at the beginning of the year. The prices of single industrial products are used for the calculation of individual price indices.

The prices are collected by questionnaires directly received from enterprises by post, on monthly basis. The calculation of the index covers around 1100 products. The weights for the calculation of aggregate indices are based on two regular statistical surveys. Weights for industrial divisions are obtained from the annual Structural business survey (SBS) as the share of sales of each industrial division in total sales. The annual survey of industry (from the Industry statistics) is carried out in order to calculate the weights for each product in a division. The aggregate indices are calculated on the basis of weighted arithmetic mean of individual indices, using the Laspeyres type index formula. The weights are changed every five years.

Indices of producer prices of industrial products are calculated by the NACE Rev. 2 classification, for sections B, C, D and E (division 36), (excluding group 30.1 Building and repairing of ships and boats, group 30.3 Manufacture of aircraft and spacecraft and group 30.4 Manufacture of military fighting vehicles). The elementary aggregation is based on the national version of the Nomenclature of industrial products.

The data are published at two-digit level of the national Classification of activities (KD 2010).

Additionally, the levels of detail at which producer price indices are calculated are the following:

1. by destination of consumption (energy, intermediate products except energy, capital goods, durable consumer goods, non-durable consumer goods)
2. for selected groups of products (agricultural machines and equipment, chemicals for agriculture, materials for incorporating in construction, road vehicles, liquid fuels and lubricants, metal household appliances, electrical equipment, wooden furniture, wearing apparel (materials and ready-made clothes), footwear (leather and rubber).

The treatment of quality changes takes place in two ways:

1. during the year – imputation of price change using the price change for a similar product;
2. at the end of the year – the linking method is used for the replacement of outdated items; new products are included once a year and weights are reallocated within the group.

5.2.2.2. Producer price index of agricultural and fishing products

Average prices of agricultural and fishing products are calculated based on quantities and values of purchased and sold products, obtained from the Trade Statistics and Agricultural Statistics. Starting from 2013, indices of producer prices of agricultural and fishing products are calculated according to the new methodology that is harmonized with the European standards.

Agricultural price statistics covers: output price index, input price index and lend prices and rents.

1. *Output price statistics*

This statistics covers survey on output products named “Price indices of products of agriculture and fisheries”. List of products for absolute agricultural prices are harmonized with List of products for Annual Agricultural Absolute Prices given in Annex 4 of Handbook for EU Agricultural Price Statistics. The product list for absolute prices contains 140 products divided into 20 product groups.

Survey on agricultural output products is based on complete coverage so that over 2000 reporting units are covered. Reporting units are purchasing organizations, agricultural enterprises, agricultural cooperatives etc.

Average prices are calculated monthly, quarterly and annually. The average prices are calculated for 140 products.

Dealing with missing observations is different for very seasonal products such as potatoes, fruit and vegetables and on the other side for all other products whose seasonality is less expressed.

Weights (at product level) are calculated for each month particularly. Weights are based on year 2015. It means weights were calculated as average values of sales for three same months from three years: 2014, 2015 and 2016. According to the methodology weights are regularly recalculated every five years.

Also there are weights at reporting unit level. They are calculated as total values of sales for each reporting unit in the previous year. It means only reporting units appearing in the previous year enter in the index calculation.

2. *Input price statistics*

This statistics covers survey on input products named “Price indices of materials, tools and services in agriculture”. This survey was introduced in the first half of 2012 with the aim to calculate average prices and price indices of materials, tools and services in agriculture.

Product list was expanded in 2017 with new product groups: Maintenance of materials, Maintenance of building and other goods and services.

List of products for absolute agricultural prices are harmonized with List of products for Annual Agricultural Absolute Prices given in Annex 4 of Handbook for EU Agricultural Price Statistics.

Survey on agricultural input products is based on a complex statistical sample. The sample consists of reporting units, which sell their products as agricultural inputs directly to agricultural producers.

Average prices are calculated for nearly 100 products. Average prices are calculated quarterly and annually.

According to the methodology, weights are regularly recalculated every five years. These weights for input products were calculated quarterly, as they do not have seasonal character. Regular annual price revisions were made in May 2018 as the basis for obtaining the correct base prices.

3. *Land prices and rents*

This survey is at an early stage of development.

5.2.2.3. Consumer price index

Considering that CPI was only introduced in 2007, in order to obtain comparable deflators, the overlap with the older retail price index has been carried out for the years before 2007.

The consumer price index is defined as the measure of the average change of prices of fixed basket of goods and services, which is purchased by households. The indices measures price changes in time and the consumption structure of the base period is used for both of the comparative periods (Laspeyres index). The most significant goods and services that are purchased by the households and that satisfy the household’s final consumption are covered. This list excludes purchases of second-

hand goods, remuneration in kind, life insurance, gifts, imputed rent, outlays for investments (dwellings, land, etc.) and outlays for lottery games.

The list of products is regularly updated in order to preserve its representative role, regarding to structure of consumption and consumers' habits. Products are included in the list when their share within the total consumption of the households becomes greater than 0.1%.The data on prices are collected monthly and personal visits are made to retail outlets in the selected towns. Prices are collected in 15 towns – major administrative and trade centres, which are chosen in the way to represent whole territory of the country.

The weights present the share of the selected goods and services in the overall consumption of the households from the household budget survey, household final consumption expenditure and other available sources. Base period for the weights is t-2; the price is updated with respect to the average of t-1, which is also the base period for the prices and indices. The weights are updated annually. The average monthly price of a product is first calculated at the town level, then at the level of the territory of Central Serbia and Vojvodina, and finally at the level of the Republic of Serbia.

Referring to the town level, a simple geometric mean of the collected prices is used.

On the bases of average prices, price indices are calculated for individual products and product groups. Price indices for product groups are calculated on the bases weighted arithmetic mean. As weights, the structure of individual consumption expenditures of the households is used.

The annual percentage change in a CPI is used as a measure of inflation. For calculating the consumer price index the Classification of Individual Consumption by Purpose (COICOP) is used. The indices are published at four-digit level of the COICOP. The indices for special groups are also calculated (goods, non-durable goods, services, fuel and energy, total index without fuels and energy, etc.).

Treatment of quality changes is carried out for several reasons: due to the appearance of new products, if production of the product is stopped, due to small changes in connection with the product that does not significantly, etc.

There are no automatic procedures for any product group. Instead, the selection of the method depends on the specific situation reported by the price collector.

5.2.2.4. Prices of catering services

Prices of catering services are the consumer prices applied for certain meals, i.e. food and beverages and the price of overnight stay is the price paid by a guest for one overnight stay. Statisticians collect the prices of catering services once a month in towns that are big market and tourist centres of the Republic of Serbia. The survey of prices is collected in some 90 selected catering facilities with the biggest turnover. Indices of prices of catering services calculated according to the list containing about 40 kinds of catering services, divided into 4 groups: food, alcoholic drinks, non-alcoholic drinks and overnight stays.

5.2.2.5. Unit value index for exports and imports (UVI)

Indices of unit values are computed from the data on quantity and value of products that participated in foreign exchange, both in the reference period of the current year and in the respective period of the previous year, which serves as the basis for comparisons. In addition, given are aggregate indices by economic branches, sections of the Standard International Trade Classification, by economic destination, and exports and imports indices by level of products' processing. Starting from 1989, exports and imports price indices are obtained by calculating the quantities of exported/imported goods in current year, at previous year prices. The indices are calculated based on a sample including over 80% of the goods'value. For aggregate indices, the coverage is uneven and in most cases lower. Lower coverage is the result of considerable structural changes both in exports and imports of goods, what is particularly expressive in the calculations of indices for individual economic branches.

5.2.2.6. Indices of export and import producers' prices

The Statistical Office of the Republic of Serbia started in 2006 a survey regarding the calculation of Indices of export producers' prices. Index of export producers' prices is calculated according to methodology harmonized with methodology for calculating indices of producers' prices in domestic market and is based on international statistical principles and recommendations. The aim of conducting this survey is calculating total index of producers' prices (for domestic and foreign market), and it is also used as a short – term indicator in macroeconomic analysis and reviews. The survey is conducted on the representative sample. Prices are collected in foreign currencies and indices are calculated in dinar value, according to the mean exchange rate of the National Bank of Serbia. Data are given according to new Classification of Activities by sections and divisions
Indices from import producers' prices - The aim of conducting this survey is calculating indices of import prices and it is also used as a short – term indicator in macroeconomic analysis and reviews. The survey is conducted on the representative sample. Prices are collected in foreign currencies and indices are calculated in dinar value, according to the mean exchange rate of the National Bank of Serbia. Data are given according to Classification of Activities, by sections and divisions.

5.2.3. Physical volume indices

5.2.3.1. Index of physical volume of agricultural production

The index of physical volume of agricultural production is a statistical indicator used to measure the changes in the volume of agricultural production. The indices are calculated on the basis of the data from regular agricultural statistical surveys on the volume of crop and livestock production, as well as on the basis of the data on average agricultural producers' prices on the level of the Republic of Serbia. The list of products includes all agricultural products of economic interest. Based on the revised data on the output of crop and animal production for the period 2005–2013, implemented was the revision of the index of physical volume of agricultural production for the period 2006–2013.

Products of low economic significance in the last few years were excluded from the list of products for the index calculation, and included were those that to a higher extent influence the volume of agricultural production. Therefore, the new list includes 46 economically important agricultural products. The movable three-year average values of producer prices on the level of the Republic of Serbia are used as weighting factors. The total agricultural production index was calculated on the basis of the final net output. Starting from 2017, the year 2015 was taken to be the base year for the calculation of base indices, and it was applied to the whole presented series for the reasons of comparability. For agriculture as a whole, gross and net indices were provided. The agricultural output of all products from the list were taken into account for the calculation of the gross index; while in order to avoid double counting, animal feed (maize used as animal feed, barley, oats, fodder crops and hay) were excluded from the calculation of the net index.

5.2.3.2. Index of physical volume of forest exploitation

The physical volume index of forests exploitation is calculated on the basis of data on the production of forest assortments, according to the present nomenclature of products and weights coefficients. Weights coefficients are calculated on the basis of average purchase prices (values of forest assortments), reduced for participation of material costs and services in the state product of forestry. Weights coefficients are changed each five years.

5.2.3.3. Index of physical volume of industrial production

The index of physical volume of industrial production represents the change in the volume of industrial production.

For the calculation of the index of physical volume, data are collected for 4420 industrial products and services. The national nomenclature of industrial products was harmonized with the Classification of Activities, as well as with the European Classification of Products by Activities (CPA).

The calculation is performed using the Laspeyres formula.

The weights for products and services are based on the value added per unit of measurement of each product/service from the Nomenclature of Industrial Products and Services. These weights provide the conversion of the data expressed in natural units to those expressed in comparable values.

In the second phase, on the basis of indices obtained for divisions of activities and on the basis of weights for divisions, the index of physical volume of industrial production is calculated for Industry – total and for sections of activities. The weights for products are adjusted once a year. The general revision of weights is implemented every 5 years. The last general revision of weights was made in 2015.

5.2.3.4. Index of physical volume of transport and communications services

Basic data for Transport and communications services are obtained by regular monthly, quarterly and annual statistical reports of enterprises in these fields.

The physical volume indices of transport services are calculated on the basis of weighted passenger and ton kilometers of each transport branch particularly and by the reduction of these to so called reduced synthetic passenger/ton kilometers. The operations (output) of each transport branch, given in passenger and ton kilometers, are differently weighted according to the applied technological and economic criteria. By multiplying passenger kilometers/ton kilometers by appropriate coefficients we obtained the aggregates that present the synthetic passenger and ton kilometers. The relation of total synthetic passenger kilometres and ton kilometers in time gives the physical volume indices of transport services.

Indices of physical volume of PTT services are calculated on the basis of the weighted letter mail and parcel services, payment operations, telegraphic and telephone services in fixed and mobile telephony, services of “Yu-PAK” network, and paging system.

5.2.4. Data on trade and catering statistics, construction and tourism

5.2.4.1. Data on turnover in wholesale, retail trade

Data on domestic trade are provided by surveys on retail and wholesale trade covering the turnover of goods in terms of both value and quantity. All these statistics are collected quarterly or annually since 1992. For agricultural products all the data are collected on monthly basis through reports on sales, purchases and turnover of social institutions and private producers.

Retail trade turnover expresses the value of goods (no services) that enterprises (company, business unit, and entrepreneur) active in retail trade, deliver to end users (primarily to household for personal consumption purpose also to enterprises). The Survey has been harmonized with Eurostat recommendations and standards since 2003. The trade department provides data on turnover for more than 40 groups, which are mainly in line with COICOP (3-digit level). Also, its results are available by way of payment type (cash, consumer credit, and purchases of enterprises). The sample method was applied in statistical data collection. The sample covers the whole population of large units and majority of medium units. The Survey is carried out monthly and quarterly, so annual data are obtained by the summation of quarterly data.

5.2.4.2. Data on Catering

Turnover in the Catering Trades presents a bookkeeping accounted value of provided Catering Trades services (accommodation, food, beverages), and other services that are commonly performed in the Catering Trades (transport of guests and luggage, catering craft activities, sales of tobacco, souvenirs, newspapers, etc.). Data on the turnover in the Catering Trades, by months, relate to legal entities and entrepreneurs turnover and present estimates derived from monthly variations and assessment of the turnover's trends. By the end of the quarter monthly estimates are adjusted on the basis of the regular quarterly statistical survey, which is based on an incomplete coverage of legal persons, where legal entities whose aggregate value of turnover compared to the full set amounts to more than 90% are covered, as well as on the basis of sample based quarterly survey of entrepreneurs. Final data are the result of special statistical Catering Trades surveys in annual periodicity and they make up the total turnover, which is published in the annual series.

5.2.4.3. Data on Tourism

Tourism statistics is provided by monthly periodicity, by a reporting method, collecting data on tourist turnover and accommodation facilities from business entities that provide accommodation or mediating in this kind of services. Tourist turnover is defined by the number of arrivals and overnight stays in accommodation facilities and the capacity by the number of accommodation facilities and number of rooms and beds in them. The statistical survey on travel agencies covers agencies that have their head office in the Republic of Serbia and have a licence for performing intermediation in Tourism.

5.2.4.4. Data on Construction

Construction Statistics provides monitoring of the volume of construction production, and changes of the structure of investment in construction activities according to the Classification of Types of Construction, as well as data on the dynamics of housing construction trends. Also, it provides information on changes in the level and structure of building materials, fuel and electricity consumption in Construction. Annual survey on construction works is to provide results of construction activity by types of constructions, location of constructions and construction phases. Therefore, collected are the data on value of performed works in the appropriate units of measure, including structural and technical characteristics; such data are provided by all constructors and relate to all constructions carried out in the reporting year.

Data collected in this survey present result of construction enterprises work and private persons on the territory of the Republic of Serbia, excluding construction works abroad. Works performed are presented by the territories on which the constructions are located and not by territories of constructors' headquarters.

Data on prices of dwellings of new construction are used in order to evaluate the level of current prices of dwellings of new construction, while data on issued building permits show the future trends of construction activity.

5.2.5. Employment and earnings statistics

Labour market statistics enables realization of individuals, households and enterprises' inclusion on labour market, both in short-term and in structural view. Apart from the aspect of economic activity (productivity, labour costs, amount of salary), labour market statistics is significant for socio-economic issues, such as unemployment, earnings' structure by employees' characteristics, social inequality (e.g. gender pay gap), reconciliation between work and family life, etc.

The data on employees are collected on the basis of the following statistical surveys:

5.2.5.1. Labour Force Survey (LFS)

In accordance with the recommendations and definitions of the International Labour Organization (ILO) and Eurostat requirements, the data on employed persons and unemployed persons are collected through the Labour Force Survey (LFS). This survey observes the population aged 15 and over relative to the activity in the reference week, and not according to the formal employment status of the persons interviewed. This constitutes the most important source for international comparison of data of the Republic of Serbia with other countries.

5.2.5.2. Survey on registered employment

Since 2015, the Statistical Office of the Republic of Serbia has switched to a new methodology of measuring registered employment by combining data from the Central Register of Compulsory Social Insurance (CRCSI) and Statistical Business Register (SBR). The new source of data provides more up-dated coverage of all enterprises, thus a better coverage of employees. At the same time it allows to broaden the definition of employment by including all the modalities of employment, which encompasses not only employees in "longterm employment" and employees in "temporary and occasional employment" but also registered individual agricultural producers (farmers).

The objective of the survey on registered employment is to obtain data on the number of employees in legal entities and unincorporated enterprises, number of self-employed as well as the number of individual agricultural producers (farmers) included in the system of social insurance, i.e. registered in the CRCSI.

The survey covers all the social insurance contribution payers:

- insured who are insured on the ground of employment according to the CRCSI: employees, i.e. persons employed in an enterprise, other legal entity, government body, local authorities' body; civilians serving military service in the army and military units and institutions; professional servicemen according to regulations on the Army of Serbia; domestic and foreign citizens employed in the territory of the Republic of Serbia in foreign or international organizations and institutions, foreign diplomatic representations and consular representations or in foreign legal or physical persons unless otherwise defined in international contract, i.e. if such insurance is provided for international contract; persons performing work outside employer's premises; employees sent to work abroad if they are not insured under the regulations of the given country or if otherwise laid down in international contract;
- persons who work or whose status is equivalent to employment;
- persons insured working on temporary or occasional basis;
- persons performing work under contract;
- persons insured on the ground of performing self-employment activities;
- persons insured on the ground of performing agricultural activities.

In September 2014, SORS took over the initial database of the insured and insured persons from CRCSI, and ever since takes over every first Monday data on changes occurred in the previous month. This is done electronically, through web service.

Monthly data on the number of employees represent the number of employees on the next to last working day in the month.

Quarterly data on the number of employees are calculated as the arithmetic mean of the number of employees for three months of the reference quarter.

Annual average number of employees is calculated as the arithmetic mean of the number of employees for 12 months.

The term *employed* includes all persons with a formal, legal contract or with a resolution to be employed, i.e. on running a business or practicing a profession. In the Labour Force Survey, under the term *employed* we assume all persons that in the week observed for at least one day did some work for remuneration (to provide subsistence).

5.2.5.3. Earnings

Earnings statistics provides monthly data on the level and trends of average salaries and wages up to the level of municipalities and divisions of activities, annual data on the level of salaries and wages by employees' sex and qualification, as well as data on salaries and wages median and distribution.

Four-year Structure of Earnings Survey provides internationally comparable data on average salaries and wages by the characteristics of employees and business entities.

Starting from January 2018, the survey on wages and salaries is based on the data of the form – tax return as regards tax deduction (PPPPD). Average wage/salary is obtained by dividing the total mass of wages/salaries for the reporting month by the total number of employees expressed as the full-time equivalent, FTE. Included are all economic subjects that to the Tax administration submitted the completed electronic form PPP-PD for the Tax return with calculated wages/salaries. Included are all categories of employees for whom employers, i.e. economic subjects to the Tax administration submitted the electronic form PPPPD for the Tax return with calculated wages/salaries.

5.2.6. Administrative data sources

5.2.6.1. Monthly statements of deposits and credits

This source contains data from monthly banking statistics on stocks of loans and deposits according to sub-sectors only for commercial banks. The central bank publishes on its website the data on Bank Short-Term and Long-Term Claims on Non-Monetary Sector and Non-Monetary Sector Deposits with Banks.

5.2.6.2. Balance of payments

Balance of Payments of the Republic of Serbia is compiled according to the IMF's methodology BPM6 (Balance of Payments Manual, Sixth Edition, 2009). Data are disseminated at the monthly and annual level, in EUR million and USD million. The value of transactions is recalculated from original currencies into the reporting currency by applying the official middle exchange rates of the National Bank of Serbia (NBS) on the transaction date. The main data sources for compiling the balance of payments are: reports submitted to the NBS and data of the Statistical Office of Republic of Serbia. The Balance of payments provides a systematic record of transactions with non-residents. Data from balance of payments are used in national accounts for compiling the external account of goods and services, the external account of primary incomes and current transfers, the capital account and the financial account.

5.2.6.3. Dinar Exchange Rates against Foreign Currencies – average for the period

Exchange rates represent average exchange rates of the dinar against foreign currencies in a month/year, calculated as an arithmetic mean of the official middle exchange rates of the dinar against foreign currencies applicable on business days during the relevant month/year. The nominal effective dinar exchange rate index is the weighted geometric mean of the indices of the average exchange

rates of the dinar against the euro and the dollar, calculated as set out above. The real effective dinar exchange rate index is the nominal effective exchange rate index adjusted by CPI and the weighted geometric mean of CPI in the euro area and the United States. The weights are derived as a function of the share of individual currencies in the country's total foreign exchange inflows and outflows

5.2.6.4. Insurance supervision

Data on total insurance premiums are collected through quarterly reports for all registered supervised entities, engaged in activities directly linked to insurance business, deliver to the National Bank of Serbia. These data are published on the NBS website.

5.2.6.5. Expenditures and revenues of government budget

The Ministry of Finance collects data on expenditures and revenues of the government budget. Expenditure items include payments related to coverage of business expenses (electricity, phone bills etc.), business trips, services contracts, current maintenance and procurement of material, repayment of interests, compensation of employees, subsidies, social insurance and social welfare expenses, taxes and fees, interest, etc. Revenues include, tax revenues, revenue from sales of goods and services, penalties, property revenues (collected interest, rental fees) compensations, fines, sale of capital goods, as well as the capital transfers from non-governmental institutions. Subsidies comprise all the funds transferred to the economic sector (public enterprises, registered agricultural holdings etc.) for coverage of current expenses and/or the grant intended for current business activities.

5.2.6.6. Treasury Administration data

Information on distributed public revenues of the Treasury Administration of the Ministry of Finance is the main source of data on taxes on products (value added tax - national VAT, import VAT and the arrears of turnover taxes from the previous years; excise duties - consumption taxes concerning specific products such as oil, tobacco, coffee, alcoholic beverages etc.; customs duties and other import duties - revenues from duties paid for imports of goods and services, with the exception of the VAT on imported goods that is included in VAT revenues). Data are provided on a monthly basis.

5.3. GDP by the production approach

SORS introduced chain-linked volume measures both in ANA and QNA, in compliance with the Commission decision 98/715/CE on prices and volumes measures in National Accounts in 2011. Volume estimates, previously expressed in constant prices of a fixed base year, are now calculated at prices of the previous year: the new system guarantees up-to-date price structures in the calculation of period-on-period changes of volumes.

The calculation of GDP at previous year prices means that the previous year is taken as a base year. In this way, the structural changes in relative prices that occurred between two consecutive years in an economy are taken into account. In constant prices calculations of GDP according to the production approach, weights from the base year are determined by the share of GVA of each NACE division, and net taxes in the GDP.

Time series calculated at previous year prices could not be used for real growth rate calculations since data are not comparable (each year is valued at previous year's prices). To obtain comparable series, chain-linking is applied, where series are chain-linked to the reference year. The choice of the reference year does not affect the growth rates. According to Eurostat recommendations, 2010 has been currently used as the reference year.

The previously used fixed base method of constant price estimation ensured that GDP elements in volume terms are valued at the prices of the fixed based year so that values could be added together

to obtain the aggregates. In this case the requirement for additivity is fulfilled. With the transition to the calculations at previous year prices additivity still exists, but there are no comparable data in the series, because the GDP elements for each year are valued at previous year's prices. To obtain comparability, the series of GDP elements are chain-linked to the reference year. After converting chain-linked volume indices to monetary terms, using reference year prices, non-additivity occurs since aggregates cannot be obtained by summing their elements. Additivity exists only in the reference year and the year thereafter.

The GDP compilation at constant prices according to the production approach is performed in two stages: calculations at previous year prices and chain-linking.

In the first stage, calculations at previous year prices are carried out:

1. Calculation of GVA at previous year prices for 88 divisions of NACE Rev.2, taxes and subsidies on products, using appropriate indicators;

2. Calculation of GVA at previous year prices for 21 NACE Rev.2 sections, by summing up GVA at previous year prices of divisions classified in the respective sections;

3. Calculation of total GVA at previous year prices by summing up GVA of all sections at previous year's prices;

4. Calculation of GDP at previous year prices by summing up GVA and taxes on products and subtracting subsidies on products at previous year's prices.

In the second stage, chain-linked volume measures are calculated:

1. Series of chain-linked indices are independently calculated with respect to the reference year for the 88 divisions, 21 sections, taxes and subsidies on products, total GVA and GDP;

2. Monetary values for each of the above-mentioned categories are obtained by multiplying the chain-linked indices with the corresponding nominal value of the reference year (2010). The values obtained in this way are referred to as "chain-linked volume measures, reference year 2010".

GDP at constant prices, measured from the production approach, represent the sum of gross value added at constant prices by activities, plus taxes on products less subsidies on products at constant prices.

Value added of activities at constant prices is obtained by separately estimating output at constant prices and intermediate consumption at constant prices. Value added at constant prices according to the production approach is derived as the difference between output and intermediate consumption at constant prices.

For the calculation of GVA at constant prices, following methods are used:

1. Double indicator method (double deflation) - The double deflation method is based on separate deflation of the output and intermediate consumption. The compilation of output at constant prices is done by deflation with the producer price indices of manufactured goods for domestic market and for exports. Producer price indices of manufactured goods for sales on the domestic market and producer price indices of manufactured goods for exports are weighted with the ratio between use on the domestic territory and exports. Intermediate consumption is calculated by deflating the value at current prices with a composite prices index obtained by weighting the appropriate PPIs for domestic component and import prices indices for import component of intermediate consumption.

2. Input cost method - the output at constant prices for non-market producers is derived by the input cost method, i.e. by summing compensation of employees, intermediate consumption, net other taxes on production and consumption of fixed capital at constant prices. Intermediate consumption at constant prices is obtained by deflation method (current price value is deflated with adequate price index).

3. Single output related indicator method – involves extrapolating reference year estimates of current price gross value added using movements in a volume indicator of output:
    - With deflated output - entails applying deflation of output at current price values of the current year by the appropriate composite price index and deriving intermediate consumption by using the annual input/output ratio of previous year over output at constant prices from the current year.
    - With volume index - entails multiplying output at current price values of the base year by the appropriate volume index. Intermediate consumption at constant prices is calculated by multiplying output at constant prices of the current year (year t) with the input/output ratio from the previous year.

Above mentioned methods have been used for the period from 2010 – 2017. The single output related indicator method was used for the period 1995-2010.

5.3.1. Output at constant prices

The indicators used for the estimation of output at constant prices are shown in Box 1.

Box 1 Indicators used for the calculation of the output, at constant prices, by activities

Section	Division	NACE Rev. 2	Indicators
A		**Agriculture, forestry and fishing**	
	01	Crop and animal production, hunting and related service activities	Data from Economic accounts of agriculture, Index of physical volume of agricultural production, producer price index of agricultural products
	02	Forestry and logging	Volume index of forest exploitation
	03	Fishing and aquaculture	PPI of fishing products
B		**Mining and quarrying**	
	05	Mining of coal and lignite	composite price index PPI 05 and export price 05
	06	Extraction of crude petroleum and natural gas	PPI 06, export price
	07	Mining of metal ores	PPI 07, export price
	08	Other mining and quarrying	PPI 08, export price
	09	Mining support service activities	PPI B
C		**Manufacturing**	
	10	Manufacture of food products	PPI 10, export price
	11	Manufacture of beverages	PPI 11, export price
	12	Manufacture of tobacco products	PPI 12, export price
	13	Manufacture of textiles	PPI 13, export price
	14	Manufacture of wearing apparel	PPI 14, export price
	15	Manufacture of leather and related products	PPI 15, export price
	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	PPI 16, export price
	17	Manufacture of paper and paper products	PPI 17, export price
	18	Printing and reproduction of recorded media	PPI 18, export price
	19	Manufacture of coke and refined petroleum products	PPI 19, export price
	20	Manufacture of chemicals and chemical products	PPI 20, export price
	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	PPI 21, export price
	22	Manufacture of rubber and plastic products	PPI 22, export price
	23	Manufacture of other non-metallic mineral products	PPI 23, export price
	24	Manufacture of basic metals	PPI 24, export price

Box 1 Indicators used for the calculation of the output, at constant prices, by activities

Section	Division	NACE Rev. 2	Indicators
	25	Manufacture of fabricated metal products, except machinery and equipment	PPI 25, export price
	26	Manufacture of computer, electronic and optical products	PPI 26, export price
	27	Manufacture of electrical equipment	PPI 27, export price
	28	Manufacture of machinery and equipment n.e.c.	PPI 28, export price
	29	Manufacture of motor vehicles, trailers and semi-trailers	PPI 29, export price
	30	Manufacture of other transport equipment	PPI 30, export price
	31	Manufacture of furniture	PPI 31, export price
	32	Other manufacturing	PPI 32, export price
	33	Repair and installation of machinery and equipment	PPI 32, export price
D		**Electricity, gas, steam and air conditioning supply**	
	35	Electricity, gas, steam and air conditioning supply	PPI 35
E		**Water supply, sewerage, waste management and remediation activities**	
	36	Water collection, treatment and supply	PPI 36
	37	Sewerage	PPI 36
	38	Waste collection, treatment and disposal activities; materials recovery	PPI 36
	39	Remediation activities and other waste management services	PPI 36
F		**Construction**	Composite price index for buildings and structures
G		**Wholesale and retail trade; repair of motor vehicles and motorcycles**	
	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	Weighted CPI: Motor cars, Spare parts and accessories for personal transport equipment and Maintenance and repair of personal transport equipment
	46	Wholesale trade, except of motor vehicles and motorcycles	Weighted domestic PPI and implicit import of goods deflator
	47	Retail trade, except of motor vehicles and motorcycles	CPI, which exclude: water (from public utilities systems), electricity and motor vehicles, motorcycles and parts thereof
H		**Transportation and storage**	
	49	Land transport and transport via pipelines	Physical volume indices of transport services based on the quantitative indicators (passenger km and tonne km)
	50	Water transport	CPI Transport services (07.3)
	51	Air transport	CPI Passenger transport by air (07.3.3)
	52	Warehousing and support activities for transportation	Weighted CPI combining indices of 49, 50, 51
	53	Postal and courier activities	CPI Postal services (08.1)
I		**Accommodation and food service activities**	
	55	Accommodation	CPI Total
	56	Food and beverage service activities	CPI Restaurants and hotels (11.1)
J		**Information and communication**	
	58	Publishing activities	CPI services
	59	Motion picture, video and television programme production, sound recording and music publishing activities	CPI services
	60	Programming and broadcasting activities	CPI services
	61	Telecommunications	Weighted CPI (0831, 0832, 0833)

Box 1 Indicators used for the calculation of the output, at constant prices, by activities

Section	Division	NACE Rev. 2	Indicators
	62	Computer programming, consultancy and related activities	Software price index used in GFCF
	63	Information service activities	CPI services
K		**Financial and insurance activities**	
	64	Financial service activities, except insurance and pension funding	CPI Financial services
	65	Insurance, reinsurance and pension funding, except compulsory social security	CPI Insurance services
	66	Activities auxiliary to financial services and insurance activities	CPI Financial services
L		**Real estate activities**	
	68	Real estate activities	Volume index by HFCE – imputed rent for housing, CPI for actual rentals for housing
M		**Professional, scientific and technical activities**	
	69	Legal and accounting activities	CPI for services
	70	Activities of head offices; management consultancy activities	CPI for services
	71	Architectural and engineering activities; technical testing and analysis	Composite price index for R&D
	72	Scientific research and development	Composite price index for R&D
	73	Advertising and market research	CPI for services
	74	Other professional, scientific and technical activities	CPI for services
	75	Veterinary activities	CPI for veterinary and other services
N		**Administrative and support service activities**	
	77	Rental and leasing activities	CPI for services
	78	Employment activities	CPI for services
	79	Travel agency, tour operator reservation service and related activities	CPI for 9.6 Package holidays
	80	Security and investigation activities	CPI for services
	81	Services to buildings and landscape activities	CPI for services
	82	Office administrative, office support and other business support activities	CPI for services
O		**Public administration and defence; compulsory social security**	
	84	Public administration and defence; compulsory social security	Non market output (Input cost method) & implicit deflator 84 for sales for goods and services
P		**Education**	
	85	Education	Non market output (Input cost method) & CPI for education, for market producers
Q		**Human health and social work activities**	
	86	Human health activities	Non market output (Input cost method) & CPI for health, for market producers
	87	Residential care activities	Non market output from the expenditure side, CPI for services for market output
	88	Social work activities without accommodation	Non market output from the expenditure side CPI, for services for market output
R		**Arts, entertainment and recreation**	
	90	Creative, arts and entertainment activities	CPI for cultural services, for market producers
	91	Libraries, archives, museums and other cultural activities	CPI for cultural services, for market producers
	92	Gambling and betting activities	CPI for Recreation and culture
	93	Sports activities and amusement and recreation activities	CPI for cultural services

Box 1 Indicators used for the calculation of the output, at constant prices, by activities

Section	Division	NACE Rev. 2	Indicators
S		**Other service activities**	
	94	Activities of membership organizations	CPI for other services
	95	Repair of computers and personal and household goods	CPI for other services
	96	Other personal service activities	CPI for other services
T		**Activities of households as employers; undifferentiated goods and services producing activities of households for own use**	
	97	Activities of households as employers of domestic personnel	CPI for other services

5.3.2. Intermediate consumption at constant prices

Intermediate consumption at constant prices is estimated applying following methods:

1. Intermediate consumption of the corresponding division at current prices is broken down into the cost components by products. In addition for each cost component, the structure of sales in the domestic market and imports is determined. Furthermore, for each of these cost categories on the economic activitty level, the values at current prices are deflated with the appropriate weighted prices indices (producer price index of manufactured goods for domestic market, consumer price index (CPI), external trade unit value index, import price index and other). In this way, implicite deflator is derived for each division level of the Classification of Activities, since the cost structures vary across industries.

   For the period, 2010-2014 cost structure weights are taken from the comprehensive results of the survey "Structures of operational income and expenditures of legal entities and unincorporated enterprises". For each economic activity, the survey results permit a breakdown of intermediate consumption into 229 goods and services.

   For the years 2015 and onwards weights have been updated with new results obtained through the ad hoc SBS survey (conducted in 2017 for 2016) that covered 150 biggest companies as representatives of each NACE division. Companies were selected according to certain criteria (wages and salaries, sales revenues, number of employees) which provides representative picture of a particular economic activity. Results of this survey were merged with existing upgraded tables based on survey "Structures of operational income and expenditures of legal entities and unincorporated enterprises". For each economic activity, the survey enables a breakdown of intermediate consumption into a 229 goods and services.

   Starting from the 2017 SORS has officially introduced additional "surveying" of large and medium-sized enterprises as a regular module in the Annual Structural Business Survey with aim to compile data on intermediate consumption structure in a way that will allow detail breakdown of intermediate consumption into the CPA classification covering representative goods and services. The Annual Structural Business survey for 2017, part that relates to structure of business income and expenditure, is aimed at presenting the structure of the inputs and outputs of the production process in large and medium-sized business entities. The framework covers large and medium-sized enterprises with over 50 employees, but also those with fewer than 50 employees, according to the bookkeeping rules are treated as large and medium-sized enterprises.

For this part of the research, 2613 enterprises belonging to the sectors of industry, construction and market services, respectively sectors B to N in the Classification of Activities of KD2010 are included, excluding business entities from the Financial Sector and Insurance Sector for which special input output survey is available and already used for calculation.

2. In case of single extrapolation method, intermediate consumption calculation at constant prices is done using a ratio approach. The annual ratio of intermediate consumption over output from the previous year is applied to the output at constant prices in the current year.

3. In case of input cost method the intermediate consumption at constant prices is obtained using the deflation method. For deflation of intermediate consumption a composite price index is used, where a detailed breakdown of goods and services exists (there are 38 items of goods and services used for intermediate consumption, which are, for calculation purposes, aggregated to 19 categories). For each year the weights of these items are determined as the shares of each category in the total expenditures for use of goods and services and then an appropriate price index is chosen (the list of chosen indices is given in the table below). The next step is the calculation of the composite price index – current weights (weights from the year t) of each item is multiplied with the relevant price index (in the year t) – which are used for deflation of intermediate consumption.

Deflators applied for the IC volume estimates by cost components is given in the Box 2.

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
01.ZZ	Products of agriculture, hunting and related services (except agricultural and animal husbandry services (except veterinary services))	PPI of agricultiral products
01.6A	Support services to crop production	PPI of agricultiral products
01.6B	Support services to animal production ; post-harvest crop services ; seed processing services for propagation	PPI of agricultiral products
02.2Z	Wood in the rough	PPI of agricultiral products
02.1Z	Forest trees and nursery services (except forest trees nurseries services, Wild growing non-wood products	PPI of agricultiral products
02.4Z	Forest trees nurseries services; support services to forestry	PPI of agricultiral products
03.ZZ	Fish and other fishing products; aquaculture products; support services to fishing	PPI of fishing products
05.ZZ	Coal and lignite	Domestic PPI of industrial products (for KD 05), imports price index
06.1Z	Crude petroleum	Domestic PPI of industrial products (for KD 06.1), imports price index
06.2Z	Natural gas, liquefied or in gaseous state	Domestic PPI of industrial products (for KD 06.2), imports price index
07.1Z	Iron ores	Domestic PPI of industrial products (for KD 07), imports price index
07.2Z	Non-ferrous metal ores	Domestic PPI of industrial products (for KD 07.2), imports price index
08.1Z	Stone, sand and clay	Domestic PPI of industrial products (for KD 08.1), imports price index

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
08.9Z	Mining and quarrying products n.e.c.	Domestic PPI of industrial products (for KD 08.9), imports price index
09.ZZ	Mining support services	Domestic PPI of industrial products (for section B)
10.1A	Processed and preserved meat and poultry meat	Domestic PPI of industrial products (composite index for KD 10.11 and KD 10.12), imports price index
10.1C	Meat and poultry meat products	Domestic PPI of industrial products (for KD 10.13), imports price index
10.2Z	Processed and preserved fish, crustaceans and molluscs	Domestic PPI of industrial products (for KD 10), imports price index
10.3Z	Processed and preserved fruit and vegetables	Domestic PPI of industrial products (for KD 10.3), imports price index
10.4A	Oils and fats	Domestic PPI of industrial products (for KD 10.41), imports price index
10.4B	Margarine and similar edible fats	Domestic PPI of industrial products (for KD 10.42), imports price index
10.5Z	Dairy products	Domestic PPI of industrial products (for KD 10.5), imports price index
10.6A	Grain mill products	Domestic PPI of industrial products (for KD 10.61), imports price index
10.6B	Starches and starch products	Domestic PPI of industrial products (for KD 10.62, imports price index)
10.7Z	Bakery and farinaceous products	Domestic PPI of industrial products (for KD 10.7), imports price index
10.8A	Sugar	Domestic PPI of industrial products (for KD 10.81), imports price index
10.8B	Cocoa, chocolate and sugar confectionery	Domestic PPI of industrial products (for KD 10.82), imports price index
10.8C	Processed tea and coffee	Domestic PPI of industrial products (for KD 10.8), imports price index
10.8D	Condiments and seasonings	Domestic PPI of industrial products (for KD 10.84), imports price index
10.8E	Prepared meals and dishes	Domestic PPI of industrial products (for KD 10.8), imports price index
10.8F	Homogenised food preparations and dietetic food	Domestic PPI of industrial products (for KD 10.8), imports price index
10.8I	Other food products n.e.c.	Domestic PPI of industrial products (for KD 10.89), imports price index
10.9Z	Prepared animal feeds	Domestic PPI of industrial products (for KD 10.9), imports price index
11.0A	Distilled alcoholic beverages	Domestic PPI of industrial products (for KD 11.01), imports price index
11.0B	Wine from grape	Domestic PPI of industrial products (for KD 11.02), imports price index
11.0C	Cider and other fruit wines, other non-distilled fermented beverages	Domestic PPI of industrial products (for KD 11), imports price index
11.0E	Beer, malt	Domestic PPI of industrial products (for KD 11.05), imports price index
11.0G	Soft drinks, mineral waters and other bottled waters	Domestic PPI of industrial products (for KD 11.07), imports price index
12.ZZ	**Tobacco products**	Domestic PPI of industrial products (for KD 12), imports price index
13.1Z	Textil yarn and thread	Domestic PPI of industrial products (for KD 13.1), imports price index
13.2Z	Woven textiles	Domestic PPI of industrial products (for KD 13.2), imports price index
13.3Z	Textile finishing services	Domestic PPI of industrial products (for KD 13), imports price index

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
13.9Z	Other textiles	Domestic PPI of industrial products (for KD 13.9), imports price index
14.1Z	Wearing apparel, except fur apparel (except sub-contracted operations)	Domestic PPI of industrial products (for KD 14.1), imports price index
14.2Z	Articles of fur (except sub-contracted operations)	Domestic PPI of industrial products (for KD 14), imports price index
14.3Z	Knitted and crocheted apparel (except sub-contracted operations)	Domestic PPI of industrial products (for KD 14.3), imports price index
14.Z9	Sub-contracted operations in textil industry	Domestic PPI of industrial products (for KD 14), imports price index
15.1Z	Tanned and dressed leather; luggage, handbags, saddlery and harnells; dressed and dyed fur (except sub-contracted operations)	Domestic PPI of industrial products (for KD 15.1), imports price index
15.2Z	Footwear (except sub-contracted operations)	Domestic PPI of industrial products (for KD 15.2), imports price index
15.Z9	Sub-contracted operations in footwear and leather production industry	Domestic PPI of industrial products (for KD 15), imports price index
16.1Z	Wood, sawn and planed	Domestic PPI of industrial products (for KD 16.1), imports price index
16.2Z	Products of wood, cork, straw and plaiting materials (except sub-contracted operations)	Domestic PPI of industrial products (for KD 16.2), imports price index
16.Z9	Sub-contracted operations in production of processed wood and wood products	Domestic PPI of industrial products (for KD 16), imports price index
17.1Z	Pulp, paper and paperboard	Domestic PPI of industrial products (for KD 17.1), imports price index
17.2Z	Articles of paper and paperboard	Domestic PPI of industrial products (for KD 17.2), imports price index
18.ZZ	Printing and reproduction services of recorded media	Domestic PPI of industrial products (for KD 18), imports price index
19.1Z	Coke oven products	Domestic PPI of industrial products (for KD 19.1), imports price index
19.2Z	Refined petroleum products	Domestic PPI of industrial products (for KD 19.2), imports price index
20.1Z	Basic chemicals, fertilisers and nitrogen compounds, plastics and synthetic rubber in primary forms	Domestic PPI of industrial products (for KD 20.1), imports price index
20.2Z	Pesticides and other agrochemical products	Domestic PPI of industrial products (for KD 20.2), imports price index
20.3Z	Paints, varnishes and similar coatings, printing ink and mastics	Domestic PPI of industrial products (for KD 20.3), imports price index
20.4Z	Soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations	Domestic PPI of industrial products (for KD 20.4), imports price index
20.5Z	Other chemical products	Domestic PPI of industrial products (for KD 20.5), imports price index
20.6Z	Man-mad fibres	Domestic PPI of industrial products (for KD 20), imports price index
21.1Z	Basic pharmaceutical products	Domestic PPI of industrial products (for KD 21.1), imports price index
21.2Z	Pharmaceutical preparations	Domestic PPI of industrial products (for KD 21), imports price index
22.1Z	Rubber products	Domestic PPI of industrial products (for KD 22.1), imports price index
22.2A	Plastic products	Domestic PPI of industrial products (for KD 22.21), imports price index
22.2B	Plastic packing goods	Domestic PPI of industrial products (for KD 22.22), imports price index

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
22.2C	Builder's ware of plastic	Domestic PPI of industrial products (for KD 22.23), imports price index
22.2I	Other plastic products	Domestic PPI of industrial products (for KD 22.29), imports price index
23.1Z	Glass and glass products	Domestic PPI of industrial products (for KD 23.1), imports price index
23.2Z	Refractory products	Domestic PPI of industrial products (for KD 23.2), imports price index
23.3Z	Clay building materials	Domestic PPI of industrial products (for KD 23.3), imports price index
23.4Z	Other porcelain and ceramic products	Domestic PPI of industrial products (for KD 23.4), imports price index
23.5Z	Cement, lime and plaster	Domestic PPI of industrial products (for KD 23.5), imports price index
23.6Z	Articles of concrete, cememnt and plaster	Domestic PPI of industrial products (for KD 23.6), imports price index
23.7Z	Cut, shaped and finished stone	Domestic PPI of industrial products (for KD 23.7), imports price index
23.9A	Abrasive products	Domestic PPI of industrial products (for KD 23.91), imports price index
23.9I	Other non-mettallic mineral products n.e.c.	Domestic PPI of industrial products (for KD 23.99), imports price index
24.1Z	Basic iron and steel and ferros-alloys; tubes, pipes, hollow profiles and related fittings, of steel; other products of the first processiong of steel	Domestic PPI of industrial products (for KD 24), imports price index
24.4Z	Basic precious and other non-ferrous metals	Domestic PPI of industrial products (for KD 24.4), imports price index
24.5Z	Casting services of metals	Domestic PPI of industrial products (for KD 24.5), imports price index
25.1Z	Structural metal products (except sub-contracted operations)	Domestic PPI of industrial products (for KD 25.1), imports price index
25.2Z	Tanks, reservoirs and containers of metal	Domestic PPI of industrial products (for KD 25.2), imports price index
25.3Z	Steam generators, except central heatin hot water boilers (except sub-contracted operations)	Domestic PPI of industrial products (for KD 25), imports price index
25.4Z	Weapons and ammunition	Domestic PPI of industrial products (for KD 25.4), imports price index
25.5G	Forging, pressing, stamping and roll-forming services of metal; powder metallurgy (goods)	Domestic PPI of industrial products (for KD 25), imports price index
25.5S	Forging, pressing, stamping and roll-forming services of metal; powder metallurgy (services)	Domestic PPI of industrial products (for KD 25), imports price index
25.6Z	Treatment and coating services of metals; machining	Domestic PPI of industrial products (for KD 25), imports price index
25.7Z	Cutlery, tools and general hardware (except sub-contracted operations)	Domestic PPI of industrial products (for KD 25.7), imports price index
25.9Z	Other fabricated metal products (except sub-contracted operations)	Domestic PPI of industrial products (for KD 25.9), imports price index
25.Z9	Sub-contracted operations as part of machine industry - processing and finishing materials services	Domestic PPI of industrial products (for KD 25), imports price index
26.1Z	Electronic components and boards	Domestic PPI of industrial products (for KD 26), imports price index
26.2Z	Computers and peripheral equipment	Domestic PPI of industrial products (for KD 26), imports price index
26.3Z	Communication equipment	Domestic PPI of industrial products (for KD 26), imports price index

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
26.4Z	Consumer electronics	Domestic PPI of industrial products (for KD 26.4), imports price index
26.5A	Measuring, testing and navigating equipment	Domestic PPI of industrial products (for KD 26.51), imports price index
26.5B	Watches and clocks	Domestic PPI of industrial products (for KD 26.52), imports price index
26.6Z	Irradiation, electromedical and electrotherapeutic equipment	Domestic PPI of industrial products (for KD 26), imports price index
26.7Z	Optical instrucments and photographic equipment	Domestic PPI of industrial products (for KD 26), imports price index
26.8Z	Magnetic and optical media	Domestic PPI of industrial products (for KD 26), imports price index
27.1Z	Electrical motors, generators, transformers and electricity distribution and contro apparatus	Domestic PPI of industrial products (for KD 27.1), imports price index
27.2Z	Batteries and accumulators	Domestic PPI of industrial products (for KD 27.2), imports price index
27.3Z	Wiring and wiring devices	Domestic PPI of industrial products (for KD 27.3), imports price index
27.4Z	Electric lighting equipment	Domestic PPI of industrial products (for KD 27.4), imports price index
27.5Z	Domestic applicances	Domestic PPI of industrial products (for KD 27.5), imports price index
27.9Z	Other electrical equiment	Domestic PPI of industrial products (for KD 27.9), imports price index
28.1Z	General-purpose machinery	Domestic PPI of industrial products (for KD 28.1), imports price index
28.2Z	Other general - purpose machinery	Domestic PPI of industrial products (for KD 28.2), imports price index
28.3Z	Agricultural and forestry machinery	Domestic PPI of industrial products (for KD 28.3), imports price index
28.4Z	Metal forming machinery and machine tools	Domestic PPI of industrial products (for KD 28.4), imports price index
28.9Z	Other special-purpose machinery	Domestic PPI of industrial products (for KD 28.9), imports price index
29.1Z	Motor vehicles	Domestic PPI of industrial products (for KD 29.1), imports price index
29.2G	Bodies (coachwork) for motor vehicles; trailers and semi-trailers (except 29.20.4 and 29.20.5)	Domestic PPI of industrial products (for KD 29.2), imports price index
29.2S	Reconditioning, assembly, fitting out and bodywork services of motor vehicles; fitting out services of caravans and mobile homes	Domestic PPI of industrial products (for KD 29), imports price index
29.3Z	Parts and accessories for motor vehicles	Domestic PPI of industrial products (for KD 29.3), imports price index
30.1Z	Ship and boats (except 30.11.9)	Domestic PPI of industrial products (for KD 30), imports price index
30.2Z	Railway locomotives and olling stock (except 30.20.9)	Domestic PPI of industrial products (for KD 30.2), imports price index
30.3Z	Air and spacecraft and related machinery (except 30.30.6)	Domestic PPI of industrial products (for KD 30), imports price index
30.4Z	Military fighting vehicles	Domestic PPI of industrial products (for KD 30), imports price index
30.9Z	Transport equipment n.e.c.	Domestic PPI of industrial products (for KD 30), imports price index
30.SZ	Conversion and reconstruction of ships, floating platforms and structures; sub-contracted operations as part of manufacturing of ships and floating structures; reconditioning and fitting out services	Domestic PPI of industrial products (for KD 30), imports price index

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
	("completing") of railway and tramway locomotives and rolling-stock; sub-contracted operations as part of manufacturing of railway locomotives and rolling stock; overhaul and conversion services of aircraft and aircraft engines	
31.ZZ	Furniture	Domestic PPI of industrial products (for KD 31), imports price index
32.1Z	Jewellery, bijouterie and related articles	Domestic PPI of industrial products (for KD 32), imports price index
32.2Z	Musical instruments	Domestic PPI of industrial products (for KD 32), imports price index
32.3Z	Sports goods	Domestic PPI of industrial products (for KD 32), imports price index
32.4Z	Games and toys	Domestic PPI of industrial products (for KD 32), imports price index
32.5Z	Medical and dental instruments and supplies	Domestic PPI of industrial products (for KD 32), imports price index
32.9Z	Manufactured goods n.e.c.	Domestic PPI of industrial products (for KD 32), imports price index
33.1Z	Repair services of fabricated metal products, machinery and equipment	Domestic PPI of industrial products (for KD 32)
33.2Z	Installation services of industrial machinery and equipment	Domestic PPI of industrial products (for KD 32)
35.1A	Electricity; trade services of electricity	Domestic PPI of production and distribution of electricity
35.1B	Transmission services of electricity ; distribution services of electricity	Domestic PPI of production and distribution of electricity
35.2A	Manufactured gas; trade services of gas through mains	Domestic PPI of production and distribution of natural gas
35.2B	Distribution services of gaseous fuels through mains	Domestic PPI of production and distribution of natural gas
35.3Z	Steam and air conditioning supply services	Domestic PPI of industrial products (for KD 35.3)
36.ZZ	Natural water; water treatment and supply services	Domestic PPI of industrial products (for KD 36)
37.ZZ	Sewerage services; sewage sludge	Domestic PPI of industrial products (for KD 36)
38.ZZ	Waste collection, treatment and disposal services; materials recovery services	Domestic PPI of industrial products (for KD 36), imports price index
39.ZZ	Remediation services and other waste management services	Domestic PPI of industrial products (for KD 36)
41.AZ	Development of building projects	Composite price index for buildings and structures
41.BZ	Construction works for residential and non-residential buildings	Composite price index for buildings and structures
42.ZZ	Constructions and construction works for civil engineering	Composite price index for buildings and structures
43.ZZ	Specialised construction works	Composite price index for buildings and structures
45.1Z	Trade services of motor vehicles	Weighted CPI for motor cars, CPI for spare parts and accessories for personal transport equipment and CPI for maintance and repair of personal transport equipment
45.2Z	Maintenance and repair services of motor vehicles	Weighted CPI for motor cars, CPI for spare parts and accessories for personal transport equipment and CPI for maintance and repair of personal transport equipment
46.1Z	Wholesale trade services on a fee or contract basis	Weighted domestic PPI and implicit deflator for imports of goods
46.9Z	Wholesale trade services on the form of trade margins	Weighted domestic PPI and implicit deflator for imports of goods

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
47.ZZ	Retail trade services	CPI which exclude: water (from public utilities systems), electricity and motor vehicles, motorcycles and parts thereof.
49.1Z	Passengers land services	CPI for passenger transport by road
49.2Z	Freight rail transport services; freight transport services by road and removal services	CPI for passenger transport by road
50.AZ	Sea and coastal passenger water transport services	
50.BZ	Sea and coastal freight water transport services	
51.1Z	Passenger air transport services	CPI for passenger transport by air
51.2Z	Freight air transport and space transport services	CPI for passenger transport by air
52.1Z	Warehousing and storage services	CPI for transport services
52.2Z	Support services for transportation	CPI for transport services
53.Z	Postal and courier services	CPI for postal services
55.ZZ	Accommodation services	CPI total
56.ZZ	Food and beverage serving services	CPI for restaurants and hotels
58.1Z	Publishing services of books, periodicals and other publishing services	CPI for services, imports price index
58.2Z	Software publishing services	CPI for services, imports price index
59.ZZ	Motion picture, video and television programme production services, sound recording and music publishing	CPI for services, imports price index
60.ZZ	Programming and broadcasting services	CPI for services
61.ZZ	Telecommunications services	CPI for telecomunication services
62.ZZ	Computer programming, consultancy and related services	Software price index
63.ZZ	Information services	Software price index
64.ZZ	Financial services, except insurance and pension funding	CPI for financial services
64.FI	FISIM	
65.ZZ	Insurance services	CPI for insurance services
66.ZZ	Services auxiliary to financial services and insurance services	CPI for financial services
68.AZ	Imputed rents	CPI for actual rentals for housing
68.ZZ	Real estate services, excluding imputed rents	CPI for actual rentals for housing
69.1Z	Legal services	CPI for services
69.2Z	Accounting, bookkeeping and auditing services; tax consulting services	CPI for services
70.ZZ	Services of head offices; management consulting services	CPI for services
71.1Z	Architectural and engineering services and related technical consulting services	Composite price index for R&D, imports price index
71.2Z	Technical testing and analysis services	Composite price index for R&D, imports price index
72.ZM	Scientific research and development services market	Composite price index for R&D
72.ZN	Scientific research and development services non market	Composite price index for R&D
73.1Z	Services provided by advertising agencies	CPI for services
73.2Z	Market research and public opinion polling services	CPI for services
74.1Z	Specialised design services	CPI for services, imports price index
74.2Z	Photographic services	CPI for services, imports price index
74.3Z	Translation and interpretation services	CPI for services, imports price index
74.9Z	Other professional, scientific and technical services n.e.c.	CPI for services, imports price index
75.ZZ	Veterinary services	CPI for veterinary services
77.AZ	Rental and leasing services	CPI for services

Box 2 Deflators applied for the IC volume estimates by cost components

CPA – product description		Indicators
77.DZ	Licensing services for the right to use intellectual property and similar products, except copyrighted works	CPI for services
78.ZZ	Employment services	CPI for services
7DZ	Travel agency, tour operator and other reservation services and related services	CPI total
80.ZZ	Security and investigation services	CPI for services
81.ZZ	Services to buildings and landscape	CPI for services
82.ZZ	Office administrative, office support and other business support services	CPI for services
84.ZZ	Public administration and defence services; compulsory social security services	CPI for services
85.ZM	Education market services	CPI for education
85.ZN	Education non market services	CPI for education
86.ZM	Hospital services	CPI for health
86.ZN	Hospital non market services	CPI for health
87.ZM	Residential care services market	CPI for health
87.ZN	Residential care services non market	CPI for health
88.ZM	Social work services without accommodation (market)	CPI for health
88.ZN	Social work services without accommodation (non market)	CPI for health
90.ZM	Creative, arts and entertainment services (market)	CPI for recreational and cultural services, imports price index
90.ZN	Creative, arts and entertainment services (non market)	CPI for recreational and cultural services, imports price index
91.ZM	Library, archive, museum and other cultural services (market)	CPI for cultural services, imports price index
91.ZN	Library, archive, museum and other cultural services (non market)	CPI for cultural services, imports price index
92.ZZ	Gambling and betting services	CPI for recreational and cultural services
93.ZM	Sporting services	CPI for recreational and cultural services
93.ZN	Sporting services	CPI for recreational and cultural services
94.ZM	Services furnished by membership organisations (market)	CPI for other services
94.ZN	Services furnished by membership organisations (non market)	CPI for other services
95.1Z	Repair services of communication equipment	CPI for other services
95.2Z	Repair services of personal and household goods	CPI for other services
96.0A	Washing and (dry) cleaning services of textile and fur products	CPI for other services
96.0B	Hairdressing and other beauty treatment services	CPI for other services
96.0C	Funeral and related services	CPI for other services
96.0D	Physical well-being services	CPI for other services
96.0I	Other personal services n.e.c.	CPI for other services
97.ZZ	Services of households as employers of domestic personnel	CPI for other services

5.3.3. Section A: Agriculture, Forestry and Fishing

For this section constant price calculation is mainly based on EAA results.

For the constant price calculations the double deflation method is used.

Output (value of agricultural production) at constant prices is estimated by deflating current price values by price indices. The price indices is obtained as a ratio between the current price and the price

of the previous year. Estimation is made at product level. Output at constant prices is recorded in SORS by group of products: cereals, industrial crops, forage plants, vegetables and horticultural products, potato, fruits, wine, olive oil, other crop products, cattle, pigs, equines, sheep and goats, poultry, other animals milk, eggs, other animal products, agricultural services.

The estimation of intermediate consumption at constant prices is estimated by deflating current price values by price indices of the means of agriculture of production, at the following product level: seeds and planting stock, energy lubricants, fertilizers and soil improvers, plant protection products and pesticides, animal feedingstuffs, maintenance of materials. All other individual components of intermediate consumption are separately deflated by the appropriate price index as shown in Table.

Table 5.3.3.1 Indicators used for constant price estimation for intermediate consumption (EAA)

Stratification	Indicator
Seeds and planting stock	price index of the means of agriculture of production - Seeds and planting stock
Energy and fuels	price index of the means of agriculture of production - Energy and fuels
Fertilizers and soil improvers	price index of the means of agriculture of production - Fertilizers and soil improvers Fertilizers and soil improvers
Plant protection products and pesticides	price index of the means of agriculture of production - Plant protection products and pesticides
Veterinary expenses	composite price index for veterinary expenses
Animal feedingstuffs	price index of the means of agriculture of production - Animal feedingstuffs
Maintenance of materials	price index of the means of agriculture of production - Maintenance of materials
Maintenance of buildings	CPI
Agricultural services	Output Price Index
Other goods and services	CPI

GVA at constant prices of forestry and logging 02 is obtained applying the method of single output related indicator method. The estimate is obtained by multiplying output at current prices of the base year by the index of physical volume of forestry production. Intermediate consumption at constant prices is obtained using previous year annual ratios of intermediate consumption over output at current prices and multiplied with output at constant prices of the current year.

The GVA of fishing 03 at constant prices is calculated by single output related indicator methods; namely, the current price value of output is deflated by the index of producer prices of fishing products. Intermediate consumption at constant prices is obtained using previous year annual ratios of intermediate consumption over output at current prices and multiplied with output at constant prices of the current year.

5.3.4. Section B: Mining and quarrying

The double deflation method is used for the constant price calculations for all divisions classified within this section. This means that output and intermediate consumption are separately calculated at constant prices.

A detailed description of deflators calculation is given in the previous chapter - output and intermediate consumption at constant prices. For each division, the value of the output at constant prices is obtained by deflating the value at current prices with the appropriate composite index. Intermediate consumption at constant prices is obtained by deflating the value at current prices with the appropriate composite index. GVA is obtained as a difference of output at constant prices and intermediate consumption at constant prices.

Calculation of GVA at previous year prices at the section level is obtained by summing up GVA at previous year prices of divisions classified in the section B.

Then, the aggregates are chain-linked to obtain series with 2010 as reference year.

5.3.5. Section C: Manufacturing

The double deflation method is used for the constant price calculations for all divisions classified within this section. This means that output and intermediate consumption are separately calculated at constant prices.

A detailed description of deflators calculation is given in the previous chapter - output and intermediate consumption at constant prices. For each division, the value of the output at constant prices is obtained by deflating the value at current prices with the appropriate composite index. Intermediate consumption at constant prices is obtained by deflating the value at current prices with the appropriate composite index. GVA is obtained as a difference of output at constant prices and intermediate consumption at constant prices.

Calculation of GVA at previous year prices at the section level is obtained by summing up GVA at previous year prices of divisions classified in the section C.

Then, the aggregates are chain-linked to obtain series with 2010 as reference year.

5.3.6. Section D: Electricity, Gas and Steam Supply

This section includes the activity of providing electric power, natural gas, steam, hot water and the like through a permanent infrastructure (network) of lines, mains and pipes. The double deflation method is used for the constant price calculations for (groups and classes) classified within division 35. This means that output and intermediate consumption are separately calculated at constant prices. A detailed description of deflators calculation is given in the previous chapter - output and intermediate consumption at constant prices. For each group/class, the value of the output at constant prices is obtained by deflating the value at current prices with the appropriate price index. Intermediate consumption at constant prices is obtained by deflating the value at current prices with the appropriate composite price index. GVA is obtained as a difference of output at constant prices and intermediate consumption at constant prices.

The calculation is done at detail breakdown. For electricity, calculation is done separately for each class level. For gas and steam and air conditioning supply calculation is done at the group level.

Gross added value of the sector D Electricity, gas, steam and air conditioning supply at the prices of the previous year is obtained by summing up gross value added values in the prices of the previous year of all classes and groups classified in this sector.

The compilation of data on prices for electricity and natural gas is carried out through the „Survey on Electricity and Natural Gas Prices" in accordance with the Eurostat methodology. The data collection

dynamics is semi-annual. Reporting units are selected companies dealing with the distribution of electricity and natural gas to final users. Data on the production, transmission and distribution of electricity are collected from company Elektroprivreda Srbije (EPS). Data on quantity and value of produced and distributed electricity to final consumers are available. Data on prices are derived on the basis of these data.

Data on gas production and distribution are collected from company Srbijagas. Data on the quantity and value of the distributed gas to the final consumers are available. Data on prices are derived on the basis of these data.

Data on prices for the group Supply of steam and air conditioning is taken from the price statistics department.

Box 4 Indicators used for constant price estimation for division Electricity, gas, steam and air conditioning supply

Activity	Output indicators	Intermediate consumption indicators
35.11 Production of electricity	PPI for production and distribution of electricity	composite prices index PPI, CPI, imports price index
35.12 Transmission of electricity	PPI for production and distribution of electricity	composite prices index PPI, CPI, imports price index
35.13 Distribution of electricity	PPI for production and distribution of electricity	composite prices index PPI, CPI, imports price index
35.14 Trade of electricity	PPI for production and distribution of electricity	composite prices index PPI, CPI, imports price index
35.2 Manufacture of gas; distribution of gaseous fuels through mains	PPI for production and distribution of natural gas	composite prices index PPI, CPI, imports price index
35.3 Steam and air conditioning supply	PPI for Steam and hot water supply	composite prices index PPI, CPI, imports price index

5.3.7. Section E: Water supply, sewerage, waste management and remediation activities

Output at constant prices for all divisions classified within this section is obtained by the method of single output related indicator methods; namely the current price output values are deflated with appropriate price index (PPI of division 36 Collection, purification and distribution of water).

Intermediate consumption at constant prices is obtained using previous year annual ratios of intermediate consumption over output at current prices and multiplied with output at constant prices of the current year.

Calculation of GVA at previous year prices at the section level is obtained by summing up GVA at previous year prices of divisions classified in the section E.

Then, the aggregates are chain-linked to obtain series with 2010 as reference year.

5.3.8. Section F: Construction

The double deflation method is used for the constant price calculations for all divisions classified within this section. This means that output and intermediate consumption are separately calculated at constant prices.

A detailed description of deflators calculation is given in the previous chapter - output and intermediate consumption at constant prices. For each division, the value of the output at constant prices is obtained by deflating the value at current prices with the appropriate composite index

(Composite price index for buildings and structures – explained within part of document referring to GFCF at constant prices). Intermediate consumption at constant prices is obtained by deflating the value at current prices with the appropriate composite index. GVA is obtained as a difference of output at constant prices and intermediate consumption at constant prices.

Calculation of GVA at previous year prices at the section level is obtained by summing up GVA at previous year prices of divisions classified in the section F.

Then, the aggregates are chain-linked to obtain series with 2010 as reference year.

5.3.9. Section G: Wholesale and retail trade, repair of motor vehicles and motorcycles

Output at constant prices for all activities is obtained by the method of single output related indicator methods; namely the current price output values are deflated with appropriate price index.

For division 45 Wholesale and retail trade and repair of motor vehicles and motorcycles, the current price value of output is deflated by the composite index of following CPIs: Motor cars, Spare parts and accessories for personal transport equipment and Maintenance and repair of personal transport equipment.

For division 46 Wholesale trades except motor vehicles and motorcycles, the current price value of output is deflated by the composite price index. This index is obtained as the weighted producer price index of industrial products in domestic market and the implicit import of goods deflator. As weights, the shares of output and imports of goods at current prices are used.

For division 47 Retail trade except motor vehicles and motorcycles, the current price value of output is deflated by the CPI, which exclude: water (from public utilities systems), electricity and motor vehicles, motorcycles and parts thereof.

Intermediate consumption at constant prices for all three divisions is obtained using previous year annual ratios of intermediate consumption over output at current prices from the previous year and multiplied with output at constant prices from the current year. GVA is obtained as a difference of output at constant prices and intermediate consumption at constant prices.

Calculation of GVA at previous year prices at the section level is obtained by summing up GVA at previous year prices of divisions classified in the section G. Then, the aggregates are chain-linked to obtain series with 2010 as reference year.

5.3.10. Section H: Transportation and storage

This section includes the following divisions: 49 – Land transport and transport via pipelines; 50 – Water transport; 51 – Air transport; 52 – Warehousing and support activities for transportation and 53 – Postal and courier activities.

Gross added value at constant prices for all divisions classified in the section H is calculated using a single indicator method, except for division 51 - Air traffic where the method of double deflation is used in the calculation.

For the division (49), output at current prices of the base year is multiplied with the index of physical volume of transport services based on quantitative indicators (passenger and tonne-kilometers).

For the division (50), the output at current prices is deflated by the consumer price index for transport services (07.3).

For the division (52), the output at current prices is deflated by the weighted index of consumer prices: 49, 50, 51.

For the division (53), the output at current prices is deflated by the consumer price index Postal services (08.1)

Intermediate consumption at constant prices for all four divisions is obtained using previous year annual ratios of intermediate consumption over output at current prices from the previous year and multiplied with output at constant prices from the current year. GVA is obtained as a difference of output at constant prices and intermediate consumption at constant prices for all four divisions.

For the calculation of gross value added at constant prices - division (51), the double deflation method is applied. The value of the output at constant prices is obtained by deflating the value at current prices by the index of consumer prices of transport services - passenger transport by air (07.3.3). Intermediate consumption at constant prices is obtained by deflating the value at current prices with the appropriate composite index. Gross value added at constant prices was obtained by the difference between these two aggregates.

Gross value added of the sector H Transport and storage, in the prices of the previous year, is obtained by summing the gross value added in the prices of the previous year of all divisions classified in this sector. Then, all aggregates are connected to get the series from 2010 as a reference year.

5.3.11.Section I: Accommodation and food service activities

The estimate of this section is obtained by the method of single extrapolation with deflated value of output. For division 55 - Accommodation output at current price value is deflated by the CPI total. The estimate at constant prices for division 56 – Food and beverage service activities is obtained by deflating the output by the CPI for restaurants and hotels.

Intermediate consumption at constant prices for divisions in this section is obtained by multiplying output at constant prices by input/output ratio from the previous year.

5.3.12.Section J: Information and communication

For this section is used single extrapolation with deflated value of output.

The output by divisions is deflated by the appropriate price indices.

Intermediate consumption at constant prices for divisions in this section is obtained by multiplying output at constant prices by input/output ratio from the previous year.

5.3.13.Section K: Financial and insurance activities

The calculation of gross value added at constant prices for the financial sector is characterized by the diversity of the methods arising from the specificity of individual subsectors and the metod of calculating their output. Certainly the most important place in this sector in terms of gross value added is NACE 64, which includes commercial banks, financial leasing companies and central bank services (the National Bank of Serbia). For this sector, it is specific that most of the output constitute interest margins, ie, FISIM, whose calculation and allocation has already been elaborated. Consequently, the calculation of output at constant prices requires that FISIM and other elements of the output, primarily banking fees and fees are treated in a special way. The main sources of data are the financial statements and research of financial institutions KGI-02, which provide detailed data on the structure of intermediate consumption.

For the period 2005-2014. gross value added of NACE 64 at constant prices was calculated using single deflation methods. Output at constant prices was calculated by deflating the value at current prices with the index of consumer prices for financial services. Intermediate consumption at constant prices was calculated by using input output rations from the previous year with the output at constant prices of the current year.

For the years since 2015, the calculation has been significantly improved and with improved conditions for application of double deflation methods. The output of NACE 64 is divided into three

components: FISIM, fees and commissions and services of the central bank. Each component is calculated separately at constant prices.

The output for division 64 at constant prices is obtained by the method of extrapolation – the output at current prices of the base year is multiplied by the appropriate composite index (for period 2005-2015).

The composite index is obtained as the arithmetic mean of the index of deposits and credits at constant prices and the index of the number of employees in this division. The index of deposits and credits at constant prices is derived by deflating the stocks of deposits and credits at commercial banks at current prices by the CPI for Financial services.

In accordance with IPA 2014 Multi-beneficiary Statistical Cooperation Programme for 2016 and 2017 estimation for section K is improved.

Output of monetary intermediation (division 64) is broken down into tree components: FISIM, output of the central bank and bank services and commissions. Each component is estimated separately.

Output of financial intermediation companies, cannot be directly measured because such companies do not normally charge their customers for their services, except for some minor incidental services. Their output is measured indirectly.

Financial Intermediation Services Indirectly Measured (FISIM)

Calculation of FISIM at current and constant prices is determined by convention. Methodological framework defined by *Council Regulation 448/98, the Commission Regulation 1889/2002 and Handbook on prices and volume measures in national accounts (2016 edition).*

FISIM presents indirectly measured service charge, realized by financial intermediary in transactions with credits and deposits by institutional sector. In reality, this charge does not occur explicitly, but in the scope of interests paid by users, and collected by financial intermediaries. The calculation of FISIM is based on the reference rate method as prescribed in the above-mentioned FISIM regulations. Differences between the reference rate and the effective rate on loans or deposits represents interest margin, achieved by financial intermediaries. The following method is a B method.

Data on credits, deposits and internal reference rates are taken from the National Bank of Serbia.

Volume estimates of FISIM is calculated using stocks of loans and deposits, which are deflated to base period prices using a general price index, such as implicit price deflator for domestic final demand (ESA 2010 Chapter 14). Stocks of loans and deposits are divided to user institutional sectors. Subsectors, which provide FISIM, are S.122 (deposit-taking corporations except the central bank) and other financial intermediaries, except insurance corporations and pension funds (S.125). By convention, FISIM are not calculated for the central bank (S.121) (ESA 2010, 14.06). FISIM output of the resident FIs is calculated by resident user non-bank institutional sector. (ESA 2010, 14.11). Loans of households are broken down to loans to households as owners of unincorporated enterprises, dwelling loans and consumer loans, and deposits are calculated as deposits to households as owners of unincorporated enterprises and to households as consumers.

FISIM in volume on the deposits = stocks of deposits of the institutional sector / price index * base period margin on deposits (the reference rate in the base period less the effective interest rate on deposits in the base period)

FISIM in volume on the loans = stocks of loans granted to the institutional sector / price index * base period margin on loans (the effective interest rate on loans in the base period less the reference rate in the base period).

FISIM in volume terms = FISIM on deposits in volume terms + FISIM on loans in volume terms

The output of Central Bank at previous year prices is estimated in a similar way as current price estimates. This means that constant price estimates are performed by using the input cost method by summing up all production costs. Each cost component is estimated separately.

Output = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Taxes on production

Value added components are estimated in the following way:

1. Compensation of employees at constant prices is calculated by deflating the compensation of employees with the index of gross wages and salaries for NBS.
2. Intermediate consumption at constant prices is calculated by deflating intermediate consumption at current prices by composite price index. The main statistical data source is the Annual Survey on Financial corporations. This Survey includes a special module with data on a Classification of Products by Activity (CPA) breakdown for intermediate consumption (for purpose of the compilation of the Supply and Use tables (SUT)). The structure of intermediate consumption is determined for 94 consumption categories of goods and services. Next step is calculation of the composite price index. Weights of each item are multiplied with the corresponding consumer price index (CPI). This composite price index is used for deflation of the intermediate consumption.
3. Consumption of fixed capital (CFC) at constant prices is obtained by deflation of the current values with composite price index for software. Total investment in software include both investment components the purchased software and software development for internal use.
4. Taxes on production at constant prices is estimated so that the ratio between the data on taxes on production and output at current prices in the base year multiplied by the data on output at constant prices in the given year.

Fees and commissions includes following expenditures: payments for running a bank accounts, currency exchange, fees for an overdraft either requested or forced, specific transaction charges, payments for advice, payments for the safekeeping of valuables. Fees and commissions at constant prices are calculated by deflation current values by producer price index (PPI) for financial services.

PPI for financial services in the SORS are calculated on the basis of data from 11 banks. This index was calculated first time in 2007. Monthly data on prices include the following costs for services: dinar saving operations, current and giro accounts, domestic payments, international payments, mid & long-term loans, payments cards, safe deposit boxes, etc. On the basis of these price data, in accordance with the rules for making indices, quarterly and annual PPI for financial services are calculated. This index is not yet published in official statistical release.

The output of the insurance services (division 65) is measured by the service charge that is calculated as the difference between revenue from premiums, including income from invested premiums, and claims due, including any reserves.

This division comprises of units engaged in provisions of insurance services – life and non-life insurance, reinsurance and pension funds.

Volume estimates of output for insurance are obtained by extrapolation. As indicator is used composite index - number of insurance policy holders (by type of insurance) is weighted with insurance premiums receivable (by type of insurance) from previous year. In terms of output, pension funds are very similar to life insurance.

Intermediate consumption at constant prices is calculated by deflating intermediate consumption at current prices by composite price index. The main statistical data source is the *Annual Survey on Financial corporations* (KGI-02). This Survey includes a special module with data on a Classification of Products by Activity (CPA) breakdown for intermediate consumption (for purpose of the compilation of the Supply and Use tables (SUT)).

Volume estimates of output for Division 66 – Activities auxiliary to financial services and insurance activities is obtained by deflation with CPI for financial services.

Intermediate consumption at constant prices is calculated separately for Central Securities Depository and Clearing House, Securities Commissions, Belgrade Stock Exchange, Companies engaged in securities brokerage and dealing, etc. at similar way as for estimation of intermediate consumption for divisions 64 and 65.

5.3.14. Section L: Real estate activities

Within section L, special treatment applies to imputed rents. Dwelling services of households (Imputed rentals for housing) are extrapolated by quantity indicators (index of physical volume of total surface area - useful floor space of dwellings), obtained from construction department. For explanation of estimation at constant prices, see heading on households final consumption.

The rest of the output is deflated by the CPI for actual rentals for housing.

Intermediate consumption at constant prices for this division is obtained by multiplying output at constant prices by input/output ratio from the previous year.

5.3.15. Section M: Professional, scientific and technical activities and Section N: Administrative and support service activities

The output for Sections M and N by division at constant prices is estimated by the deflation method with appropriate price index.

Intermediate consumption at constant prices for all divisions is obtained by multiplying output at constant prices by input/output ratio from the previous year.

5.3.16. Section O: Public administration and defence; compulsory social security

Since the value of a non-market service is determined by the costs involved, it is thus possible to calculate the volume by the value of the costs at base period prices, i.e. by the value at base period prices of intermediate consumption, compensation of employees, net other taxes of production and consumption of fixed capital. This method is known as the input cost method.

Almost the whole output is produced by non-market producers of the general government sector. The output is compiled applying the input cost method. The output at constant prices is therefore estimated in the same way as the output at current prices, i.e. by the input approach as the sum of value added and intermediate consumption, both at constant prices.

5.3.17. Section P Education

The estimation of output at constant prices is carried out separately for two groups of producers: non-market producers (part of government final consumption expenditure at constant prices from the expenditure side) and market producers.

The method used for non-market producers is explained in Chapter on government final consumption.

The compilation of output for market producers is made in the same way as for market producers in other industries. The output of education services for market producers at current prices (e.g. private schools, driving schools) is deflated by the CPI for education.

Intermediate consumption at constant prices for market and non-market producers is estimated by deflating with the same composite price index, which is explained in Chapter on government final consumption.

5.3.18.Section Q Human health and social work activities

Section Q covers human health and social work services.

The major of production is non-market oriented production. It is provided by units of the general government producers. The method used for non-market producers is explained in Chapter 3.4.

The output for market producers for division 86 Human health services at current prices is deflated by the CPI for health services.

The output for market producers for division 87 Residential care activities and division 88 Social work activities without accommodation at current prices is deflated by the CPI for services.

Intermediate consumption at constant prices for market and non-market producers is estimated by deflating with the same composite price index which is explained in Chapter 3.4.

5.3.19. Section R: Arts, entertainment and recreation; Section S: Other service activities; Section T: Activities of households as employers; undifferentiated goods and services producing activities of households for own use

The output for divisions within sections R, S and T at constant prices is estimated by deflation of current prices by the appropriate price index. (See Box1).

Intermediate consumption at constant prices for sections R and S is obtained by multiplying output at constant prices by input/output ratio from the previous year.

5.3.20.Taxes and subsidies on products

The data on taxes and subsidies on products at constant prices are calculated on the basis of statistical and administrative data sources.

The data sources for taxes are submitted by the Treasury Administration of the Ministry of Finance. Data on taxes are provided on a monthly basis and on a cash basis, with the breakdown of taxes by type. For cash based aggregates an adjustment to accrual accounting is done using time adjusted method, with a variable time lag.The data on the accrual basis are available starting from 2005.

The taxes on products are calculated for the following groups:

1. Value added tax (VAT) – total
2. Excise on:
    - alcohol
    - tobacco
    - petrol
    - other excise goods
3. Other taxes on products – total
4. Customs duties – total

The tax rate, for all kinds of taxes, is estimated on the basis of the taxes on products data and the data on Household final consumption expenditure (HFCE). From the database of HFCE, separate groups of goods and services that contain certain kinds of taxes on products are created. The tax rate expresses the ratio between the data on taxes and HFCE at current prices in the base year.

The VAT value at constant prices is calculated so that the tax rate is multiplied by the of HFCE data, by same groups, at constant prices in the given year.

A similar procedure is applied to the data for other type of taxes.

The data sources for calculation of customs duties at constant prices are customs duties and imports of goods at current and constant prices. The volume measures of customs duties are calculated by applying the customs rate in the base year to the volume measures of the imports of goods at constant prices in the current year.

For taxes on products, the calculations at constant prices have been carried out using a ratio approach. The annual ratio of taxes on products over properly chosen aggregate from the previous year is applied to the aggregate at constant prices in the current year.

Data sources for subsidies are budgetary data. Data are shown as actual payments in the accounting period and are on cash basis. All this information can be found in the Bulletin of Public Finance of the Ministry of Finance,

The largest part of all subsidies from the budget is assigned to agriculture and manufacture of food products. For constant price calculation extrapolation method is used. The current value of subsidies at the base year is multiplied by a composite index. This composite index is derived as the weighted average of the index of physical volume of agricultural production and the index of physical volume of manufacture of food products. As weights, the structure of subsidies assigned to these two production activities is used.

5.4. GDP by the expenditure approach

Gross domestic product by expenditure approach is calculated as the sum of individual consumption expenditure of households, individual consumption of non-profit institutions serving households (NPISHs), as well as government individual and collective consumption expenditures and gross capital formation. Gross capital formation is equal to the sum of expenditures for gross fixed capital formation, changes in inventories and changes (acquisitions less disposals) of valuables.

Calculations at constant prices are derived for all categories of GDP:

- Household final consumption expenditure (HFCE) are calculated at the four-digit (or 5-digit) (classes) level of the Classification of individual consumption by purpose (COICOP);
- Final consumption expenditure of non-profit institutions serving households (NPISHs) – total;
- Government final consumption expenditure (GFCE) are estimated separately for individual and collective government consumption;
- Gross fixed capital formation (GFCF), by type of fixed assets;
- Acquisitions less disposals of valuables, total;
- Changes in inventories, by categories;
- Exports and imports – distinction in goods and services.

5.4.1. Household final consumption expenditure (HFCE)

The compilation of HFCE at constant prices is performed at the four-digit (or 5-digit) level of the Classification of Individual Consumption by Purpose (COICOP). For the large majority of expenditures, volume estimates are obtained by deflating current price values by the consumer price index (CPI).

Currently, CPI is not produced for a number of COICOP items, so that:

- Hospital services are deflated using the total CPI for Health
- Motorcycles are deflated using CPI for Purchase of vehicles

- Passenger transport by sea and inland waterway and Combined passenger transport/Other purchased transport services are deflated using CPI for Transport services
- Insurance connected with health is deflated using CPI for Insurance connected with the dwellings
- Other insurance/Life insurance is deflated using total CPI for Insurance
- FISIM is deflated by using CPI for Other financial services n.e.c.

Dwelling services of households (Imputed rentals for housing) and education are extrapolated by quantity indicators. Dwelling services are extrapolated by index of physical volume of total surface area (useful floor space of dwellings), obtained from construction department. Pre-primary and primary educations are extrapolated by the sum of children in pre-primary and number of pupils in primary school. Secondary education is extrapolated by number of pupils in secondary school. Post-secondary non-tertiary education/Tertiary education is extrapolated by number of new registered students in the Republic of Serbia. The data for extrapolation of education services are obtained from education department.

Index of the exchange rate of the euro (t/t-1) is used as deflator for narcotics and prostitution.

As noted initially, all other unmentioned COICOP items are deflated by respective CPI. Price statistics department compiles these data. The price index is an index of the price that consumers pay for observed groups of products; it takes into account quality changes and is valued at purchasers' prices including VAT.

The stratification of products and methods used are shown in the chapter about intermediate consumption at constant prices.

The deflation of household final consumption expenditure by the consumer price index is classified as an A method.

Extrapolations by quantity indicators for dwelling services and education are classified as B methods.

Direct purchases of resident households abroad at constant prices are obtained by deflation with the weighted price index of total CPIs of 5 countries where Serbian tourists mostly travel. Direct purchases of non-resident households on the domestic territory at constant prices are obtained by deflation by the total CPI for the Republic of Serbia. These methods used can be classified as B methods.

Box 3.1 Volume estimates of household final consumption expenditure by the domestic concept

COICOP code	Description	Method
01.1.1	Bread and cereals	Deflation by the CPI
01.1.2	Meat	Deflation by the CPI
01.1.3	Fish and seafood	Deflation by the CPI
01.1.4	Milk, cheese and eggs	Deflation by the CPI
01.1.5	Oils and fats	Deflation by the CPI
01.1.6	Fruit	Deflation by the CPI
01.1.7	Vegetables	Deflation by the CPI
01.1.8	Sugar, jam, honey, chocolate and confectionery	Deflation by the CPI
01.1.9	Food products n.e.c.	Deflation by the CPI
01.2.1	Coffee, tea and cocoa	Deflation by the CPI
01.2.2	Mineral waters, soft drinks, fruit and vegetable juices	Deflation by the CPI
02.1.1	Spirits	Deflation by the CPI
02.1.2	Wine	Deflation by the CPI
02.1.3	Beer	Deflation by the CPI
02.2.0	Tobacco	Deflation by the CPI
02.3.0	Narcotics	Deflated with an index of the exchange rate of the euro (t/t-1)
03.1.1	Clothing materials	Deflation by the CPI
03.1.2	Garments	Deflation by the CPI
03.1.3	Other articles of clothing and clothing accessories	Deflation by the CPI
03.1.4	Cleaning, repair and hire of clothing	Deflation by the CPI
03.2.1	Shoes and other footwear	Deflation by the CPI
03.2.2	Repair and hire of footwear	Deflation by the CPI
04.1.1	Actual rentals for housing	Deflation by the CPI
04.2.1	Imputed rentals for housing	Extrapolation by useful floor space of dwellings
04.3.1	Materials for the maintenance and repair of the dwelling	Deflation by the CPI
04.3.2	Services for the maintenance and repair of the dwelling	Deflation by the CPI
04.4.1	Refuse collection	Deflation by the CPI
04.4.2	Sewage collection	Deflation by the CPI
04.4.3	Water supply	Deflation by the CPI
04.4.4.	Other services relating to the dwelling n.e.c.	Deflation by the CPI
04.5.1	Electricity	Deflation by the CPI
04.5.2	Gas	Deflation by the CPI
04.5.3	Liquid fuels	Deflation by the CPI
04.5.4	Solid fuels	Deflation by the CPI
04.5.5	Heat energy	Deflation by the CPI
05.1.1	Furniture and furnishings	Deflation by the CPI
05.1.2	Carpets and other floor coverings	Deflation by the CPI
05.1.3	Repair of furniture, furnishings and floor coverings	Deflation by the CPI
05.2.0	Household textiles	Deflation by the CPI
05.3.1	Major household appliances whether electric or not	Deflation by the CPI
05.3.2	Small electric household appliances	Deflation by the CPI
05.3.3	Repair of household appliances	Deflation by the CPI
05.4.0	Glassware, tableware and household utensils	Deflation by the CPI
05.5.1	Major tools and equipment	Deflation by the CPI
05.5.2	Small tools and miscellaneous accessories	Deflation by the CPI

Box 3.1 Volume estimates of household final consumption expenditure by the domestic concept

COICOP code	Description	Method
05.6.1	Non-durable household goods	Deflation by the CPI
05.6.2	Domestic services and household services	Deflation by the CPI
06.1.1	Pharmaceutical products	Deflation by the CPI
06.1.2	Other medical products	Deflation by the CPI
06.1.3	Therapeutic appliances and equipment	Deflation by the CPI
06.2.1	Medical services	Deflation by the CPI
06.2.2	Dental services	Deflation by the CPI
06.2.3	Paramedical services	Deflation by the CPI
06.3.0	Hospital services	Deflation by the CPI for total Health
07.1.1	Motor cars	Deflation by the CPI
07.1.2	Motorcycles	Deflation by the CPI for Purchase of vehicles
07.1.3	Bicycles	Deflation by the CPI
07.2.1	Spare parts and accessories for personal transport equipment	Deflation by the CPI
07.2.2	Fuels and lubricants for personal transport equipment	Deflation by the CPI
07.2.3	Maintenance and repair of personal transport equipment	Deflation by the CPI
07.2.4	Other services in respect of personal transport equipment	Deflation by the CPI
07.3.1	Passenger transport by railway	Deflation by the CPI
07.3.2	Passenger transport by road	Deflation by the CPI
07.3.3	Passenger transport by air	Deflation by the CPI
07.3.4	Passenger transport by sea and inland waterway	Deflation by the CPI for transport services
07.3.5/6	Combined passenger transport/Other purchased transport services n.e.c.	Deflation by the CPI for transport services
08.1.0	Postal services	Deflation by the CPI
08.2.0	Telephone and telefax equipment	Deflation by the CPI
08.3.0	Telephone and telefax services	Deflation by the CPI
09.1.1	Equipment for the reception, recording and reproduction of sound and pictures	Deflation by the CPI
09.1.2	Photographic and cinematographic equipment and optical instruments	Deflation by the CPI
09.1.3	Information processing equipment	Deflation by the CPI
09.1.4	Recording media	Deflation by the CPI
09.1.5	Repair of audio-visual, photographic and information processing equipment	Deflation by the CPI
09.2.1	Major durables for recreation and culture	Deflation by the CPI
09.2.2	Musical instruments and major durables for indoor recreation	Deflation by the CPI
09.2.3	Maintenance and repair of other major durables for recreation and culture	Deflation by the CPI
09.3.1	Games, toys and hobbies	Deflation by the CPI
09.3.2	Equipment for sport, camping and open-air recreation	Deflation by the CPI
09.3.3	Gardens, plants and flowers	Deflation by the CPI
09.3.4/5	Pets and related products/Veterinary and other services for pets	Deflation by the CPI
09.4.1	Recreational and sporting services	Deflation by the CPI
09.4.2	Cultural services	Deflation by the CPI

Box 3.1 Volume estimates of household final consumption expenditure by the domestic concept

COICOP code	Description	Method
09.4.3	Games of chance	Deflation by the CPI
09.5.1	Books	Deflation by the CPI
09.5.2	Newspapers and periodicals	Deflation by the CPI
09.5.3	Miscellaneous printed matter	Deflation by the CPI
09.5.4	Stationery and drawing materials	Deflation by the CPI
09.6.0	Package holidays	Deflation by the CPI
10.1.0	Pre-primary and primary education	Extrapolation by the number of pupils and number of children in pre-primary education
10.2.0	Secondary education	Extrapolation by the number of pupils
10.3.0/4.0	Post secondary non-tertiary education/Tertiary education	Extrapolation by the number of students
10.5.0	Education not definable by level	Deflation by the total CPI
11.1.1	Restaurants, cafés and the like	Deflation by the CPI
11.1.2	Canteens	Deflation by the CPI
11.2.0	Accommodation services	Deflation by the CPI
12.1.1	Hairdressing salons and personal grooming establishments	Deflation by the CPI
12.1.2	Electric appliances for personal care	Deflation by the CPI
12.1.3	Other appliances, articles and products for personal care	Deflation by the CPI
12.2.0	Prostitution	Deflated with an index of the exchange rate of the euro (t/t-1)
12.3.1	Jewellery, clocks and watches	Deflation by the CPI
12.3.2	Other personal effects	Deflation by the CPI
12.4.0	Social protection	Deflation by the CPI
12.5.1	Insurance connected with the dwelling	Deflation by the CPI
12.5.2	Insurance connected with health	Deflation by the CPI of Insurance connected with the dwelling
12.5.3	Insurance connected with transport	Deflation by the CPI
12.5.4/5	Other insurance/Life insurance	Deflation by the total CPI for insurance
12.6.1	FISIM	Deflation by the CPI for Other financial services n.e.c
12.6.2	Other financial services n.e.c	Deflation by the CPI
12.7.0	Other services n.e.c.	Deflation by the CPI
	Resident households expenditure in the rest of the world	CPI (weighted price index with total CPI of countries were Serbian tourists mostly travel)
	Non-resident expenditure on the economic territory	CPI (total CPI of Serbia)

5.4.2. Non-profit institutions serving households final consumption expenditure (NPISH)

Final consumption expenditure of NPISHs, at previous year prices is estimated using the input cost approach by summing up all the cost components of final expenditure of NPISHs. Each cost component is estimated separately. The aggregates are chain-linked to obtain final consumption expenditure of NPISHs value with 2010 as reference year.

Final consumption expenditure of NPISHs = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid – Sales of goods and services[20]

Compensation of employees at constant prices is obtained by extrapolating compensation of the employees with the relevant index of number of employees.

Intermediate consumption at constant prices is obtained by deflation of intermediate consumption at current prices with the consumer price index for social protection services.

Consumption of fixed capital at constant prices is obtained by deflation of the current values with the implicit producer price index for capital goods.

Other taxes on production at constant prices have been obtained by extrapolation with the relevant index of number of employees.

Sales of goods and services at constant prices is obtained in the following way:

- Market output and payments for non-market output at constant prices are obtained by deflating current price values with the consumer price index for services,

- Output for own final use at constant prices is obtained by deflating current price values with the relevant indicators for R&D and own-account software (see part on GFCF) Intellectual property products).

5.4.3. Government final consumption expenditure (GFCE)

Government final consumption expenditure (GFCE) represents current expenditures by general government units on services to the community. General government final consumption expenditure is divided into expenditures for collective services and expenditures for individual services. Individual services are related to expenditures for health, recreation, culture and religion, education and social protection, whereas all other expenditures are considered to be collective services. Services provided by general government units are free of charge or charged at prices which cover only a small proportion of costs, therefore the government is considered to be consumer of its own output, which has no directly observable market value, but is defined to be equal to the sum of the production costs:

Output = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid – Other subsidies on production received[21] *+ Operating surplus*[22]

Final consumption expenditure of general government is estimated as output subtracted by receipts from sales of goods and services provided by government units (market output) plus social benefits in kind.

[20] Sales of goods and services include market output, output for own final use and payments for non-market output.

[21] It is considered that government units do not receive subsidies, i.e. funds received from government are treated as intra-governmental transfers.

[22] By convention, operating surplus for the government units is equal to zero.

Final government consumption expenditure = Output – Sales of goods and services[23] + Social transfers in kind via market producers

Government final consumption expenditure at previous year prices is estimated in a similar way as current price estimates. This means that constant price estimates have been performed using the input-cost approach by summing up all the cost components of government final consumption. Each cost component is estimated separately. The aggregates are chain-linked to obtain GFCE value with 2010 as reference year.

Compensation of employees at constant prices is obtained by extrapolating compensation of the employees with the relevant index of number of employees.

Intermediate consumption at constant prices is obtained by deflation of intermediate consumption at current prices. On the basis of the annual financial statements, the structure of intermediate consumption is determined for each activity (consumption category). In the next step the composite price index for each category is calculated – current weights (weights from the year t) of each item is multiplied with the relevant price index (in the year t). These composite price indices are used for deflation of the intermediate consumption.

The following table presents an overview of the price indices used for intermediate consumption deflator calculation:

Box 3.xx Price indices used for intermediate consumption deflator calculation

Goods and services used for intermediate consumption		Price index
I	Regular expenses	
1.	Cost of payment operations and bank services	CPI Financial services n.e.c.
2.	Energy	CPI Electricity, gas and other fuels
3.	Communal services	CPI Water supply and miscellaneous services related to the dwelling
4.	Communication	CPI Communication
5.	Insurance	CPI Insurance
6.	Rental of assets and equipment	CPI Actual rents
7.	Other costs	CPI Subscription on radio, TV and cable TV
II	Travelling costs	CPI Transport services (07.3), CPI Accommodation services and Catering services index
III	Contractual services	
1.	Administrative services	CPI Services
2.	Computer services	CPI Services
3.	Staff education and training	CPI Education

[23] Sales of goods and services include market output, output for own final use and payments for non-market output.

Box 3.xx Price indices used for intermediate consumption deflator calculation

Goods and services used for intermediate consumption		Price index
4.	Information services	CPI Newspapers and periodicals
5.	Expert services	CPI Services
6.	Laundering and catering services	CPI Food and non-alcoholic beverages and CPI Goods and services for routine household maintenance
7.	Presentation services	CPI Total
8.	Other general services	CPI Services
IV	Specialised services	*COLLECTIVE:* CPI for Services; *HEALTH:* CPI for Health; *RECREATION, CULTURE AND SPORT:* CPI for Recreational and sporting services and CPI for Cultural services; *EDUCATION:* CPI for Education; *SOCIAL PROTECTION:* CPI total
V	Current repairs and maintenance (services and materials)	PPI for Construction elements and materials
VI	Material	*COLLECTIVE; RECREATION, CULTURE AND SPORT; EDUCATION:* CPI for Stationery and drawing materials; *HEALTH:* CPI for Health; *SOCIAL PROTECTION:* CPI for Services

Other taxes on production at constant prices have been obtained by extrapolation with the relevant index of number of employees.

Consumption of fixed capital at constant prices is obtained by deflation of the current values with the producer price index for capital goods.

Social transfers in kind at constant prices have been obtained by deflation with the consumer price index for health.

Sales of goods and services at constant prices is obtained in the following way:

- Market output and payments for non-market output at constant prices are obtained by deflating current price values with the relevant consumer price index, as shown in the Box 3.xxx;
- Output for own final use at constant prices is obtained by deflating current price values with the relevant indicators for R&D and own-account software (see on GFCF - Intellectual property products).

Box 3.xxx Consumer price indices used for deflation of market output

Consumption category	Consumer price index
Collective services	Services
Health	Health
Recreation, culture and sport	Culture
Education	Education
Social protection	Services

Methods used in the government final consumption estimation at constant prices for individual services can be classified as C methods, while the constant price estimation method for collective services can be classified as B method.

5.4.4. Gross Fixed Capital Formation (GFCF)

Gross fixed capital formation encompasses a large range of different types of fixed assets, which are integrated by type of fixed assets into six subgroups:

- dwellings,
- other buildings and structures,
- machinery and equipment,
- weapons systems,
- cultivated biological resources,
- intellectual property products.

Gross fixed capital formation in volume terms is compiled applying the following classifications, conforming to the concepts and international standard ESA 2010: classification of fixed assets - AN.11 and industrial classification of economic activities - NACE Rev. 2.

The estimation is performed through the following steps:

- GFCF at previous year prices calculations have been done by deflating each investments component at current prices separately, using appropriate indicators. Obtained time series at previous year prices could not be used for real growth rates calculations since data are not comparable.
- To obtain comparable time series, the method of chain-linking has been applied and chain-linked volume measures have been calculated. According to Eurostat recommendations, 2010 has been currently used as the reference year.
- Value terms for each component have been obtained by multiplying chain-linked indices with the corresponding nominal value of the reference year. Chain-linked volume series expressed in monetary terms are non-additive, because the aggregates could not be obtained by summing up its integral elements. Additivity exists only in the reference year and in the year after, as the GFCF elements in these years are valued at the same prices.

5.4.4.1. Data sources

Given the multi-source character of the GFCF and the fact that it represents a kind of statistics of synthesis, a wide range of data collection techniques are used in GFCF volume estimates procedure. Primary and supplementary statistics carried out by the SORS as well as administrative data used in compiling investment estimates in volume terms are listed in the following table:

Box xx: Data sources for GFCF deflators' computation

	Data source	Indicators
1.	**GFCF at current prices**	structures of acquisitions and disposals of fixed assets by type
2.	**Annual report on investments in fixed assets (INV-01)**	structures of acquisitions and disposals of fixed assets by type
3.	**Price Statistics**	
	Price indices of the producers' products of agriculture and fishing	price index (PPI)
	Price indices of the producers' industrial products for domestic market	price index (PPI)
	Consumer Price Index by COICOP	price index (CPI)
	Indices from import producers' prices	price index
4.	**Construction statistics**	
	Annual survey on construction works (GRADJ - 11)	construction production volume by types of constructions according to Classification of Types of Construction; data on investor, etc.
5.	**Research and Development Survey**	
	Survey on research and development for enterprises and canters of excellence (IR-1)	expenditures by type (current costs, investment costs), by sources of funds (domestic investing and from abroad); number of employees in R&D, number of researchers in HC and FTE, etc.
	Survey on research and development for faculties, R&D institutes (IR-2)	expenditures by type (current costs, investment costs), by sources of funds (domestic investing and from abroad), by primary socio-economic objectives
	Survey on research and development for non-profit organizations – associations (IR-3)	expenditures by type (current costs, investment costs), by sources of funds (domestic investing and from abroad), by primary socio-economic objectives
6.	**Labour market statistics**	
	Monthly survey on employees and their salaries and wages (RAD-1)	averages wages and salaries by activities
	Survey on registered employment	number of employees by activities (formal employment data)
	Labour Force Survey (LFS)	number of employees by activities (formal/informal employment data)
7.	**Structural business statistics (SBS)**	
	Structure of income and expenditure of economic subjects survey	income and expenditure of economic subjects by activities
8.	**National Bank of Serbia (NBS)**	data on exchange rates
9.	**Financial Statements Data (SBRA, Ministry of Finance)**	structures and ratios of revenues and expenditures of business entities; data on intangible assets, real estate, plant and equipment and biological assets data on changes in fixed assets by types etc.

5.4.4.2. GFCF volume estimation by AN code

Gross fixed capital formation at constant prices is obtained by summing up estimated data on investments in construction assets, machinery and equipment, cultivated biological resources and intellectual property products, in volume terms.

The data on investments at previous year prices within every section level (NACE Rev. 2) are obtained by deflating each component of fixed assets separately (the same deflator is applied for all activities by type of assets). Indicators, used for deflation, were selected among available data sources from the official statistical system. In addition, new deflators have been calculated (Paasche-type indices), especially for the constant price estimation needs.

The following Box provides an overview of the deflators used by main GFCF categories.

Box xx: Deflators applied for the GFCF volume estimates by categories

GFCF by type	Deflator
Buildings and other structures (AN.111, AN.112)	Composite price index for construction works based on: PPI of materials for incorporating in construction PPI of energy PPI of machinery and equipment n.e.c. PPI of motor vehicles and trailers indices of gross salaries in construction
Equipment and machinery (AN.113)	
Domestic equipment and machinery	Composite price index for domestic equipment based on corresponding PPIs: PPI for motor vehicles, trailers and semi-trailers PPI for other transport equipment PPI for fabricated metal products, except machinery and equipment PPI for machinery and equipment n.e.c. PPI for computer, electronic and optical products PPI for electrical equipment PPI for furniture
Imported equipment and machinery	Composite price index for imported equipment based on following indices from import producers' prices: IPI for motor vehicles, trailers and semi-trailers IPI for other transport equipment IPI for fabricated metal products, except machinery and equipment IPI for machinery and equipment n.e.c. IPI for computer, electronic and optical products IPI for electrical equipment IPI other manufacturing
Weapons systems (AN.114)	PPIs of industrial products for domestic market indices from import producers' prices
Cultivated biological resources (AN.115)	PPI for agricultural and fishing products
Intellectual property products (AN.116)	Composite price index for research and development Composite price index for software and databases Composite price index for mineral exploration, entertainment, literary and artistic originals and other IPP

5.1.4.2.1 Dwellings and other buildings and structures

Investments in buildings and other structures at constant prices are calculated by deflating investments at current prices. Since the total input structure/structure of expenditures for construction includes costs of building materials, energy, transport, salaries and wages, and a number of other elements, the deflator used for construction works (composite price index for buildings and other structures) is estimated by weighting the respective producer price indices of industrial products for domestic market (elements and materials for incorporating in construction, energy, motor vehicles and trailers, machinery and equipment n.e.c.) and index of average gross salaries and wages in construction.

With this approach, all cost components (material costs, consumption of fixed capital and compensations of employees) are taken into account considering their share in the total construction costs. The current year weights are calculated on the basis of data from annual financial statements of construction companies, as shares of each element of costs in the total expenditures of enterprises.

5.1.4.2.2 Domestic machinery and equipment

Investments in domestic machinery and equipment at previous year prices are estimated by deflating investments at current prices. The composite price index for domestic equipment is used as deflator.

The starting point for its computation presents the results of the Annual survey on investments in fixed assets that ensure detailed data on investments in domestic equipment, broken down into 10 categories of investment goods. For each of these categories, the values at current prices are deflated with the respective PPIs of industrial products for domestic market, applying the weighted share of the product group in the total investments in domestic equipment on the section level of the Classification of Activities. Separate composite price indices are derived for each section, since the structures of machinery and equipment vary across industries.

5.1.4.2.3 Imported machinery and equipment

Investments in imported machinery and equipment in volume terms are computed by deflating investments at current prices. Composite price index for imported equipment is used as deflator.

The starting point for its computation presents the results of the Annual survey on investments in fixed assets that ensure detailed data on the value of investments in imported equipment, further broken down into 10 categories of capital goods. For each of these categories, the values at current prices are deflated with the weighted indices from import producers' prices for each product group. Each category of fixed assets is taken into account proportionally to its share in the total investments in imported equipment on the section level of the Classification of Activities. Separate composite price indices are derived for each section, since the structures of imported machinery and equipment vary across industries.

5.1.4.2.4 Weapons systems

Acquisitions of military equipment at constant prices are estimated by deflating military expenditures at current prices. As deflators, appropriate indices of producers 'prices of industrial products for the domestic market and indices from import producers' prices are used, depending on the origin and technical structure of the purchased military equipment.

Military expenditures are shown within the category Other machinery and equipment as a new item of gross fixed capital formation (but not displayed separately).

5.1.4.2.5 Cultivated biological resources

Volume estimates of investments in cultivated biological resources are calculated by deflating investments at current prices. Producer price index of agricultural and fishing products is applied as deflator.

5.1.4.2.6 Intellectual property products

Investments in intellectual property products at constant prices is obtained by summing up IPP investment categories estimated in volume terms. The IPPs in volume terms are derived by deflating appropriate investments at current prices with the respective composite price index:

- composite price index for research and development,
- composite price index for software and databases,
- composite price index for intellectual property products, excluding software and research and development.

Research and development

Investments in research and development at constant prices are calculated by deflating investments at current prices. Since the total input structure for research and development includes costs of raw materials, energy, costs of machinery and equipment and other fixed assets, salaries and wages for employees, and a number of other elements, the deflator used for research and development - composite price index for research and development is estimated as the weighted average of the respective producer price indices of industrial products for domestic market, consumer price index, implicit deflator of gross fixed capital formation and index of average gross salaries and wages in research and development division of the Classification of Activities.

Applying this approach, all cost components (material costs, investment costs and remuneration for employees) are taken into account in proportion with their share in the gross domestic expenditures for research and development activity. The weights are obtained on the basis of data from the surveys Annual report on research and development and Structure of income and expenditure of economic subjects.

Software and databases

Investments in software and databases at constant prices are estimated by deflating investments at current prices. Total investments in software include both investment components - the purchased software and software development for internal use.

As deflator for purchased software applied is PPI for software applicable in the USA adjusted for USD/RSD exchange rate fluctuations. In accordance with the international recommendations, this deflator is used because of the dominant position of software of the USA origin in the world market and thereby comparability of data is ensured.

Deflator for own account software - composite price index for own account software - is estimated by weighting the respective producer price indices and indices of average gross salaries and wages in computer engineering. Thereby all cost components (compensation of employees - labour cost, intermediate inputs, indirect business taxes and consumption of capital, etc.) are taken into account in proportion with their share in total expenditures in development software for own needs.

Deflator for software - composite price index for software and databases - is obtained as the weighted average of the above mentioned indices.

Mineral exploration; entertainment, literary and artistic originals; and other IPP

The starting point for deflator computation needed for the calculation of investments in intellectual property products, excluding software and research and development, at constant prices are the data on mining (mineral) exploration, entertainment, literary and artistic originals and other intellectual property products respective from the survey on investments. The composite price index is derived by weighting following price indices:

- composite price index for research and development,
- consumer price index (COICOP) for culture,
- consumer price index - total (COICOP).

The weights are determined by the share of each product group in total investments for the subject part of intellectual property products.

5.4.5. Changes in inventories

The main sources of data for calculating changes in inventories are the financial statements and various indices from price statistics division, except for EAA inventories in households where data are taken from agriculture and domestic trade divisions. Four types of inventories, as it is suggested in ESA 2010: inventories of materials and supplies, finished products, work-in-progress and goods for resale, are compiled separately by five institutional sectors and by NACE Rev.2, 2-digit level. Calculation of changes in inventories including the separation of holding gains has been done for data since 1995.

Given that EAA changes in inventories are obtained on a total level by product groups, in order to perform their deflation, an expert assumption of the structure by types of inventories for each product group has been applied. Therefore the base for estimation EAA changes in inventories at previous year prices are EAA data by product groups and following types of inventories: materials and supplys, work in progress and finished products. The same deflators that are applied for different types of changes in inventories, as well as in estimation changes in inventories for each institutional sector, for activity (NACE 01) Agriculture, forestry and fishing are applied for each product group in order to get changes in inventories of EAA at previous year prices.

Choice of deflators for the calculation of changes in inventories at previous year prices is made easier by the fact that it follows directly from the way the current price changes in inventories are made, and will utilize the same price indices. In the present calculations the changes in inventories in current prices are obtained by revaluing the opening and closing stocks into the average price of the current year. The previous year price estimates can be easily derived in these calculations as estimates of inventories by categories at the average annual prices are already at hand.

Each category of inventories is separately treated and the choice of suitable deflators was limited by their available details. The following chart shows the used deflators by inventory categories (See Box 3.4).

Box 3.4: Deflators by changes in inventories

Changes in inventories	Activity	Deflators
Materials and supplies	All activity, except Construction	PPI of intermediate products except energy
	Construction	PPI of materials for incorporating in construction
Work-in-progress	Agriculture, forestry and fishing	PPI of agricultural and fishing products
	Mining and quarrying	PPI of manufactured products (two digit level)
	Manufacturing	PPI of manufactured products (two digit level)
	Electricity, gas, steam and air conditioning supply	PPI of manufactured products (two digit level)
	Water supply; sewerage, waste management and remediation activities	PPI of manufactured products (two digit level)
	Accommodation and food service activities	Price indices of catering services
	Other activities	PPI total
Finished products	Agriculture, forestry and fishing	PPI of agriculture and fishing products
	Mining and quarrying	PPI of manufactured products (two digit level)
	Manufacturing	PPI of manufactured products (two digit level)
	Electricity, gas, steam and air conditioning supply	PPI of manufactured products (two digit level)
	Water supply; sewerage, waste management and remediation activities	PPI of manufactured products (two digit level)
	Accommodation and food service activities	Price indices of catering services
	Other activities	PPI total
Goods for resale	All activity	CPI for goods except electricity and water

As the values of changes in inventories at previous year prices together with the other categories of final expenditures determine the GDP at previous year prices, the fact that changes in inventories may shift between positive and negative values does not pose a problem in calculating the chain-linked GDP from the expenditure side. However, a problem arises when calculating separately the chain-linked series of changes in inventories when the values shift between positive and negative over time. Based on experience of other countries and conversations with international experts it is noticed that there are two ways to solve this problem. The first, chaining can be replaced by a calculation of the contribution from changes in inventories to GDP growth. Another solution for dissemination is to chain-link gross capital formation (GFCF plus changes in inventories) and to show GFCF as an item thereof. It was also noted that some countries just ignore the positive-negative problem and carry out the standard chaining also for changes in inventories. SORS has decided to present the changes in inventories through contribution to GDP growth rates.

Further improvements are mainly related to details of available price indices. This will influence the quality of both current and constant prices. It is also expected that the supply-use tables, which are expected in the near future will give insight into more detailed inventory structure, especially on the inventories of material and supplies, which will be then available by CPA classification.

5.4.6. Acquisition less disposals of valuables

Volume estimates for Acquisition less disposals of valuables are obtained by deflating the current price value applying total consumer price index. Since this aggregate can take negative as well as zero, these data cannot be chain linked.

5.4.7. Exports and imports of goods and services

5.4.7.1. Introduction

The data on exports and imports of goods at current prices are obtained from the external trade statistics in goods, compiled in the SORS based on data provided from Customs Administration. The sole data source for external trade statistics in goods is the Single Administrative Document (SAD), completely harmonized with EU standards. The statistical value, which is used for producing the external trade data, is the value calculated at the Serbian border. It is a FOB value for exports and a CIF value for imports.

The external trade statistics in goods, as compiled by the SORS, are passed on to the balance of payments (BoP) in the National Bank of Serbia (NBS). After CIF/FOB adjustment and adjustment for coverage, the BoP data on exports and imports of goods are returned to the SORS. Before their final use in the national accounts, the BoP figures are further adjusted in order to take into account non-observed economy.

Estimation of exports and imports of goods at constant prices is done at two-digit (division) level of KD 2010, using indicators obtained from the division of price statistics, division of external trade statistics as well as indicators calculated in the national accounts division.

Data on exports and imports of services at current prices are obtained from the BoP statistics compiled by the National Bank of Serbia (NBS). For the purpose of the calculation of exports and imports of services at constant prices, the services are broken down into three main groups: transport services, travel services and other services. Deflation is done separately for each of the three groups indicators obtained from the division of price statistics, as well as indicators calculated in the national accounts division.

The volume estimates of exports and imports of goods and services are calculated internally in the national accounts division of the SORS. Calculations are performed in three steps:

1. Exports and imports of goods and services are calculated at previous year's prices in order to obtain the change between the preceding and the current year.
2. These changes are chained (i.e. multiplied each one with the subsequent one) in order to obtain a series of chain linked indices each of which uses the price structure of the previous period, expressed with a common reference year (currently, 2010 is used as a reference year).
3. The volume series in levels for exports and imports are obtained by multiplying chain linked indices by the respective values at the current prices of the reference year 2010.

5.4.7.2. Exports and imports of goods

The volume estimates of external trade in goods flows are calculated at two-digit (division) level of KD 2010. The figures in current prices are deflated using the best available indicators for each two-digit level of KD 2010. The final estimates of total exports and imports of goods at constant prices are then obtained as a sum of the estimates calculated at two-digit level.

The following types of indicators have been used for the estimation of exports and imports of goods at constant prices:

- Actual export and import prices
- Total output producer price indices (PPIs), comprising both the production for domestic market and production for export
- Domestic PPI for agriculture and fishery products

- Mirror price indices (export prices of a foreign country), and
- Unit value indices (UVIs).

Actual export and import price indices

Export and import price indices (actual export and import prices) are compiled monthly by price statistics division of SORS and are available at a KD 2010 two-digit level of detail. These indices are considered the best indicators for deflation of exports and imports of goods. They are based on actual transaction prices as reported by the main exporters/importers of goods. As such, they reflect the actual transactions between Serbia and its partners. Export price indices are available starting from 2008, while import price indices are available from 2015.

Total output PPIs

Where export price indices are not available for deflation of exports, total output PPIs, comprising both the production for domestic market and production for export, are used as first alternative. These indices are compiled monthly by price statistics division of SORS and are available at a KD 2010 two-digit level of detail.

Domestic PPIs for agriculture and fishery products

Aggregate domestic PPI for agriculture and fishery products is used for deflation the exports of agriculture and fishery products (divisions 01 and 03 of KD 2010). These indices are compiled by the price statistics division. They are calculated every month on the basis of data on the sale of agricultural products from own production of enterprises operating agricultural production (selling prices), and data on purchase of agricultural products from family holdings, performed by authorized organizations (purchasing prices).

Export prices of foreign countries (mirror prices)

In cases where import price indices are not available for deflation of imports, specific indicators, calculated on the basis of export prices of a foreign countries (mirror prices), have been used as first alternative. For each division of KD 2010, the top ten trade partners in imports are selected and composite indices (indicators derived from main partner countries' export related price indices compiled at KD 2010 division level or, in case that such indicators are not available, their total or ordinary producer price indices, also at division level of KD 2010) are calculated. After adjusting for each specific exchange rate, using the ratio between the annual average exchange rate of the partner country's currency for the current and for the previous year, the annual indices are aggregated using the current year level of imports from partner countries. Compared to import price indices, mirror prices represent total imports from partner countries, so these prices will most likely represent a broader product basket, i.e. they will be less representative.

Unit value indices (UVIs)

Exports and imports UVIs are calculated by the division of external trade statistics in SORS. These indices, obtained using the index formula of the Paasches' type, are available at a KD 2010 two-digit level of detail. They are calculated on the basis of RSD values of exports and imports of goods. For years prior to 2009, UVIs have been calculated on the basis of USD values. To express these indices in RSD equivalents, original indices from external trade statistics were multiplied by adjustment factor, obtained as the ratio between the annual average exchange rate of USD (published by the NBS) for the current and for the previous year.

UVIs reflect a direct ratio of values and quantities so they are subject to large distortions when products within groups are heterogeneous, when quality mixes are varied, and when quantity figures

are unreliable. They are only available indicators used for deflation of exports and imports of goods flows recorded for the service activities of KD 2010. Also, export and import UVIs are used as alternative indicators for those manufacturing activities for which none of the above mentioned more reliable indicators is not available or is deemed unreliable.

Cif/fob adjustment

Having in mind compilation of supply and use table needs, adjustment of imports of goods from cif to fob basis is done at the level of total imports of goods (not at division of activity level). For deflation of this cif/fob adjustment, the SORS uses the same index as in the case of deflation of the imports of transport services. The section on exports and imports of services below provides more details about this indicator.

Changes introduced in the major revision of national accounts data

During the major revision of national accounts data, conducted in 2018, volume estimates of exports of goods for period 2005-2017 have been significantly improved by applying for the first time export price indices (actual export prices) in the calculations.

On the imports side, in 2017 SORS has introduced the regular production of import price indices (actual import prices) and these were applied for the first time in the calculations of imports of goods at constant prices for years 2015-2017.

The import estimates for years from 2005 to 2014 were obtained using mirror price indices, also applied for the first time for deflation of imports of goods.

Export and import price indices, mirror price indices as well as total output PPIs have almost completely replaced unit value indices (UVIs) previously used for deflation of exports and imports of goods, which significantly upgraded the quality of GDP estimates at constant prices.

In line with recommendation of the mission from the Statistics Department (STA) of International Monetary Fund (IMF), which visited SORS in March 2018, the SORS has started to compile external trade statistics in goods (in volume terms) on a monthly basis in order to improve the accuracy of the estimates as well as to ensure the consistency between annual and quarterly estimates. Given the volatility of the imports and exports, the simple average monthly prices differ from the weighted average, resulting in distorted annual volume estimates if the former is used. By obtaining volume estimates on a monthly basis and subsequently aggregating the data to quarters and years, SORS managed to generate implicit deflators that were implicitly weighted by the level of transactions during the year. For the purpose of the major revision of NA data, this procedure has been implemented for years from 2014 to 2017, which, apart from the first use of export and import price indices, required recalculation of mirror price indices and UVIs from annual to monthly basis. The data generated were directly used in both the annual and quarterly compilation of GDP for these years. The monthly calculations have now been established as regular method of compilation of exports and imports of goods in volume terms.

Overview of deflators used by activity

Boxes XX below provides the overview of indicators used for deflation of exports and imports of goods in current prices, by division of KD 2010. The overview reflects the use of deflators in the most recent years (2014-2017). All indicators shown are compiled and used for deflation at two-digit level of KD 2010, except for domestic PPI for agriculture and fishery products, which is aggregate index used for deflation both for division 01 and 03 of KD 2010.

Box XX: Deflators of exports of goods by division of KD 2010

Activity	Deflator used
A Agriculture, forestry, and fishing	
01 Crop and animal production, hunting and related service activities	Domestic PPI for agriculture and fishery products
02 Forestry and logging	Export UVI
03 Fishing and aquaculture	Domestic PPI for agriculture and fishery products
B Mining and Quarrying	
05 Mining of coal and lignite	Export price index or total output PPI, comprising products both for domestic and foreign market
06 Extraction of crude petroleum and natural gas	Total output PPI, comprising products both for domestic and foreign market
07 Mining of metal ores	Export price index or total output PPI, comprising products both for domestic and foreign market
08 Other mining and quarrying	Total output PPI, comprising products both for domestic and foreign market
C Manufacturing	
10 Manufacture of food products	Export price index
11 Manufacture of beverages	Export price index
12 Manufacture of tobacco products	Export price index
13 Manufacture of textiles	Export price index or export UVI
14 Manufacture of wearing apparel	Export price index
15 Manufacture of leather and related products	Export UVI
16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	Export price index
17 Manufacture of paper and paper products	Export price index
18 Printing and reproduction of recorded media	Export price index
19 Manufacture of coke and refined petroleum products	Export UVI
20 Manufacture of chemicals and chemical products	Export price index
21 Manufacture of basic pharmaceutical products and pharmaceutical preparations	Export price index
22 Manufacture of rubber and plastic products	Export price index
23 Manufacture of other non-metallic mineral products	Export price index
24 Manufacture of basic metals	Export price index
25 Manufacture of fabricated metal products, except machinery and equipment	Export price index
26 Manufacture of computer, electronic and optical products	Total output PPI, comprising products both for domestic and foreign market
27 Manufacture of electrical equipment	Export price index
28 Manufacture of machinery and equipment n.e.c.	Export price index
29 Manufacture of motor vehicles, trailers and semi-trailers	Export price index
30 Manufacture of other transport equipment	Total output PPI, comprising products both for domestic and foreign market

Activity	Deflator used
31 Manufacture of furniture	Export price index
32 Other manufacturing	Total output PPI, comprising products both for domestic and foreign market
D Electricity, gas, steam and air conditioning supply	
35 Electricity, gas, steam and air conditioning supply	Total output PPI, comprising products both for domestic and foreign market
E Water supply; sewerage, waste management and remediation activities	
38 Waste collection, treatment and disposal activities; materials recovery	Export UVI
J Information and communication	
58 Publishing activities	Export UVI
59 Motion picture, video and television programme production, sound recording and music publishing activities	Export UVI
M Professional, scientific and technical activities	
71 Architectural and engineering activities; technical testing and analysis	Export UVI
74 Other professional, scientific and technical activities	Export UVI
R Arts, entertainment and recreation	
90 Creative, arts and entertainment activities	Export UVI
91 Libraries, archives, museums and other cultural activities	Export UVI
S Other service activities	
96 Other personal service activities	Export UVI

Box XX: Deflators of imports of goods by division of KD 2010

Activity	Deflators used
A Agriculture, forestry, and fishing	
01 Crop and animal production, hunting and related service activities	Import UVI
02 Forestry and logging	Import UVI
03 Fishing and aquaculture	Import UVI
B Mining and Quarrying	
05 Mining of coal and lignite	Mirror price index
06 Extraction of crude petroleum and natural gas	Mirror price index
07 Mining of metal ores	Mirror price index
08 Other mining and quarrying	Import price index
C Manufacturing	
10 Manufacture of food products	Import price index
11 Manufacture of beverages	Import price index
12 Manufacture of tobacco products	Import price index
13 Manufacture of textiles	Import price index
14 Manufacture of wearing apparel	Import price index
15 Manufacture of leather and related products	Import price index
16 Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	Import price index
17 Manufacture of paper and paper products	Import price index
18 Printing and reproduction of recorded media	Mirror price index
19 Manufacture of coke and refined petroleum products	Import price index
20 Manufacture of chemicals and chemical products	Import price index
21 Manufacture of basic pharmaceutical products and pharmaceutical preparations	Import price index
22 Manufacture of rubber and plastic products	Import price index
23 Manufacture of other non-metallic mineral products	Import price index
24 Manufacture of basic metals	Import price index
25 Manufacture of fabricated metal products, except machinery and equipment	Import price index
26 Manufacture of computer, electronic and optical products	Import price index
27 Manufacture of electrical equipment	Import price index
28 Manufacture of machinery and equipment n.e.c.	Import price index
29 Manufacture of motor vehicles, trailers and semi-trailers	Import price index
30 Manufacture of other transport equipment	Import UVI
31 Manufacture of furniture	Mirror price index
32 Other manufacturing	Import price index

Activity	Deflators used
D Electricity, gas, steam and air conditioning supply	
35 Electricity, gas, steam and air conditioning supply	Mirror price index
E Water supply; sewerage, waste management and remediation activities	
38 Waste collection, treatment and disposal activities; materials recovery	Import UVI
J Information and communication	
58 Publishing activities	Import UVI
59 Motion picture, video and television programme production, sound recording and music publishing activities	Import UVI
M Professional, scientific and technical activities	
71 Architectural and engineering activities; technical testing and analysis	Import UVI
74 Other professional, scientific and technical activities	Import UVI
R Arts, entertainment and recreation	
90 Creative, arts and entertainment activities	Import UVI
91 Libraries, archives, museums and other cultural activities	Import UVI
S Other service activities	
96 Other personal service activities	Import UVI

5.4.7.3. Exports and imports of services

For the purpose of the calculation of exports and imports of services at constant prices, the services are broken down into three main groups: *transport services*, *travel services* and *other services*. Estimation is done separately for each of the three groups using appropriate indicators (retail price indices (RPIs), consumer price indices (CPIs) and indicators obtained from household final consumption expenditure (HFCE) statistics).

Monthly data on exports and imports of services at current prices, expressed in USD values, are obtained from the balance of payments statistics, compiled by the NBS. For national accounts needs, they are recalculated in RSD values using monthly exchange rates, which are reported to the IMF by the NBS. These indices are also provided to the SORS, together with monthly data on services.

Exports of each of the main groups of services are deflated using the general domestic CPI. Prior to 2007, retail price index (RPI) was used instead. This is because CPI was not compiled before 2007.

For deflation of imports of *transport services* as well as of imports of *other services*, partner countries' CPIs, weighted according to their shares of total exports of services to Serbia, are used.

For direct purchases of residents abroad (imports of *travel services*), a weighted index derived from the CPIs of Serbian tourists' main destination countries is used for deflation, the weights being percentage shares of the main destinations countries of Serbian tourists in the total number of their overnight stays abroad. The deflator is obtained from HFCE statistics.

Similar to the volume estimates of external trade in goods, in 2018 the SORS has started to compile external trade statistics in services (in volume terms) on a monthly basis in order to improve the quality of the estimates as well as to ensure the consistency between annual and quarterly calculations. So far, the monthly data series of exports and imports of services in volume terms have been calculated for years from 2014 to 2017.

In line with this procedure, total monthly domestic CPIs have been used for the deflation of exports of services.

Composite monthly CPIs, used for deflation of the imports of *transport* and *other services* for years from 2014-2017, have been calculated by aggregating monthly total CPIs of the top ten partner countries in imports of services, weighted according to their shares in the total annual imports of services. Original monthly CPIs of partner countries were previously adjusted for monthly changes of their exchange rates, expressed relative to the (monthly) average exchange rate of the same currencies for the previous year.

For years prior to 2014, composite annual CPIs used for deflation of the imports of *transport* and *other services* have been calculated by aggregating annual total CPIs of the top ten partner countries in imports of services, weighted according to their shares in the total annual imports of services. Original annual CPIs of partner countries were previously exchange rate adjusted, using the ratio between the annual average exchange rate of their currencies for the current and for the previous year.

The calculation of weighted CPIs for deflation of the imports of *transport* and *other services* for years from 2014 to 2017 has been done on monthly basis, using annual weights, obtained as a share of annual exports of each of the top 10 partner countries in total Serbian imports of services, for weighting partner countries' monthly CPIs. The original monthly CPIs of the partner countries, referenced to the (monthly) average of the previous year were exchange rate adjusted, using the adjustment factors obtained as the ratio between monthly exchange rate of the partner country for the current year and the corresponding exchange rate (monthly) average for the previous year.

The deflator from HFCE statistics, used for deflation of imports of *travel services* is available only on annual basis. For the purpose of monthly calculations, this indicator has been monthlyized using benchmarking technique in quarterly national accounts.

The Box X.X below provides the overview of indicators used for deflation of the main categories of exports and imports of services.

Box X.X: Overview of deflators used by main categories of services

Categories of services	Deflators used
Exports of transport services	General domestic CPI
Exports of travel services	General domestic CPI
Exports of other services	General domestic CPI
Imports of transport services	Composite index derived from the weighted general CPIs of the ten countries with the highest exports of services to Serbia
Imports of travel services	Deflator obtained on the basis of data on direct purchases abroad by Serbian residents (data from the HFCE statistics)
Imports of other services	Composite index derived from the weighted general CPIs of the ten countries with the highest exports of services to Serbia

Chapter 6 QUARTERLY NATIONAL ACCOUNTS

6.1. Introduction

The aim of this document is to provide a comprehensive description of data sources and methods, used for quarterly GDP calculation in Serbia. The main purpose is to enable assessment of observance with the European national accounting standard - European System of National and Regional Accounts 2010 (ESA 2010) and related legislation.

The methodological framework for QNA in Serbia is based on the principles and definitions of the European System of National and Regional Accounts 2010 (ESA 2010), the System of National Accounts 2008 (SNA 2008), the International Monetary Fund manual (Quarterly National Accounts Manual) and relevant Eurostat manuals (Handbook on Price and Volume Measures in National Accounts and Handbook on Quarterly National Accounts).

6.2. Overview of the system of quarterly national accounts in the Republic of Serbia

The first results of the quarterly GDP compilations at constant prices in the Republic of Serbia (fixed based year approach, 2002=100) were published in June 2005. The time series covered the period from the first quarter 1999 to the first quarter of 2005, without seasonal adjustment. GDP was estimated by the production approach, at section and division level of NACE Rev. 1.1. Since September 2008, quarterly GDP time series have been extended backwards to the first quarter of 1997. The first results of the quarterly calculations of the seasonally adjusted GDP at constant prices were published in September 2009. Seasonally adjusted GDP was estimated at section level. The time series covered the period since the first quarter 1997.

In order to improve the quality of the quarterly calculations SORS published revised quarterly GDP calculations at constant prices (previous year prices), derived according to the production approach in June 2011. To show real growth, series were presented in the form of chain-linked volume measures with 2005 as the reference year. In addition, NACE Rev. 2 came into use in January 2011. Series of indicators from the first quarter of 2001 have been recalculated and used for QNA aggregates calculations. For earlier years, there were no comparable data series that could be used as indicators.

Furthermore, SORS published the results of the quarterly GDP calculation at current prices by the production approach in June 2011. Calculations at current prices have been implemented starting from the first quarter of 2001.

In addition, SORS has started to publish results of quarterly GDP calculation by the expenditure approach at current and constant prices, starting from the first quarter 2003 in June 2011.

From December 2013, according to Eurostat recommendations, 2010 has been implemented as the reference year for chain linked volume measures.

According to the Plan of SNA 2008 / ESA 2010 Implementation, since September 2014 the Statistical Office of the Republic of Serbia has officially started to implement the new methodology of national accounts ESA 2010 in parallel with EU Member States. Therefore, the SORS has completed the revision of quarterly data for the period 2001-2013 published so far, and for the first time the quarterly GDP calculation for the period 1996-2000.

6.2.1. QNA compilation approach

The quarterly national accounts compilations are based on the same principles, concepts, classifications and definitions as the annual national accounts.

At the moment, QNA consists mainly of quarterly GDP compilation. The limited availability of quarterly data does not allow a direct approach in quarterly GDP calculation. Therefore, quarterly aggregates are derived through an indirect method using related time series, which are indicators observed at higher frequencies (quarterly or monthly). The choice of such related indicators is crucial to guarantee the accuracy of the quarterly estimates. Different criteria are used to select indicators, the most important ones are:

a) coherency with the economic concept of the aggregate;

b) statistical correlation between the annualized indicator and the annual aggregate;

c) timeliness and accuracy;

d) length of the series.

The estimate of GDP is derived from both the production and the expenditure approach. Calculations are not derived by using completely independent data sources, because in the statistical system of the Republic of Serbia there is still no reliable quarterly information at current prices which could be directly used as an indicator for the calculation of changes in inventories. Therefore, quarterly changes in inventories at current and previous year prices are obtained indirectly, as a residual item. Consequently, quarterly changes in inventories may contain a statistical discrepancy, which could occur from the implementation of the two independent calculations.

Data sources for the quarterly GDP calculation are numerous and various and cover a range of economic and financial indicators. Data are obtained from the SORS regular statistical surveys, designed for monitoring specific areas or features of the economy (production, prices, employment, etc.), as well as from administrative sources (Ministry of Finance and National Bank of Serbia).

QNA estimates are produced at current prices, at previous year prices and as chain-linked volume measures (in monetary terms). Generally, current prices estimates are first derived on the basis of quarterly indicators on values; volume estimates are then obtained by deflation with quarterly prices. Some exceptions to this practice exist when extrapolation is applied.

Classifications used in QNA calculations:

- Nomenclature générale des Activités économiques dans les Communautés Européenne, NACE Rev. 2;
- Classification of Individual Consumption According to Purpose, COICOP;
- Classification of the Functions of the Government, COFOG;
- Breakdown of fixed assets by type.

Quarterly GDP is determined by the production components. Short-term indicators on output are generally more reliable and more readily available than the data sources used for expenditure aggregates calculation. Furthermore, the low quality of data sources for changes in inventories at the quarterly frequency makes the independent GDP compilation from the expenditure side less reliable. The current practice is to derive changes in inventories as a balance between uses and resources, i.e. subtracting the estimates of total final consumption, gross fixed capital formation, acquisitions less disposals of valuables and net exports from the production-based GDP estimate. The accuracy of such a balancing item is certainly inferior to independently derived estimates of the other components, since it also includes possible statistical discrepancies between production and expenditure

components' estimates. Given this property, the magnitude of the resulting estimate of changes in inventories is considered as an implicit measure of the quality of the other estimated components.

Benchmarking in QNA is largely based on the proposal of Chow and Lin (1971). The authors proposed a solution of the problem based on a generalized least-squares regression that exploits the relationship with one (or more) indicator series and restricts the quarterly results to be in line with given annual benchmarks. Furthermore, these methods are usually referred to as *temporal disaggregation* techniques when they imply the estimation of statistical relationships between the variables involved. This choice implies a smoothed distribution of the annual residuals over the quarters, guaranteeing a better fit to the movements of the indicator series. Different methods exist to estimate the AR (1) parameter used in the models: the most appropriate one from the statistical point of view is maximum likelihood. The Chow-Lin method is considered to be the first choice for any disaggregation process, while the approach of Fernàndez is an alternative. Moreover, for certain aggregates a quasi-direct approach is followed that generates very small discrepancies. In such cases, the method proposed by Denton (1971) is used in place of Chow-Lin. In fact, this approach does not require any estimation process: the distribution of the differences between the annual totals and the quarterly (aggregated) series is done via a 'movement preservation principle' that guarantees strict closeness of the disaggregated and preliminary series in terms of growth rates.

6.2.2. Volume estimates

Volume estimates are calculated at prices of the previous year. This system guarantees up-to-date price structures in the calculation of volume estimates.

The calculation of GDP at previous year prices means that the previous year is taken as base year. In this way, the structural changes in relative prices that occurred between two consecutive years in an economy are taken into account. In the constant prices calculations of GDP according to the production approach, weights from the base year are determined by the share of GVA of each division, taxes and subsidies on products in the GDP. In the constant prices calculations of GDP according to expenditure approach weights from the base year are determined by the share of expenditure components in GDP.

The measurement of the real GDP movement in year t relative to year t-1 requires that GDP in both years is valued at the same prices. This means that GDP in year t at constant prices, i.e. previous year prices is compared with GDP of year t-1 at current prices. Time series calculated at previous year prices could not be used for real growth rate calculations since data are not comparable (each year is valued at previous year's prices).

To obtain comparable series, the method of chain-linking is applied, where indicators in the form of indices referenced to the previous year are chain-linked to a single reference year. The choice of the reference year does not affect the growth rate changes, as they always remain the same. According to Eurostat recommendations, 2010 is currently used as the reference year.

For the purpose of quarterly chain-linking the recommended annual overlap method is applied. This technique is used for calculating quarter-on-quarter growth rates, which are considered the most important figures for business cycle analysis.

After converting chain-linked volume indices to monetary terms, using reference year prices, non-additivity may occur since aggregates cannot be obtained by summing their elements. Additivity exists only in the reference year (at the annual level) and the year after (at the annual and quarterly levels).

6.2.3. Flash GDP estimate

A flash estimate is the first estimate of the quarterly gross domestic product, according to the concepts of the national accounts, calculated and published as soon as possible after the end of the reference quarter, on the basis of available information.

The SORS has published the flash estimate of the quarterly gross domestic product since March 2010. This estimate is published 30 days after the end of the reference quarter. It is released on the SORS website in the form of press release as a single figure, showing Q to Q-4 real growth rate and it is included in the official releases calendar.

To achieve maximum reliability, the general principle adopted in SORS for the GDP flash estimate is to use the same methods and sources as for the t+60 days estimates, wherever possible.

Output indicators are generally regarded as being better guides to short-term movements in GDP than expenditure indicators. The components of the output measure of real GDP can be classified in two categories: series for which data are already available (based on monthly indicators - data on retail trade sales, external trade figures, volume indices for the industrial production, the consumer price indices, the producer price indices, number of employees etc.) and series for which there is no information or exist only a part of the needed information (based on statistical models and econometric forecast procedures - missing indicators are forecasted using one or two months of the quarter that are possibly available to predict the remaining information).

6.2.4. Seasonal adjustment and working day correction

Seasonal adjustment is a process of time series decomposition which removes seasonal effects from time series. Seasonal adjustment in Serbia is carried out using specialized DEMETRA software, developed by Eurostat and, within DEMETRA, the model based approach of TRAMO/SEATS. Seasonal adjustment is performed mainly using the automatic module with default parameters for new automatic processing.

To produce seasonally adjusted aggregates an indirect approach is followed, that is seasonally adjusted aggregates are derived by aggregation of seasonally adjusted components. The adjustment for seasonal effects is done on the indicator series, which are used to decompose the reference annual series through benchmarking techniques. Chain-linked volume series are seasonally adjusted.

Seasonally adjusted GDP by production approach is estimated at the section level of NACE Rev. 2.

The procedure for calculation of seasonally adjusted GDP is as follows:

- Seasonally adjustment of the chain-linked indicators;
- Temporal disaggregation of the annual data with the seasonally adjusted chain-linked indicators;
- Chain-linked seasonally adjusted series are converted to seasonally adjusted data at previous year prices;
- This section level data at previous year prices are added up to obtain GVA and GDP at previous year prices and chain-linked again to obtain seasonal adjusted sections, GVA and GDP with 2010 as reference year.

6.2.5. Publication timetable, revisions policy and dissemination of QNA

An official releases calendar is available on the SORS website approximately one month before the beginning of the year.

The flash estimate of GDP is published 30 days after the reference quarter as a single figure, showing Q to Q-4 real growth rate of GDP, in form of press release.

Estimates of QNA aggregates are published 60 days after the end of the reference quarter. It covers GDP by production and expenditure approach with detailed breakdown by categories.

The revision policy of QNA is closely related to that of annual national accounts. Being compiled following an indirect method together with benchmarking procedures, QNA results are completely consistent with ANA results when the annual data are available. For the current year, while the annual aggregates are still not available, quarterly estimates are calculated using benchmarking models with related series.

When annual data become available, new annual econometric relationships are estimated and the Chow-Lin quarterly disaggregation procedure, which is run with new estimated coefficients, may lead to revision of the quarters. In addition, occasional revisions of ANA and subsequently of QNA may be carried out according to particular reasons. Data are revised when new/higher quality data can significantly contribute to the quality of data-based decision-making or when due to publication deadlines determined by the European or national legislation or when due to unpredictable obstacles in data processing and less accurate data have been published on the basis of incomplete coverage.

QNA data may be revised due to:

a) changes in annual accounts;
b) changes/revisions in the short-term indicators used – inclusion of a more complete/additional data source or a change in the data source;
c) availability of indicators and the replacement of forecasts with actual data;
d) improvement of methodology due to a change in the statistical method or a change in classifications, concepts and definitions.

Data for quarters of a current year are revised until the fourth quarter data are published: together with the second quarter data, revised data for the first quarter are published, together with the third quarter data, revised data for the first and the second quarters are published, together with the fourth quarter data, revised data for the first, the second and the third quarters are published. These are current revisions. After the publication of the fourth quarter data, quarterly accounts are revised only due to reconciliation with annual accounts data. Revisions due to compilation of annual national accounts are made twice a year. The first revision is carried out when the preliminary annual accounts data (sum of four quarters) become available and the second when the final annual accounts data have been determined. In both cases, quarters of the current year and two previous years are revised. The exception to the general rule is seasonally adjusted data; they are revised in the context of the whole time series.

Available are data on GDP by production and expenditure approach at current prices, at previous year prices and as chain-linked volume measures (reference year 2010), in million RSD. In addition, shares in current prices, and volume changes comparing the quarter to the same quarter of the previous year are also available. Seasonally adjusted GDP data are available in the form of the growth rates compared to the previous quarter. All time series are available from the first quarter 1996.

In addition, three tables are subject to the transmission to Eurostat: Questionnaire 0101 - Gross value added at basic prices and gross domestic product at market prices, Questionnaire 0102 - GDP identity from the expenditure side contain time series from the first quarter 1996 and Questionnaire 0110 - Population and employment.

SORS regularly send questionnaires to the other international institutions (UN, OECD etc.).

Specific requests by other institutions or individuals are dealt with on an ad hoc basis.

Quarterly GDP statistical releases and related press releases can be found at the following address:

http://www.stat.gov.rs/en-US/publikacije

QNA data in the database are at the following address:

http://data.stat.gov.rs/?caller=SDDB&languageCode=en-US

A summary methodology regarding the estimation of QNA is available at the following address:

http://www.stat.gov.rs/en-us/istrazivanja/methodology-and-documents/?a=09&s=0

6.3. GDP components: the production approach

Gross domestic product from the production side is obtained as the sum of gross value added (GVA) of all economic activities plus taxes on products less subsidies on products.

Quarterly GDP calculations use monthly or quarterly data from SORS regular statistical surveys, various data on prices and quantities and other indicators from the statistical system and other available data sources.

Calculations are done at the 88 division level of NACE Rev. 2.

Gross value added at current prices

Quarterly gross value added is calculated as a difference between output and intermediate consumption at current prices.

Annual outputs are disaggregated with quarterly output indicators. The main data source for output indicators is the Quarterly Structural Business Survey (SBS-03) which is based on a sample of selected units. This survey was first conducted in 2007, as a pilot survey, and in 2008 it was introduced into the Serbian statistical system as a regular survey and contains following data for calculation of national accounts aggregates: revenues from sales of goods, products and services; revenues from revenues from capitalized production; revenues from premiums, subsidies, donations, etc. and other operating income (from rentals, memberships, royalties and license fees and other operating income), purchase value of goods sold; raw materials and energy costs; costs of salaries, remuneration and other personnel costs; costs of industrial and non-industrial services, excluding taxes and contributions. For years before 2007 output indicators are indirectly obtained using volume indices multiplied with respective price indices. To obtain comparable time series overlap coefficients were applied.

The other data sources from the statistical system used in the current price calculations are: values of construction works done, data on sales and purchase values of agricultural products, retail trade turnover values, wholesale trade turnover values, trade of motor vehicles turnover values, catering turnover values, wages and salaries and number of employees, producer price indices, consumer price indices, etc.

Data used in the current price calculations from the administrative sources are monthly data on expenditures and revenues of government budget (Ministry of Finance), monthly statements on deposits and bank claims and quarterly data on insurance premiums (National Bank of Serbia).

The following table presents an overview of the indicators used to obtain quarterly output by activities, at current prices.

Box 1. Applied indicators for quarterly output by activities, at current prices

Activity	Indicator
A Agriculture, forestry and fishing	volume index, PPI
B Mining and quarrying	quarterly data from the survey "Quarterly Structural Business Survey", volume index, PPI
C Manufacturing	quarterly data from the survey "Quarterly Structural Business Survey", volume index, PPI
D Electricity, gas and steam supply	quarterly data from the survey "Quarterly Structural Business Survey", volume index, PPI
E Water supply, sewerage, waste management and remediation activities	quarterly data from the survey "Quarterly Structural Business Survey", volume index, PPI
F Construction	quarterly data on value of construction works done
G Wholesale and retail trade; repair of motor vehicles and motorcycles	quarterly data on trade of motor vehicles turnover value, wholesale trade turnover value, retail trade turnover value
H Transportation and storage	quarterly data from the survey "Quarterly Structural Business Survey", volume index, CPI
I Accommodation and food service activities	quarterly data from the survey "Quarterly Structural Business Survey", quarterly data on turnover value of catering, volume index, CPI
J Information and communication	quarterly data from the survey "Quarterly Structural Business Survey", volume index, CPI
K Financial and insurance activities	monthly statements on deposits and bank claims, quarterly data on insurance premiums, volume index, CPI
L Real estate activities	volume index, CPI
M Professional, scientific and technical activities	volume index, CPI
N Administrative and support service activities	volume index, CPI
O Public administration and defense; compulsory social security	output from the calculations of collective GFCE at current prices
P Education	output from the calculations of individual GFCE (part for Education) at current prices, indicators for market output
Q Human health and social work activities	output from the calculations of individual GFCE (parts for Human health and social work activities) at current prices, indicators for market output
R Arts, entertainment and recreation	volume index, CPI
S Other service activities	volume index, CPI
T Activities of households as employers	volume index, CPI

Since reliable short-term indicators of intermediate consumption are not available, intermediate consumption is calculated based on input-output ratios (ratio between intermediate consumption and output) in the current year taken from the annual accounts data. These ratios are assumed to be constant over the year (the same ratio is applied for all four quarters). When current year data are not available, the input-output ratio from the previous year is used.

Taxes less subsidies on products at current prices

The main source of data on taxes on products is Information on distributed public revenues and earnings of the Treasury Administration of the Ministry of Finance. Data on taxes are provided on a monthly basis and on a cash basis, with the breakdown of taxes by type. For cash based aggregates an adjustment to accrual accounting is done using time adjusted method, with a variable time lag.

This allows quarterly taxes to be adjusted with the annual sum of the quarters being made equal to the yearly total, which has already been adjusted.

The main data sources for subsidies on products are budgetary data. Data are shown as actual payments in the accounting period and are on cash basis. All this information can be found in the Bulletin of Public Finance of the Ministry of Finance, but without proper breakdowns according to actual purpose of the subsidies which is of crucial importance for the national accountants. Before they are included in the NA system, data on subsidies are carefully examined. Using all available information, they are structured according to the NA rules as: subsidies on products, subsidies on production, investment or capital grants and other current transfers.

Quarterly taxes and subsidies on products at current prices are obtained with the disaggregation of the available annual to quarterly data at current prices and the extrapolation of the current year quarterly values, using accrual adjusted indicators at current prices as related series.

Quarterly gross domestic product at current prices is obtained as the sum of gross value added (GVA) of all economic activities plus taxes on products less subsidies on products.

Gross value added at constant prices

Quarterly value added at previous year prices is derived as the difference between output and intermediate consumption at previous year prices.

Quarterly output at constant prices is calculated following the next procedure:

1. Benchmarked quarterly output at current prices is deflated with a benchmarked suitable deflator (2010=100) for most activities.

   Specific cases for some activities:

   - Division 01, Crop and animal production, hunting and related service activities - The annual output of the agricultural production at constant prices is calculated by extrapolation method, using annual index of physical volume of agricultural production (net). Distribution of annual output of agriculture at constant prices over quarters is based on quarterly movements of the sales and purchase of agricultural products at constant prices and fixed proportions of production costs over quarters (20% in the first quarter, 25% in the second quarter, 30% in the third quarter and 25% in the fourth quarter, according to international recommendations).

     Quarterly movements of the sales and purchase of agricultural products at constant prices are obtained deflating quarterly movements of the sales and purchase of agricultural products at current prices with appropriate producer price indices of agricultural products.

     Crop production output measurement in quarterly dynamics is specific, because the sales of crop products is taken as the main indicator of production, which is occurred mostly in one quarter (3rd or 4th quarter), while agricultural production actually takes place continuously over the year, observed from the production inputs point of view. For this reason, it is necessary to correct the share of quarters in the year, obtained from data on sales and purchase of agricultural products at constant prices with fixed ratio (20%, 25%, 30%, 25%), using the arithmetic mean.

     Regarding the livestock breeding, quarterly movements of the sales and purchase of agricultural products at constant prices are used without corrections.
     Due to the fact that no quarterly data on agricultural production are available, this method was adopted as provisional solution until SORS develops quarterly data sources for this division.

- Section L, Real estate activities - The calculation is carried out by quarterisation of the annual growth rate of the imputed rents. For the rest of the division 68, extrapolation of output of the previous year with the index of the number of employees is applied.
- Section O, Public administration and defense; compulsory social security; Section P, Education; Section Q, Human health and social work activities - Output indicators are outputs from the calculations of Government collective and individual (the part for Education and the part for Human health and social work activities) final consumption expenditures at constant prices, from the expenditure side, as well as estimated market output for these sections, respectively.

2. The resulting chain-linked series to reference year 2010 are benchmarked and converted to previous year prices.

The following table presents an overview of the indicators used to obtain quarterly output by activities, at constant prices.

Box 2. Applied indicators for quarterly output by activities, at constant prices

Section	Division	Activity	Indicators
A		**Agriculture, forestry and fishing**	
	01	Crop and animal production, hunting and related service activities	annual index of physical volume of agricultural production, monthly sales and purchase value of agricultural products, at current prices, PPI of agricultural products
	02	Forestry and logging	monthly volume index of forest exploitation
	03	Fishing and aquaculture	PPI of fishing products
B		**Mining and quarrying**	
	05	Mining of coal and lignite	PPI 05
	06	Extraction of crude petroleum and natural gas	PPI 06
	07	Mining of metal ores	PPI 07
	08	Other mining and quarrying	PPI 08
	09	Mining support service activities	PPI Mining and quarrying
C		**Manufacturing**	
	10	Manufacture of food products	PPI 10
	11	Manufacture of beverages	PPI 11
	12	Manufacture of tobacco products	PPI 12
	13	Manufacture of textiles	PPI 13
	14	Manufacture of wearing apparel	PPI 14
	15	Manufacture of leather and related products	PPI 15
	16	Manufacture of wood and of products of wood and cork, except furniture; manufacture of articles of straw and plaiting materials	PPI 16
	17	Manufacture of paper and paper products	PPI 17
	18	Printing and reproduction of recorded media	PPI 18
	19	Manufacture of coke and refined petroleum products	PPI 19
	20	Manufacture of chemicals and chemical products	PPI 20
	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations	PPI 21
	22	Manufacture of rubber and plastic products	PPI 22
	23	Manufacture of other non-metallic mineral products	PPI 23
	24	Manufacture of basic metals	PPI 24
	25	Manufacture of fabricated metal products, except machinery and equipment	PPI 25

Section	Division	Activity	Indicators
	26	Manufacture of computer, electronic and optical products	PPI 26
	27	Manufacture of electrical equipment	PPI 27
	28	Manufacture of machinery and equipment n.e.c.	PPI 28
	29	Manufacture of motor vehicles, trailers and semi-trailers	PPI 29
	30	Manufacture of other transport equipment	PPI 30
	31	Manufacture of furniture	PPI 31
	32	Other manufacturing	PPI 32
	33	Repair and installation of machinery and equipment	PPI Section C
D		**Electricity, gas, steam and air conditioning supply**	
	35	Electricity, gas, steam and air conditioning supply	PPI 35
E		**Water supply, sewerage, waste management and remediation activities**	
	36	Water collection, treatment and supply	PPI Section E
	37	Sewerage	PPI Section E
	38	Waste collection, treatment and disposal activities; materials recovery	PPI Section E
	39	Remediation activities and other waste management services	PPI Section E
F		**Construction**	composite price index for buildings and structures
G		**Wholesale and retail trade; repair of motor vehicles and motorcycles**	
	45	Wholesale and retail trade and repair of motor vehicles and motorcycles	weighted CPI
	46	Wholesale trade, except of motor vehicles and motorcycles	weighted PPI for domestic market and implicit imports of goods deflator
	47	Retail trade, except of motor vehicles and motorcycles	weighted CPI
H		**Transportation and storage**	
	49	Land transport and transport via pipelines	weighted CPI
	50	Water transport	CPI Transport services
	51	Air transport	CPI Passenger transport by air
	52	Warehousing and support activities for transportation	CPI Transport services
	53	Postal and courier activities	CPI Postal services
I		**Accommodation and food service activities**	
	55	Accommodation	CPI Accommodation services
	56	Food and beverage service activities	CPI Catering services
J		**Information and communication**	
	58	Publishing activities	CPI Services
	59	Motion picture, video and television programme production, sound recording and music publishing activities	CPI Services
	60	Programming and broadcasting activities	CPI Services
	61	Telecommunications	weighted CPI
	62	Computer programming, consultancy and related activities	CPI Services
	63	Information service activities	CPI Services
K		**Financial and insurance activities**	

Section	Division	Activity	Indicators
	64	Financial service activities, except insurance and pension funding	CPI Financial services
	65	Insurance, reinsurance and pension funding, except compulsory social security	CPI Insurance services
	66	Activities auxiliary to financial services and insurance activities	CPI Financial services
L		**Real estate activities**	annual growth rate of the imputed rents, index of number of employees
	68	Real estate activities	
M		**Professional, scientific and technical activities**	
	69	Legal and accounting activities	CPI Services
	70	Activities of head offices; management consultancy activities	CPI Services
	71	Architectural and engineering activities; technical testing and analysis	CPI Services
	72	Scientific research and development	composite deflator for research and development
	73	Advertising and market research	CPI Services
	74	Other professional, scientific and technical activities	CPI Services
	75	Veterinary activities	CPI Veterinary and other services for pets
N		**Administrative and support service activities**	
	77	Rental and leasing activities	CPI Services
	78	Employment activities	CPI Services
	79	Travel agency, tour operator reservation service and related activities	CPI Services
	80	Security and investigation activities	CPI Services
	81	Services to buildings and landscape activities	CPI Services
	82	Office administrative, office support and other business support activities	CPI Services
O		**Public administration and defence; compulsory social security**	
	84	Public administration and defence; compulsory social security	output from the calculations of collective GFCE at constant prices
P		**Education**	
	85	Education	output from the calculations of individual GFCE (part for Education) at constant prices, indicators for market output
Q		**Human health and social work activities**	
	86	Human health activities	output from the calculations of individual GFCE (part for Health) at constant prices, indicators for market output
	87	Residential care activities	output from the calculations of individual GFCE (part for Residential care activities) at constant prices, indicators for market output
	88	Social work activities without accommodation	output from the calculations of individual GFCE (part for Social work activities without accommodation) at constant prices, indicators for market output
R		**Arts, entertainment and recreation**	
	90	Creative, arts and entertainment activities	CPI Recreational and cultural services
	91	Libraries, archives, museums and other cultural activities	CPI Cultural services
	92	Gambling and betting activities	CPI Recreational and cultural services
	93	Sports activities and amusement and recreation activities	CPI Recreational and cultural services
S		**Other service activities**	
	94	Activities of membership organizations	CPI Other services, n.e.c.

Section	Division	Activity	Indicators
	95	Repair of computers and personal and household goods	CPI Other services, n.e.c.
	96	Other personal service activities	CPI Other services, n.e.c.
T		**Activities of households as employers; undifferentiated goods and services producing activities of households for own use**	
	97	Activities of households as employers of domestic personnel	CPI Other services, n.e.c.

For quarterly intermediate consumption, the calculations at constant prices have been carried out using a ratio approach. The annual ratio of intermediate consumption over output from the previous year is applied to the output at constant prices in the current year (the same ratio is applied for all four quarters).

Quarterly value added at previous year prices is derived as the difference between output and intermediate consumption at previous year prices. Then, the aggregate is chain-linked to obtain GVA with 2010 as reference year. The resulting chain-linked series to reference year 2010 are benchmarked and converted to previous year prices.

Calculations for the level of 21 sections of NACE Rev. 2 have been implemented by summing GVA at previous year prices of divisions classified within the respective sections. Calculations for the A 10 level of NACE Rev. 2 are done by summing GVA at previous year prices of sections classified within the respective aggregates. Then, the aggregates are chain-linked to obtain series with 2010 as reference year.

Taxes less subsidies on products at constant prices

For quarterly taxes on products, the calculations at constant prices have been carried out using a ratio approach. The annual ratio of taxes on products over properly chosen aggregate from the previous year is applied to the aggregate at constant prices in the current year (the same ratio is applied for all four quarters). For taxes on products (excluding taxes on imports), actual individual consumption is used; for taxes on imports (custom duties), imports of goods is used.

For subsidies on products at constant prices, applied is the extrapolation of value of subsidies on products at current prices from the previous year with the composite index, derived as the weighted average of the volume index of agricultural production and the volume index of food production. As weights, the annual structure of subsidies assigned from the budget for these activities is used.

Taxes and subsidies on products are chain-linked to obtain series with 2010 as reference year. These series are benchmarked and converted to previous year prices.

Taxes less subsidies on products at previous year prices are obtained by subtracting subsidies from taxes on products at previous year prices. Then, the aggregate is chain-linked to obtain series with 2010 as reference year.

Quarterly gross domestic product at constant prices is obtained as the sum of gross value added (GVA) of all economic activities plus taxes less subsidies on products. Then, the aggregate is chain-linked to obtain series with 2010 as reference year.

6.4. GDP components: the expenditure approach

The quarterly GDP by the expenditure approach represents the sum of final uses of goods and services by resident institutional units plus exports less imports of goods and services.

Quarterly GDP in Serbia is determined from the production components, due to the facts that quarterly data on changes in inventories are very limited and that the current practice is to calculate changes in inventories as a residual (subtracting the estimates of final consumption, gross fixed capital formation, acquisition less disposals of valuables and net exports from the production-based GDP estimate). Consequently, this residual may contain a statistical discrepancy. Since this residual can take either negative or positive value, it cannot be chain-linked and the only volume expression available is at previous year prices. The magnitude of the resulting estimate is considered as an implicit measure of the quality of the other estimated components.

The calculations are carried out from the first quarter 1996 for all expenditure categories. The calculations have been done at current and constant prices at the following levels:

- HFCE has been calculated at the 3-digit level of COICOP;
- GFCE are partly compiled according to COFOG;
- NPISH final consumption expenditure – total level;
- GFCF has been compiled in accordance with breakdown of fixed assets by type;
- Acquisition less disposals of valuables - total level;
- Exports and imports, separately for exports/imports of goods and exports/imports of services.

6.4.1. Household final consumption

As household final consumption is the largest expenditure component of GDP, a very detailed estimation procedure is applied. The quarterly estimation of household final consumption expenditure is based on the COICOP grouping expenditure on goods and services in homogenous categories according to the type of need. The calculation is done according to the national concept as it includes resident's expenditure abroad and excludes non-resident's expenditure on the territory of the Republic of Serbia. In general, a bottom-up approach is used to derive the total HFCE estimate at current prices.

The quarterly HFCE at current prices estimates have been performed at the 3-digit COICOP level and the resident and non-resident categories since the first quarter of 1996. The indicators for the current price values are based on: quarterly household budget survey (HBS) data, quarterly retail trade and catering turnover data and quarterly output at current prices for some activities. For each COICOP group only one of these indicators is used. For Serbian residents' expenditure abroad and non-resident's expenditure in Serbia, Balance of Payments (BoP) data (inflow and outflow from tourism) from the National Bank of Serbia are used as the source. The choice of data source for any type of expenditure is generally determined by the perceived comprehensiveness and reliability of that source.

The quarterly HFCE at current prices estimates are calculated by disaggregating of the available annual values to quarterly data and the extrapolation of the current year quarterly values using the available quarterly indicators at current prices. The series at current prices for the 3-digit COICOP level and residents in the rest of the world are summed up and non-residents on the Serbian territory are subtracted to derive total household final consumption expenditure at current prices.

The quarterly HFCE at constant price estimates are obtained by a deflation method using CPIs for the corresponding COICOP categories, Serbian residents' expenditures abroad and non-residents' expenditure on the territory of the Republic of Serbia.

Deflators at the 3-digit level of COICOP aggregation and for non-residents on the Serbian territory are taken from the Price Statistics.

The deflator for Serbian residents' expenditures abroad is a composite index, derived from CPI data for the five most important partners for imports of tourism services. Information about the range of countries from which tourism services are imported is obtained from the National Bank of Serbia. Data on CPI for these countries are from their national statistics, on monthly basis. These data are adjusted for changes of exchange rates of their currencies in RSD and weighted with the share of imports of tourism services from these countries.

Benchmarked values at current prices are deflated with benchmarked deflators. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

The series at previous year prices for the 3-digit COICOP level and residents in the rest of the world are summed up and non-residents on the Serbian territory are subtracted to derive total household final consumption expenditure at previous year prices. This aggregate is chain-linked to obtain total HFCE value with reference 2010 year.

The following table presents an overview of the indicators used to obtain HFCE at current and constant prices**:**

Box 3. Applied indicators for the HFCE calculation at current and constant prices

Categories		Current prices	Constant prices
01	**Food and non-alcoholic beverages**		
01.1	Food	quarterly HBS data	CPI Food (01.1)
01.2	Non-alcoholic beverages	quarterly HBS data	CPI Non-alcoholic beverages (01.2)
02	**Alcoholic beverages, tobacco and narcotics**		
02.1	Alcoholic beverages	quarterly HBS data	CPI Alcoholic beverages (02.1)
02.2	Tobacco	quarterly retail trade turnover data	CPI Tobacco (02.2)
02.3	Narcotics	trend	trend
03	**Clothing and footwear**		
03.1	Clothing	quarterly retail trade turnover data	CPI Clothing (03.1)
03.2	Footwear	quarterly HBS data	CPI Footwear (03.2)
04	**Housing, water, electricity, gas and other fuels**		
04.1	Actual rentals for housing	quarterly HBS data	CPI Actual rentals for housing (04.1)
04.2	Imputed rentals for housing	production approach aggregate, at current prices	implicit deflator for division 68
04.3	Maintenance and repair of the dwelling	quarterly HBS data	CPI Maintenance and repair of the dwelling (04.3)
04.4	Water supply and miscellaneous services related to the dwelling	quarterly HBS	CPI Water supply and miscellaneous services related to the dwelling (04.4)
04.5	Electricity, gas and other fuels	quarterly HBS	CPI Electricity, gas and other fuels (04.5)
05	**Furnishings, housing equipment, routine housing maintenance**		

Categories		Current prices	Constant prices
05.1	Furniture and furnishings, carpets and other floor coverings	quarterly HBS data	CPI Furniture and furnishings, carpets and other floor coverings (05.1)
05.2	Household textiles	quarterly HBS data	CPI Household textiles (05.2)
05.3	Household appliances	quarterly HBS data	CPI Household appliances (05.3)
05.4	Glassware, tableware and household utensils	quarterly retail trade turnover data	CPI Glassware, tableware and household utensils (05.4)
05.5	Tools and equipment for house and garden	quarterly HBS data	CPI Tools and equipment for house and garden (05.5)
05.6	Goods and services for routine household maintenance	quarterly HBS data	CPI Goods and services for routine household maintenance (05.6)
06	**Health**		
06.1	Medical products, appliances and equipment	quarterly HBS data	CPI Medical products, appliances and equipment (06.1)
06.2	Out-patient services	production approach aggregate, at current prices	CPI Out-patient services (06.2)
06.3	Hospital services	production approach aggregate, at current prices	CPI Out-patient services (06.2)
07	**Transport**		
07.1	Purchase of vehicles	quarterly retail trade turnover data	CPI Purchase of vehicles (07.1)
07.2	Operation of personal transport equipment	quarterly retail trade turnover data	CPI Operation of personal transport equipment (07.2)
07.3	Transport services	production approach aggregate, at current prices	CPI Transport services (07.3)
08	**Communication**		
08.1	Postal services	production approach aggregate, at current prices	CPI Postal services (08.1)
08.2	Telephone and telefax equipment	quarterly HBS data	CPI Telephone and telefax equipment (08.2)
08.3	Telephone and telefax services	production approach aggregate, at current prices	CPI Telephone and telefax services (08.3)
09	**Recreation and culture**		
09.1	Audio-visual, photographic and Information processing equipment	quarterly retail trade turnover data	CPI Audio-visual, photographic and information processing equipment (09.1)
09.2	Other major durables for recreation and culture	quarterly HBS data	CPI Other major durables for recreation and culture (09.2)
09.3	Other recreational items and equipment, gardens and pets	quarterly retail trade turnover data	CPI Other recreational items and equipment, gardens and pets (09.3)
09.4	Recreational and cultural services	quarterly HBS data	CPI Recreational and cultural services (09.4)

Categories		Current prices	Constant prices
09.5	Newspapers, books and stationery	quarterly HBS data	CPI Newspapers, books and stationery (09.5)
09.6	Package holidays	NBS data on inflow from tourism	composite index, derived from CPI data for the five most important partners for imports of tourism services
10	**Education**	production approach aggregate, at current prices	CPI Education (10)
11	**Restaurants and hotels**		
11.1	Catering services	monthly data on value of turnover for Catering	CPI Catering services (11.1)
11.2	Accommodation services	production approach aggregate, at current prices	CPI Accommodation services (11.2)
12	**Miscellaneous goods and services**		
12.1	Personal care	quarterly HBS data	CPI Personal care (12.1)
12.3	Personal effects n.e.c.	quarterly HBS data	CPI Personal effects n.e.c. (12.3)
12.4	Social protection	production approach aggregate, at current prices	CPI Social protection (12.4)
12.5	Insurance	production approach aggregate, at current prices	CPI Insurance (12.5)
12.6	Financial services n.e.c.	production approach aggregate, at current prices	CPI Financial services n.e.c. (12.6)
12.7	Other services n.e.c.	production approach aggregate, at current prices	CPI Other services n.e.c. (12.7)
	Residents in the rest of the world	NBS data on inflow from tourism	composite index, derived from CPI data for the five most important partners for imports of tourism services
	Non-residents on the Serbian territory	NBS data on outflow from tourism	CPI Total

6.4.2. Government final consumption

Government final consumption expenditure represents current expenditures by general government units on services to the community. These services are provided free of charge or at charges which cover only small proportion of costs, therefore the government is considered to be consumer of its own output, which has no directly observable market value. General government final consumption expenditure is further divided into expenditures for collective services and expenditures for individual services, according to the activity of general government units. Individual services are health, recreation, culture and religion, education and social protection. All other activities are considered to be collective services. Government is considered to be consumer of its own output, which has no directly observable market value, but is defined to be equal to the sum of the production costs:

Output = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid

The final consumption expenditure of general government is estimated as output less receipts from sales of goods and services provided by these government units (market output) plus social benefits in kind.

Final government consumption = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid + Social transfers in kind - Market output - R&D for own final use - Software for own final use

The main data provider is the Ministry of Finance. Since 2003 data on compensation of employees and intermediate consumption are available on a monthly basis for central government, Autonomous Province of Vojvodina, cities and municipalities and the social security funds. These data are the basic source for final government consumption expenditure calculation at current prices.

Compensation of employees and intermediate consumption constitute approximately 98% of government final consumption expenditure. The remaining variables, with a very limited share, are obtained by annual data disaggregation with a trend as related series, using ECOTRIM.

The compensation of employees at current prices is obtained by disaggregating annual to quarterly data, using appropriate quarterly data on compensation of the employees at current prices as indicator. The indicator for compensation of employees within individual consumption is the number of employees multiplied with average gross wages and salaries in sections P (Education) and Q (Human health and social work activities) of the NACE Rev. 2. These monthly data are obtained from the Employment and Earnings Statistics. Budgetary data on compensation of employees from the Ministry of Finance are used as indicator for compensation of employees within total government consumption. Indicator for compensation of employees within collective consumption is obtained as difference between total and individual.

The compensation of employees at constant prices is obtained by the extrapolation method, using the number of employees. The number of employees in section O (Public administration and defense; compulsory social security) of the NACE Rev. 2 is used as indicator for compensation of employees within collective consumption and the numbers of employees in sections P and Q of the NACE Rev. 2 are used as indicators for compensation of employees within individual consumption. The resulting series at previous year prices have been chain-linked with reference 2010 year, benchmarked and converted to previous year prices.

Using the average wage index is a methodologically better solution if other conditions are met, that is if an exhaustive set of data on number of employees and their salaries in a detailed breakdown by grades and activities is available. Extrapolation method with the number of employees is used due to lack of sufficiently detailed data on the breakdown of the employees in order to make a stratification of the employees in such a way that categories with significantly different changes in wage rates can be distinguished.

Intermediate consumption at current prices is obtained by disaggregating annual to quarterly data, using quarterly data on government intermediate consumption from the Ministry of Finance as indicator. The split in collective and individual intermediate consumption is carried out using the annual shares of these categories in total intermediate consumption (the same share is applied for all four quarters).

The intermediate consumption at constant prices is obtained using the deflation method. For deflation of intermediate consumption a composite price index is used. Starting point is financial statements of budgetary users, where a detailed breakdown of goods and services exists. For each year the weights of these items are determined as the shares of each category in the total expenditures for use of goods and services and then an appropriate price index is chosen (the list of chosen indices is given in the table below). The next step is the calculation of the composite price index for each category – current weights (weights from the year t) of each item is multiplied with the relevant price index (in the year t) – which are used for deflation of intermediate consumption.

Benchmarked values at current prices are deflated with benchmarked deflator. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

Consumption of fixed capital at current prices is obtained by disaggregating available annual to quarterly current price data and extrapolation of the current year quarterly values, using statistical models.

Benchmarked current prices estimates are deflated with benchmarked deflator. As a deflator, quarterly PPI for capital goods is used (the same one is used for individual and for collective consumption). The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

Other taxes on production at current prices are obtained by disaggregating available annual to quarterly current price data and extrapolation of the current year quarterly values, using statistical models.

The other taxes on production at constant prices are obtained by the extrapolation method, using the number of employees. Number of employees in section O of the NACE Rev. 2 is used as indicator for other taxes on production within collective consumption and number of employees in sections P and Q of the NACE Rev. 2 is used as indicator for other taxes on production within individual consumption. The resulting series at previous year prices have been chain-linked with reference 2010 year, benchmarked and converted to previous year prices.

Social transfers in kind at current prices are obtained by disaggregating available annual to quarterly current price data and extrapolation of the current year quarterly values, using statistical models.

Benchmarked current prices estimates are deflated with benchmarked consumer price index for health. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

Market output at current prices is obtained by disaggregating available annual to quarterly current price data and extrapolation of the current year quarterly values, using statistical models.

Market output at constant prices is obtained by the deflation method. Benchmarked current prices estimates are deflated with benchmarked deflator. For the collective part of market output, the deflator is the consumer price index for services. For the individual part of market output, deflator is a composite price index, derived by weighting the relevant consumer price indices. As weights, the annual shares of health, culture, education and social protection in total individual market output are used. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

R&D for own final use at current prices is obtained by disaggregating available annual to quarterly current price data and extrapolation of the current year quarterly values, using statistical models.

R&D for own final use at constant prices is obtained by the deflation method. Benchmarked current prices estimates are deflated with benchmarked deflator. As a deflator, a composite price index is used (the same one is used for individual and for collective consumption). This index is obtained by weighting the appropriate producer price indices, consumer price indices, implicit deflator for GFCF and indices of average gross wages and salaries in division Scientific research and development. Annual weights are obtained from survey “Structures of operational income and expenditures of legal entities and unincorporated enterprises” and from R&D statistics. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

Software for own final use at current prices is obtained by disaggregating available annual to quarterly current price data and extrapolation of the current year quarterly values, using statistical models.

Software for own final use at constant prices is obtained by the deflation method. Benchmarked current prices estimates are deflated with benchmarked deflator. As a deflator, a composite price index is used (the same one is used for individual and for collective consumption). This index is obtained by weighting the appropriate producer price indices, consumer price indices, implicit deflators for CFC of ICT equipment and CFC of software, derived deflators related with the cost elements and indices of gross salaries for all persons employed in the computer engineering. Annual weights are obtained from own account software investments estimates. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

The following table presents an overview of the applied indicators for the calculation of government final consumption expenditure at current and constant prices:

Box 5. Applied indicators for the calculation of GFCE at current and constant prices

Categories	Current prices	Constant prices
Compensation of employees		
Collective	budgetary data, total minus individual	number of employees in section O
Individual	average wage * number of employees in sections P and Q, separately	number of employees in sections P and Q, separately
Intermediate consumption (IC)		
Collective	annual share of collective IC * budgetary data total	composite price index
Individual	annual share of individual IC * budgetary data total	composite price index
Consumption of fixed capital		
Collective	trend	PPI for capital goods
Individual	trend	PPI for capital goods
Other taxes on production		
Collective	trend	number of employees in section O
Individual	trend	number of employees in sections P and Q, separately
Market output		
Collective	trend	CPI Services
Individual	trend	composite price index
Social transfers in kind		
Collective	-	-
Individual	trend	CPI Health
R&D for own final use		
Collective	trend	composite price index
Individual	trend	composite price index
Software for own final use		
Collective	trend	composite price index
Individual	trend	composite price index

Government final consumption expenditure at current prices is obtained by summing up the current values of compensation of the employees, intermediate consumption, consumption of fixed capital, other taxes on production and social transfers in kind and by subtracting market output, R&D for own account and software for own account. Calculations are done for collective and individual government consumption separately.

Government final consumption expenditure at previous year prices is obtained by summing up compensation of employees, intermediate consumption, consumption of fixed capital, other taxes on production and social transfers in kind and by subtracting market output, R&D for own final use and software for own final use at previous year prices. This aggregate is chain-linked to obtain GFCE value with 2010 as reference year.

6.4.3. NPISH final consumption

Final consumption expenditure of NPISHs, at previous year prices is estimated using the input cost approach by summing up all the cost components of final expenditure of NPISHs. Each cost component is estimated separately. The aggregates are chain-linked to obtain final consumption expenditure of NPISHs value with 2010 as reference year.

Final consumption expenditure of NPISHs = Compensations of employees + Intermediate consumption + Consumption of fixed capital + Other taxes on production paid – Sales of goods and services[24]

Compensation of employees at constant prices is obtained by extrapolating compensation of the employees with the relevant index of number of employees.

Intermediate consumption at constant prices is obtained by deflation of intermediate consumption at current prices with the consumer price index for social protection services.

Consumption of fixed capital at constant prices is obtained by deflation of the current values with the implicit producer price index for capital goods.

Other taxes on production at constant prices have been obtained by extrapolation with the relevant index of number of employees.

Sales of goods and services at constant prices is obtained in the following way:

- Market output and payments for non-market output at constant prices are obtained by deflating current price values with the relevant consumer price index, as shown in the Box 3.xxx6;

- Output for own final use at constant prices is obtained by deflating current price values with the relevant indicators for R&D and own-account software (see part 3.2.1.2.6 Intellectual property products).

6.4.4. Gross fixed capital formation

Gross fixed capital formation covers a large range of different types of fixed assets, which are integrated into three main categories by technical structure:

1. buildings and structures,
2. equipment (with a split on investments in domestic and imported equipment),
3. other fixed assets.

Quarterly GFCF calculations at current and constant prices apply monthly or quarterly data at current prices from regular statistical surveys, various data on prices and quantities, and other indicators from the statistical system and other available data sources.

Quarterly values of construction works done at current prices from the Construction Statistics are an indicator for quarterly investments in buildings and structures. Implemented are the disaggregation

[24] Sales of goods and services include market output, output for own final use and payments for non-market output.

of the available annual to quarterly data at current prices and the extrapolation of the current year quarterly values.

The indicator for investments in domestic equipment is quarterly output at current prices, from the production side, for divisions of the NACE Rev. 2 related to production of equipment. It is used as related series to disaggregate annual investments in domestic equipment.

Data on imports of equipment from the External Trade Statistics are used as indicators for imported equipment. These data are available on monthly basis in national currency (RSD).

For other investments, there is no appropriate indicator. Quarterly current price data on the other investments are obtained by disaggregating available annual to quarterly data and extrapolating of the current year quarterly values with a trend as related series, using ECOTRIM.

Box 6. Applied indicators for the current price estimates of GFCF

GFCF categories	Indicator
Buildings and structures	quarterly values of construction works done at current prices
Equipment	
Domestic	quarterly output at current prices for divisions of the NACE Rev. 2 related to production of equipment
Imported	data on imports of equipment
Other fixed assets	trend

Gross fixed capital formation (GFCF) at current prices is obtained by summing up categories by technical structure at current prices.

Quarterly GFCF at constant prices is estimated using the deflation method. Benchmarked values at current prices are deflated with benchmarked deflators.

Investments in buildings and structures are the major part of the GFCF. The calculation of the quarterly investments in buildings and structures at constant prices is done by deflating the quarterly investments in buildings and structures at current prices. As deflator, a composite price index for buildings and structures is used. This index is obtained by weighting the appropriate producer price indices of industrial products and indices of average gross wages and salaries in construction. Annual weights are obtained on the basis of data from financial statements of construction enterprises. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

The calculation of the quarterly investments in domestic equipment at constant prices is done by deflating the quarterly investments in domestic equipment at current prices. As deflator, a weighted PPI is used. This index is obtained by weighting the appropriate producer price indices of industrial products for domestic market, for divisions of the NACE Rev. 2 related to production of equipment. Annual weights are determined by the share of output of each division in the sum of outputs of above mentioned divisions. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

The calculation of the quarterly investments in imported equipment at constant prices is done by deflating the quarterly investments in imported equipment at current prices. Quarterly deflators are indices from import producers' prices for capital goods. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

The calculation of the quarterly investments in other fixed assets at constant prices is done by deflating the current prices values using weighted deflator. This index is obtained by weighting the appropriate producer price indices, consumer price indices and composite price index for buildings and structures. Annual weights are obtained on the basis of data from the "Annual survey on investments in fixed assets". The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

Box 7. Applied deflators for the constant price estimates of GFCF

GFCF categories	Deflators
Buildings and structures	composite price index
Equipment	
Domestic	weighted PPIs for divisions of the NACE Rev. 2 related to production of equipment
Imported	indices from import producers' prices for capital goods
Other fixed assets	composite price index

Gross fixed capital formation (GFCF) at previous year prices is obtained by summing up categories by technical structure at previous year prices. This aggregate is chain-linked to obtain total GFCF value with 2010 as reference year.

6.4.5. Acquisitions less disposals of valuables

Acquisitions less disposals of valuables has a small share in Serbian GDP, so quarterly estimates at current prices are obtained by disaggregating available annual to quarterly data and extrapolating of the current year quarterly values, with trend as related series, using ECOTRIM. Benchmarked current prices estimates are deflated with a benchmarked total consumer price index. Since this aggregate can take negative or positive value, it cannot be chain-linked.

6.4.6. Imports, exports

Quarterly exports and imports calculations at current and constant prices use monthly or quarterly data from regular statistical surveys, various data on prices and quantities, and other indicators from the statistical system and other available data sources. It has been done separately for goods and services.

For quarterly calculations of exports and imports of goods and exports and imports of services, data from the National Bank of Serbia are used as indicators for current prices.

Data on exports of goods at current prices from National Bank of Serbia are an indicator for quarterly exports of goods at current prices. These data are available on monthly basis in national currency (RSD).

Data from National Bank of Serbia are used as indicators for quarterly exports of services at current prices. These data are on monthly basis and in US Dollars (USD). Data in national currency (RSD) are obtained using corresponding USD exchange rate in RSD.

Data on imports of goods at current prices from the National Bank of Serbia are an indicator for quarterly imports of goods at current prices. These data are available on monthly basis in national currency (RSD).

Data from the National Bank of Serbia are used as indicators for quarterly imports of services at current prices. These data are available on monthly basis in USD. Data in national currency (RSD) are obtained using corresponding USD exchange rate in RSD.

The calculation of quarterly exports of goods at constant prices is done by deflating the quarterly values at current prices. The deflator is composite price index based on indices of export producers' prices of industrial products in the Republic of Serbia and indices of producer prices of agricultural products in the Republic of Serbia. Weights are determined as the shares of industrial and agricultural products in total export of these goods.

The calculation of the quarterly exports of services at constant prices is done by deflating the quarterly values at current prices. The deflator for the export of services is total CPI obtained from the Price Statistics, on monthly basis.

The calculation of the quarterly imports of goods at constant prices is done by deflating the quarterly values at current prices with index based on import producers' prices, obtained from the Price Statistics, on monthly basis.

The calculation of the quarterly imports of services at constant prices is done by deflating the quarterly values at current prices with composite price index based on CPIs for the 10 most important partners for imports of services. The information about the range of countries from which services are imported is obtained from the National Bank of Serbia. CPI data for these countries are taken from their national statistics on monthly basis, adjusted with changes of exchange rates of their currencies in RSD and weighted with the shares of imports of services from these countries.

Benchmarked values at current prices are deflated with benchmarked deflators. The resulting chain-linked series with reference 2010 year are benchmarked and converted to previous year prices.

Values of exports of goods and export of services at previous year prices are summed up to obtain the total exports value at previous year prices. The aggregate is chain-linked to obtain the total export value with 2010 as reference year.

Values of imports of goods and imports of services at previous year prices are summed up to obtain the total imports value at previous year prices. The aggregate is chain-linked to obtain the total imports value with 2010 as reference year.

Box 8. Applied indicators for the current price estimates of exports and imports

Exports/Imports categories	Indicator	
	goods	services
Exports	data on exports of goods at current prices from the National Bank of Serbia (BoP)	data on exports of services from the National Bank of Serbia (BoP)
Imports	data on imports of goods at current prices from the National Bank of Serbia (BoP)	data on imports of services from the National Bank of Serbia (BoP)

Box 9. Applied deflators for the constant price estimates of exports and imports

Exports/Imports categories	Deflators	
	goods	services
Exports	composite price index	CPI Total
Imports	index based on import producers' prices	composite price index

6.5. Population and employment

6.5.1. Population

Population data represented in the national accounts are based on the official current population statistics data. On the basis of census results and annual results of natural and mechanical population movements, population estimates are produced for both the Census and the post Census years. Also, according to the results of the latest Census, the population estimates for the preceding inter-census period are revised if the methodologies of the two successive censuses significantly differ. Estimated number of population, together with the data of statistics of births, deaths and the internal migration of population (by age, sex, type of settlement, etc.) constitutes a basis for annual calculation of basic demographic indicators. Also, based on the estimated age-sex structure of the population and demographic indicators trends, future trends of the population are projected.

The quarterly population averages represented in NA are calculated for the respective quarter as the arithmetic mean of three monthly data of the current population statistics. The estimates for the Republic of Serbia for the quarters of the year t are calculated based on population estimates at the moment 1 January of the year t and average values of the number of births and deaths from the three preceding years (the third component in the calculation of population estimates net migration is zero at the republic level). The revision of these data is done at the moment 30.06. in the year t+1, when the official vital statistics data for the year t are available.

The annual mean results are initially determined on the basis of the quarterly means and later reconciled with the final annual results of the current population statistics once these have been published.

6.5.2. Employment

Data on employment are being collected through the following surveys, conducted by the Employment and Earnings Statistics:

- Monthly survey of employees and their salaries and wages;
- Survey on registered employment based on Central Register of Compulsory Social Insurance (CRCSI) and Statistical Business Register (SBR) and
- Labour Force Survey (LFS)

The aim of the Monthly survey on employees and their salaries and wages is to provide actual and reliable data on the level, structure and trends of averages wages and salaries by activities and territorial units of the Republic of Serbia. This survey is carried out on a purposive sample of legal entities. The frame for the selection/updating of the sample in this survey are all enterprises, institutions, cooperatives and other organisations, as well as their territorially separated units registered in the Statistical Business Register.

The Labour Force Survey collects data on the main characteristics of labour force, which are used to estimate the total labour force in Serbia. It is primarily aimed at obtaining data on three basic, contingent and mutually exclusive categories of population: employed, unemployed and economically inactive persons. The main areas that are measured are employment and unemployment, economic inactivity, as well as demographic, socio-economic, educational and other characteristics of population in each of the mentioned areas. Sampling frame is based on data of the Census of Population, Households and Dwellings that was carried out in the Republic of Serbia in 2011.

Since 2015, the Statistical Office of the Republic of Serbia has switched to a new methodology of measuring registered employment by combining data from the Central Register of Compulsory Social

Insurance (CRCSI) and Statistical Business Register (SBR). The survey covers all the social insurance contribution payers and the insured who are insured on the ground of employment according to the CRCSI: employees, i.e. persons employed in any legal entity, persons who work or whose status is equivalent to employment, persons insured working on temporary or occasional basis, persons performing work under contract, persons insured on the ground of performing self-employment activities and persons insured on the ground of performing agricultural activities.

The data coverage on employment that has been collected through the above mentioned surveys is insufficient for the purposes of employment calculation in national accounts and it is necessary to implement some additional adjustments (imputations) leading to full harmonization of quarterly employment data in national accounts with standards and regulations.

6.6. Main data sources used

The main data sources used for the QNA compilation are presented in the following table:

Box 10. Data sources used for the QNA compilation

	Data source	Periodicity	Indicators
1	***Quarterly Structural Business Survey***	quarterly	revenues from sales of goods, products and services; revenues from the own use of products and services; revenues from premiums, subsidies, donations, etc. and other operating income (revenues from rents, memberships, license reimbursements and other operating income)
			purchase value of sold goods; costs of materials; costs of salaries, remuneration and other personal costs; costs of production and non-production services, excluding taxes and contributions
2	***Household Budget Survey***	quarterly	the expenditure of personal consumption of households according to the COICOP
3	***Employment and Earnings***		
	Monthly survey of employees and their salaries and wages	monthly	number of employees and wages and salaries
	Survey on registered employment	monthly	number of employees
	Labour Force Survey	quarterly	number of employees
4	***Price Statistics***		
	Price indices of the producers' products of agriculture and fishing	monthly	price index (PPI)
	Price indices of the producers' industrial products for domestic and non-domestic market	monthly	price index (PPI)
	Indices of producer prices from import	monthly	price index (PPI)
	Consumer Price Index by COICOP	monthly	price index (CPI)
5	***Internal Trade***		
	Monthly Survey of Retail Trade	monthly	data on turnover of goods in retail trade - division 47, NACE Rev. 2
	Monthly report on purchase of agricultural products from individual holdings	monthly	data on sales and purchases of agricultural, forestry and fishing products from individual agricultural holdings

	Data source	Periodicity	Indicators
	Monthly report on turnover of agricultural products on green-markets	monthly	data on the total volume and structure of the sales of agricultural products at organized markets (so-called village markets or green markets) carried out by family agricultural holdings
	Quarterly Survey of wholesale and retail trade, and repair of motor vehicles and motorcycles	quarterly	data on turnover of goods in wholesale and retail trade, and repair of motor vehicles and motorcycles - division 45, NACE Rev. 2
	Quarterly Survey of wholesale trade	quarterly	data on turnover in wholesale trade in wholesale trade activity - division 46, NACE Rev. 2
	Quarterly Survey of retail trade	quarterly	data on turnover of goods in retail trade - division 47, NACE Rev. 2
6	***Tourism***		
	Monthly survey on tourist arrivals and overnight stays in accommodation facilities	monthly	number of arrivals and overnight stays in accommodation facilities
7	***Catering***		
	Quarterly statistical survey of legal units carrying on catering trade and quarterly survey of sole entrepreneurs	quarterly	turnover in catering trade (services of accommodation, food, drinks, as well as the other services usually performed in catering trade)
8	***Transport, Storage and Communications***		
	Quarterly statistical reports of enterprises in the field of Transport and communications	quarterly	the physical volume indices of transport services for railway transport, road transport, urban transport, pipeline transport, inland waterway transport, storage and transhipment services, air transport, postal activities and telecommunications
9	***Construction***		
	Quarterly survey on construction	quarterly	data on construction activity of enterprises (value of construction work done, number of workers on construction sites and hours worked on construction sites, number and floor area of completed and number of non-completed dwellings in the territory of the Republic of Serbia)
10	***External Trade***		
	Unified customs document on the imports and exports of goods – Custom Declaration	monthly	value of exports and imports of goods
11	***Industry***		
	Monthly survey of industry	monthly	industrial production index
12	***Agriculture***		

	Data source	Periodicity	Indicators
	Statistics of agricultural production	annual	index of physical volume of agricultural production
13	***Population***	quarterly	quarterly population averages
14	***Monthly statements on deposits and bank claims (NBS)***	monthly	data from monthly banking statistics on stocks of loans and deposits
15	***Balance of payments (NBS)***	monthly	data on exports and imports of goods and services
16	***Exchange rates (NBS)***	monthly	data on exchange rates
17	***Insurance supervision (NBS)***	quarterly	data on insurance premiums
19	***Expenditures and revenues of government budget (Ministry of Finance)***	monthly	expenditure (raw materials and utilities, services used repairs, wages and salaries) and revenues of the government (revenue from sales of goods and services, capitalization, penalties, interest, revenue from sales of equity, revenue from allowances and subsidies etc.)
20	***Treasury Administration data (Ministry of Finance)***	monthly	taxes on products

1. Quarterly Structural Business Survey

Quarterly Structural Business Survey was first conducted in 2007, as a pilot survey, and in 2008 it was introduced into the Serbian statistical system as a regular survey.

The aim of Quarterly Structural Business Survey (SBS03) is to provide data on quarterly dynamics of financial operating of enterprises as well as on changes on the structure of economic activities in the field of nonfinancial operating economy. Financial operating of enterprises is based on the data on operating income, operating expenses, stocks and investments in tangible fixed assets.

Quarterly Structural Business Survey encompasses all business entities involved in the production and sale of goods and services for the market, i.e. those entities that are mainly classified as non-financial business of NACE Rev. 2 classification of activities (sections A-S, excluding sections K and O).

This survey is based on the sample of the selected units. The sample consists of about 2800 units.

Operating income includes revenues from sales of goods, products and services; revenues from capitalized production; revenues from premiums, subsidies, donations, etc. and other operating income (from rentals, memberships, royalties and license fees and other operating income).

Operating costs include purchase value of goods sold; raw materials and energy costs; costs of salaries, remuneration and other personnel costs; costs of industrial and non-industrial services, excluding taxes and social contributions.

All data are at current prices. Value added tax (VAT) is excluded.

2. **Household Budget Survey**

Household Budget Survey has been carried out according to international standards and recommendations of Eurostat, International Labour Organization and UN since 2003, providing international data comparability. The Survey covered the whole territory of the Republic of Serbia on a sample basis (370 households are interviewed every fifteen days, i.e. 8856 households annually).

The Survey collects data on income and consumption expenditure of households, i.e. the data on basic elements of individual consumption. Besides, it compiles also the data on some important living standard indicators (dwelling conditions, supply with durable consumer goods, etc.), as well as certain basic data related to demographic, economic and social features of households. Individual consumption of households is presented by the 12 groups of COICOP.

3. **Employment and Earnings**

Data on formal employment are collected through the following surveys:

- Monthly survey of employees and their salaries and wages
- Survey on registered employment based on Central Register of Compulsory Social Insurance (CRCSI) and Statistical Business Register (SBR)

In addition to the above mentioned, the Labour Force Survey is conducted. The term "employed" in LFS refers to persons who performed, for at least one hour in the week in which the survey was conducted, some work in order to earn a means for their living, as well as persons who did not perform any work, due to absence from work during that week. A work providing means for living is each work being remunerated in cash or in kind.

Included are also individual agricultural producers, family workers, as well as persons who performed some work independently found and arranged without employment contract as the only source of income. This survey does not take into account the formal activity status of the person being interviewed, but the activity status of that person is determined by the actual activities performed in the respective week.

The Labour Force Survey covers the population aged 15 and over, on a sample basis. Target sample size was determined as approximately 68 640 households.

4. **Prices**

Producers' prices of agricultural and fishing products are calculated based on quantities and values of purchased and sold products, obtained from the Trade Statistics and Agricultural Statistics. Starting from 2013, indices of producer prices of agricultural and fishing products are calculated according to the methodology that is harmonized with the European standards.

Indices of producer prices of agricultural and fishing products (purchase prices for products of individual agricultural producers and selling prices for products from legal entities' production), are calculated regarding the list of around 140 products of crop farming, fruit growing and viticulture, livestock breeding, home processing and fishing.

Price indices of the producers' industrial products are based on prices that are collected by monthly surveys submitted directly by selected commercial enterprises for around 1500 manufactured items. The selection of commercial enterprises is made on the basis of data on their share in the total value of industrial production. Products for monitoring of prices are selected from each industrial area, with the highest sale in the domestic and foreign market, whose prices may represent the general trend of prices in the industry by sectors and by products destination.

Indices of export and import producers' prices is calculated according to methodology based on international statistical principles and recommendations. Prices are collected in foreign currencies

and indices are calculated in RSD, according to the mean exchange rate of the National Bank of Serbia.

For the consumer price index calculation, prices are collected for about 600 products and services classified into 12 divisions by COICOP, which are purchased by households and which aim to satisfy the households' needs.

5. **Internal Trade**

Internal trade includes: wholesale and retail trade and repair of motor vehicles and motorcycles, wholesale trade except of motor vehicles and motorcycles and retail trade except of motor vehicles and motorcycles. Internal trade statistics comprises trade turnover of goods in terms of both value and quantity. Data are collected through regular monthly, quarterly, semi-annual and annual surveys, from bookkeeping and other records of enterprises active in retail and wholesale trade. All surveys are conducted using the sampling method. The surveys cover all large, medium-sized and small companies selected by random sampling.

6. **Tourism**

Tourism statistics in monthly periodicity, by a reporting method, collect data on tourism turnover and accommodation facilities from business entities that provide accommodation or mediating in this kind of services. Tourist turnover is defined by the number of arrivals and overnight stays in accommodation facilities and the capacity by the number of accommodation facilities and number of rooms and beds. Applied methodological solutions have been harmonized with international recommendations for tourism statistics (UN/WTO, Eurostat).

7. **Catering Trade**

Catering trade turnover presents a bookkeeping accounted value of provided catering trade services (accommodation, food, beverages) and other services that are commonly performed in the catering trade (transport of guests and luggage, catering craft activities, sales of tobacco, souvenirs, newspapers, etc.). Data on the turnover in the Catering Trades, by months, relate to legal entities and entrepreneurs turnover and present estimates derived from monthly variations and assessment of the turnover's trends.

8. **Transport, Storage and Communications**

Basic data for transport and communications are obtained by regular monthly, quarterly and annual statistical reports, collected from enterprises engaged in these activities. These data are used for the calculation of the physical volume indices of transport services for railway, road, urban, pipeline, inland waterway and air transport, post and telecommunications and storage services.

All classifications and nomenclatures applied in Transport, Storage and Communications statistics are harmonized, to the greatest possible extent, with the recommendations of the Committee for Domestic Transport of the Economic Commission for Europe, mostly providing the international data comparability.

9. **Construction**

Construction statistics provides monitoring of the construction activities of physical persons and legal entities that perform construction activity and are classified in the section of Construction, as well as legal entities that are not classified in this section, but that perform construction works, in accordance with the EU regulation.

Quarterly survey on construction collects data on value of contracted and realized works in the country and abroad, data on average number of workers on construction sites and hours worked in the reporting quarter, as well as data on number and area of completed and non-completed dwellings.

10. **External Trade**

The basic data source on the External Trade statistics is a Customs Declaration, the Single Administrative Document (SAD). The observation unit in the External Trade Statistics is every goods delivery carried out in the scope of goods exports and imports.

In 2010, according to the recommendations of the UN Statistics Division, the General Trade System was introduced, which presents a broader concept of exports as well as imports and it includes all goods entering or leaving the economic territory of the country, with the exception of goods in transit. The value of goods in external trade is presented on the basis of prices achieved by enterprises while concluding contracts.

11. **Industry**

Monthly data on industrial production are collected using two questionnaires:

- Questionnaire which serves the purpose of collecting data on the total produced quantities, sub-contracted produced quantities, quantity of stocks at the end of the reporting months and on sold industrial products from the beginning of the current year;
- Questionnaire for small-size business entities which serves the purpose of collecting data on monthly basis as regard the income generated by the sale of own products and services of producers belonging to the section Manufacturing.

Reporting units are local production units of companies registered in sections B (Mining and quarrying), C (Manufacturing) and D (Electricity, gas, steam and air conditioning supply) of the NACE Rev. 2, as well as parts of non-industrial companies performing industrial activity.

Based on collected data on industrial production and the corresponding weights, industrial production indices are calculated.

12. **Agriculture and Forestry**

The index of physical volume of agricultural production is calculated on the basis of the data from regular agricultural statistical surveys referring to the volume of crop and livestock production, as well as on the basis of the data on agricultural producers' average prices at the level of the Republic of Serbia. All economically important agricultural products are included in the list of 56 products. For agriculture as a whole, gross and net indices have been calculated. The agricultural production of all 56 products from the list has been taken into account in the calculation of the gross index number, but fodder (50% of maize, barley, oats, fodder crops and meadow hay) has been excluded from the calculation of the net index in order to avoid double counting.

The physical volume index of forests exploitation is calculated on the basis of data on the production of forest assortments and weights coefficients.

13. **Population**

Population data are based on the official current population statistics data. The population trend is the result of births and deaths lists registered by the Civil Register Offices and data about migration (moves to and from Serbia). The quarterly population averages represented in the national accounts are calculated for the reference quarter as the arithmetic mean of three monthly data of the current population statistics.

14. **Monthly statements on deposits and bank claims**

This source contains data on stocks of deposits of non-monetary sector in commercial banks and bank claims from non-monetary sector (in RSD and in foreign currencies), by sectors (public enterprises, companies, households, entrepreneurs, local government, other financial organizations, non-profit and other organisations) and maturity (short-term and long-term). These data are published on the NBS website.

15. **Balance of Payments**

The Balance of Payments is compiled according to the IMF's methodology BPM6 (Balance of Payments Manual, Sixth Edition, 2009). Data are disseminated at monthly and annual level, in EUR million and USD million. The value of transactions is recalculated from original currencies into reporting currency by applying the official middle exchange rates of the National Bank of Serbia on the transaction date.

Data on exports and imports of goods are derived from customs declarations and reports submitted to the NBS. Data on external trade are adjusted based on coverage and on classification.

Data on the value of exports and imports of services are based on the International Transactions Reporting System, performed through banks and the NBS.

16. **Exchange rates – average for the period**

Exchange rates represent average exchange rates of the RSD against foreign currencies in a month/year, calculated as an arithmetic mean of the official middle exchange rates of the RSD against foreign currencies applicable on business days during the relevant month/year.

17. **Insurance supervision**

Data on total insurance premiums are collected through quarterly reports that all registered supervised entities, engaged in activities directly linked to insurance business, deliver to the National Bank of Serbia.

18. **Expenditures and revenues of government budget**

The Ministry of Finance collects data on expenditures and revenues of the government budget. Expenditure items include payments related to coverage of business expenses (electricity, phone bills etc.), business trips, services contracts, current maintenance and procurement of material, repayment of interests, compensation of employees, subsidies, social insurance and social welfare expenses, taxes and fees, interest, etc. Revenues include, tax revenues, revenue from sales of goods and services, penalties, property revenues (collected interest, rental fees) compensations, fines, sale of capital goods, as well as the capital transfers from non-governmental institutions.

Subsidies comprise all the funds transferred to the economic sector (public enterprises, registered agricultural holdings etc.) for coverage of current expenses and/or the grant intended for current business activities.

19. **Treasury Administration data**

Information on distributed public revenues of the Treasury Administration of the Ministry of Finance is the main source of data on taxes on products (value added tax - national VAT, import VAT and the arrears of turnover taxes from the previous years; excise duties - consumption taxes concerning specific products such as oil, tobacco, coffee, alcoholic beverages etc.; customs duties and other import duties - revenues from duties paid for imports of goods and services, with the exception of the VAT on imported goods that is included in VAT revenues). Data are provided on a monthly basis.

Chapter 7 THE BALANCING OR INTEGRATION PROCEDURE, AND VALIDATING THE ESTIMATES

In theory, production and expenditure approach should yield the same value of GDP. However, in practice this is almost impossible. Apart from the different calculation formulas, these two approaches are based on different data sources and their origin (administrative or statistical) and each results in different GDP estimates with its inherent advantages and disadvantages. Hence, the final step in each GDP calculation is the process of mutual harmonization, i.e, balancing the two independent estimates of GDP calculated according to production and expenditure approach.

In national accounts a distinction is made between micro and macro balancing. Micro balancing is conducted within the input-output framework at the level of individual (groups) of goods and services. The overall equilibrium between production and expenditure approach is achieved as a result of balancing of supply and use of individual products within commodity flow analysis. Macro balancing on the other hand is based on a direct confrontation a production approach made up of data not for individual groups of goods and services but for economic activities, and, on the other side, an expenditure side made up of main aggregates of GDP use i.e. expenditures. In this case there is no explicit links between the two sides, and the decision-making process is although simplified, compared to the micro balancing, facing more difficulties. Therefore the micro balancing is recommended as a preferable method but in Serbia, due to the fact that Supply and Use tables are still in the developing process, it is not fully applicable. However, the experience and results of the preliminary SUT compilation so as commodity flow analysis for certain groups of goods and services were taken into account in the macro balancing of GDP. From 2018. the balancing process is result of a interactive team work with the broadest possible insight organized and the knowledge about types of problems and solutions chosen consulted from all staff involved in compiling the national accounts. The employees who are responsible for particular domains of National Accounts are in permanent, direct personal contact with each other and if necessary ad-hoc meetings are organized to resolve the issues related to the GDP calculation and balancing of the two approaches. In 2018. after the organizational changes, in particular cooperation between the annual and QNA is improved with QNA staff actively involved in all major decisions regarding GDP and balancing.

GDP calculation under production and expenditure approach is conducted independently and, in principle, also independently of existing estimates for previous years. That means that data inputs for the GDP calculation are generated from new, updated source data each year and not as in the benchmark approach where a more elaborated and detailed calculations is conducted for a single specific year, the benchmark year, and afterwards GDP for this year moved forward by using current source data as indicators only. Estimates, i.e more precisely, revision of GDP for the period 2014 backwards were conducted using the benchmark approach with the 2016 used as the benchmark year since some key data sources were not available (and some methods were not applicable) before 2016..

As it is well explained by the German national accounts experts in their “National Accounts Inventory”, the macro balancing of the GDP is a systematic multi-stage, iterative procedure, but at the same time “this is not an automatic process or a predetermined sequence of mathematical steps”. Because of the above mentioned general approach which means that for the each year GDP is based on newly calculated, source data (not using benchmark approach), each year bears its unique challenges and specific issues which have to resolved in the balancing of GDP. Thus, it is very hard or even impossible to make some prescribed or standardized measures for elimination of the disbalances. The balancing can formally be separated into two phases. The first phase identifies the total discrepancy between the two approaches and makes preliminary decisions concerning the side, size and direction of the adjustment. After detailed analysis of the results, the NA compilation team discusses and decides how the initial discrepancy should be distributed between the production and expenditure side in the balancing process. The second step could be considered as “fine tuning” and takes into account the effects on the dynamics of the time series following from applying the first

step and may lead to additional changes in the series. The balancing process is iterative where after each adjustment, alternative estimates and their effects are assessed and each adjustment additionally checked for plausibility and consistency until the final, definite estimate is reached.

The main principle is that the least reliable data should bear the main burden of adjustment. In the first step balance is in principle obtained exclusively by changing the original, i.e. initial data in only two specific areas: On the production it is NOE and on the expenditure side the HFCE and Changes in inventories (mostly in balancing at the constant prices). The adjustments of NOE made in the balancing process can also be considered as the completion of the NOE estimation rather than a part of the balancing procedure. One of the main principles of balancing is to avoid adjustments of the data related to the "formal" part of the economy and to limit the space of balancing on the "informal" layer of the GDP due to the fact that NOE estimates are based on less reliable and precise data sources. Thus, the value of GDP and its growth is still predominantly determined by the movements of the "formal" part for which more accurate and reliable data sources are available.

The first phase of balancing starts with the GDP by expenditure approach with simultaneously checking nominal and real growth of each component of the use of GDP. In the macro balancing, the second principle applied is that annual volume measures of GDP by expenditure should be given a higher credibility compared to the production approach due to the availability of more robust price and volume indicators. Starting from the previously published growth rates of GDP (sum of quarters) which is itself based on STS volume indicators, the initial GDP by expenditure approach is thoroughly assessed with growth rates and implied deflators constantly checked for plausibility. The third principle of macro balancing is that data on government consumption and foreign trade (exports and imports) are not adjusted. This is significant change compared to the previous period where data on imports were also used as the balancing item. As it is said above, the focus of this step of balancing is the HFCF where additional parameters are taken into account: wages and salaries (annual growth), consumer loans by banks, imports of consumer goods and trade statistics. Also, as one of the important parameters, the implicit deflator of GDP and CPI are taken into account due to the fact that the HFCF constitutes dominant part of the GDP use and consequently dominantly affects its growth and value.

The second phase of balancing starts with the provisional GDP estimate obtained from the phase one and is focused on the production side of GDP. This phase is more complex because it requires detailed analysis of each activity and the effects of adjustments on the GDP. Here, as for the first step of balancing, simultaneously the nominal and real figures are assessed because the resulting volume changes could indicate the need for feed-backs to the balancing at current prices. In the revision of 2018 and in the new system of national accounts compilation plausibility of double deflation is additionally scrutinized with the leading principle to preserve or maximize consistency with the STS and QNA. As it is said before, the GVA of NOE is used as the main area for the balancing. Firstly, the Output and GVA growth rates of each activity are compared to STS volume indicators and the activities with the highest shares in the total NOE and with the largest discrepancies compared to the volume indicators are the first to be used for the balancing i.e. for the removal of the discrepancy between the production and expenditure side. Also, each activity is inspected for extraordinary developments that would require further corrections. During the balancing of the production side, several indicators are used as the controlling items: firstly, as it is said before, as one of the main principle is to preserve short term movements of gross output and GVA and to take into account impact and integration with the quarterly national accounts. Also, input/output ratios i.e. IC shares in the Gross Output are taken into account in order that the adjusted values to the maximum possible extent respect "normal" efficiency i.e. shares observed in the previous period. One of the balancing principles is to keep the value of gross output unchanged and to adjust the GVA by making changes on the intermediate consumption. The reason for this is the fact that the data on Gross Output i.e. sales of goods and services are generally more accurate than the data on intermediate consumption. Adjustments of Gross Output are carried out only in cases when there are severe, unexplanable

differences between the growth rates of Gross Output and related STS volume indicators. Moreover, the development in implicit GVA prices (implied deflators) compared to output prices and GDP implicit deflator are constantly re-checked after each adjustment. In case of severe inconsistencies, investigations of the underlying source data for possible errors and missing data are also carried out. Where such errors are discovered, or if there are unexplicable outlayers, appropriate corrections are made.

The balancing of the GDP is iterative process of scrutiny and testing, checking the plausibility and coherence of the estimates with several rounds of adjustments on each side and with the initial discrepancy diminishing and two sides more convergent after each successive iteration. After each round again, the main controlling parameters and indicators are checked until the ultimate solution is achieved with the optimal configuration of all relevant indicators, shares and ratios and coherence and consistency over time. Of course, sometimes the solution could not be considered as "the optimal" but as the one with the least amount of inconsistencies or negative effects in terms of above mentioned main controlling indicators. If the proposed adjustments to value added or the components of use of GDP in either current prices or volume produce improbable results, alternative solutions for removal of the discrepancy are tested during the meetings of the NA compilation team.

Chapter 8 OVERVIEW OF THE ALLOWANCES FOR EXHAUSTIVENESS

8.1 Introduction

In the process of estimation of GDP significant efforts are made to ensure exhaustiveness of the estimates, more precisely to ensure that, as far as possible, all relevant transactions are captured and. included in the GDP estimates. From 2014, in accordance with ESA 2010, the non-observed economy is included in the official figures of GDP. Exhaustiveness adjustments are estimated and tabulated according to the OECD Handbook Measuring the Non-Observed Economy (2002) and Eurostat's Guidelines on Tabular Approach to Exhaustiveness (2005).

In ensuring the exhaustiveness of national accounts data, the calculations also take into account recommendations and findings from consultations with international and European institutions related to the national accounts and grey economy (Eurostat, IMF, World Bank etc) Such recommendations result mostly from visits of the representatives of these institutions to the SORS in relation to various projects, technical assistance missions and other forms of cooperation and support to the SORS. In addition, the results of surveys and studies of other institutions (Tax Administration) and research agencies, experience of other national statistical institutes are consulted and often can provide important valuable indications regarding the plausibility of calculations of NOE, which can be taken into consideration in the final stages of estimation of NOE and consequently GDP.

It must be stressed that the concept of NOE used in estimation of GDP is broader than the popular, commonly employed terms "grey" or "black market" or "underground" economy which are associated with illegal (narcotics; prostitution; sale and smuggling) or deliberately concealed production activities in order to avoid paying taxes (tax evasion). NOE used in estimation of GDP includes above mentioned activities, but also other exhaustiveness adjustments related to statistical deficiencies of primary data which aimed at ensuring internal consistency of annual GDP estimates with STS and QNA which are actually a part of the balancing process and which is elaborated in the previous chapter. Hence, these adjustments can be regarded not as "grey" economy in a strict or sense, but as a conceptual transition from business accounting to national accounts concepts and definitions.

As it is said before, calculation of NOE is not just independent calculation for scientific purposes but is closely interlinked with the estimation of GDP. This is the reason why national statistical institutes are particularly careful in NOE calculation. In measurement of NOE, in common with the national accounts of most countries, the SORS is guided by the business accounting principle of conservativism. In other words, national accounts always lean towards the most conservative estimation in order to, on the one hand to make their estimates sufficiently exhaustive, but, on the other hand, to avoid possible overestimation because the results of NOE estimation are directly affecting the level of GDP and are incorporated in the official figures of GDP. Thus, NA estimates of NOE, compared to the other estimates and alternative models made by independent researchers and which are popularized in the media and academic discussions, could be considered "rigid" and "conservative" but this is direct consequence of the main principle of every national statistical institute - to limit to the maximum possible extent subjectivity and arbitrariness which could lead to overestimation of GDP.

NOE tends to concentrate in areas of economy where there is a low level of regulation and a high proportion of cash transactions. Thus small businesses out of the VAT regime are the most likely to engage in the non-declaration of sales income and employment of non-registered employees. Non-existence of financial statements and bookkeeping records for unincorporated enterprises, low capacity of Tax Administration to capture all grey economy transactions in the area of small businesses are also relevant factors in that respect. NOE is assumed that does not exist or is less significant in government sector and highly regulated industries and industries where large

enterprises predominate, such as telecommunications and finance. It is recognised, however, that NOE in the form misreporting could occur to some extent in large businesses as well even though they are subject to independent auditing and special attention of Tax Administration.

The complexity of estimation of NOE arises from its very nature i.e. form the fact that no readily available data with sufficient reliability and precision are existent and so national accountants are faced with issue of estimation heavily burdened with uncertainty. However, by following internationally recommended methodological guidelines and practices of other NSIs, the SORS is trying to produce best possible estimates in the existing circumstances and to achieve a equilibrium between exhaustiveness and reliability of GDP.

8.2 Tabular N1-N7 approach

Eurostat's tabular approach identifies seven types of non-exhaustiveness. The main aim of N1-N7 framework is not to provide a definitive classification of types of NOE but to ensure that the NOE is measured systematically, i.e. to provide basis for systematic and comprehensive assessment of the exhaustiveness of national accounts.

Eurostat's tabular approach comprises the following types of NOE:

(*"Eurostat's Guidelines on Tabular Approach to Exhaustiveness"*, Luxembourg, 2005)

N1 - Producer deliberately not registering - underground

Producer deliberately does not register to avoid tax and social security obligations. Most often this refers to small producers with turnovers that exceed threshold levels above which they should register. Producers that do not register because they are engaged in illegal activities fall under type N2. Type N1 does not include all underground activities, some of which are associated with type N6.

N2 - Producers deliberately not registering - illegal

Producer deliberately does not register as a legal entity or as an entrepreneur because it is involved in illegal activities. Type N2 excludes illegal activities by registered legal entities or entrepreneurs that report (or misreport) their activities under legal activity codes.

N3 - Producers not required to register

Producer is not required to register because it has no market output. Typically these are non-market household producers that engage in production of goods for own consumption, for own fixed capital formation, and construction of and repairs to dwellings. Alternatively, producer has some market output but it is below the level at which the producer is obliged to register as an entrepreneur.

N4 - Legal persons not surveyed

Legal persons not surveyed due to several reasons such as: the business register is out of date or updating procedures are inadequate; the classification data (activity, size or geographic codes) are incorrect; the legal person is excluded from the survey frame because its size is below a certain threshold etc. This leads to (systematic) exclusion of the legal person from surveys when in principle they should be included.

N5 - Registered entrepreneurs (natural persons conducting business activities) not surveyed

This type of non-exhaustiveness is related to owners of unincorporated enterprises or self-employed persons may not covered in the GDP calculation due to a variety of reasons: the statistical office does not conduct a survey of registered entrepreneurs; the registered entrepreneur is not in the list of registered entrepreneurs available to the statistical office, or if available, is systematically excluded

from it; the registered entrepreneur is not in the survey frame because the classification data (activity code, size code, geographic code) are incorrect.

N6 - Producers deliberately misreporting

Gross output is under-reported and/or intermediate consumption is overstated, in order to evade income tax, value added tax (VAT), other taxes, or social security contributions. Misreporting often involves maintenance of two sets of books, unregistered employees and payments of envelope salaries which are recorded as intermediate consumption; payments in cash without receipts, undisclosed barter transactions between producers and other variations of tax evasion.

N7 - Other statistical deficiencies

Type N7 comprises huge variety of possible deficiencies regarding data used for the GDP calculations caused by external data providers (incorrect, incomplete, not collected) or which are incorrectly handled, processed or compiled by statisticians before their entering the GDP calculation process. The following areas are included: handling of non-response; production for own final use by market producers; tips; wages and salaries in kind and hidden secondary activities. Clearly, not all statistical deficiencies result in the under-estimation of GDP and as it is said in the previous chapter, N7 includes also adjustments conducted during the balancing process. As the GDP estimates are resulting from balancing the two approaches (production and expenditure), some of N7 deficiencies (but also elements of other types of NOE) may be corrected for in the compilation process during the confrontation of production and expenditure measure of GDP and calculations of GVA at constant prices by activities (when inconsistencies between annual accounts with STS and QNA are identified). That is why this type is mainly used as the supporting balancing item in the calculation of GDP by production approach, unless the other types of NOE could be identified and used for this purpose.

8.3 Allowances for exhaustiveness in the production approach

Regarding the methods used for NOE estimation, the Labour Input Method (LIM) in terms of share of total estimated NOE is considered as the dominant. However, due to the fact that the N7 component is used in the process of balancing of production and expenditure approach, the so called “National Accounts Discrepancy Method” could be considered, together with LIM, as the main method at least for this type of NOE. Commodity flow analysis, closely connected with the NA discrepancy method, is also an important tool for checking plausibility of GVA estimates by activity and consequently for identification and estimation of NOE. LIM is used for estimation of misreporting of corporatae businesses (N6), registered entrepreneurs not included in statistics (N5) and underground entrepreneurs (N1); the quantity-price method is applied for illegal activities (N2), producers not required to register (production of food and beverages for own consumption and construction and repairs of dwellings for own account - N3), actual house rentals (N1) and tips (N7); For N7, NA discrepancy method determines the major part of this type of NOE. No adjustments for NOE is made for institutional units belonging to the Financial institutions sector and Government sector so as for the Government final consumption on the expenditure side.

In estimating exhaustiveness various numerous data sources are used: administrative (CROSO, financial statements, Tax administration data), LFS and other statistical surveys, studies and publications of other national and international researchers and statistical institutions etc.

Type N1. Enterprises deliberately not registering – underground

According to Eurostat's Tabular Approach to Exhaustiveness this type of non-exhaustiveness pertains to producers that should have registered but did not (underground producers) and producers that fail

to register in order to avoid tax and social security obligations (often small producers with turnover which exceeds the thresholds above which they should register their income).

Self-employed persons without registered businesses are estimated by income approach using the LFS survey and data on minimal wages and salaries. Activities of outworkers (working on a fee on contract basis) are from 2016 estimated using Tax Administration data on their income which was previously not available. Thus, they are not considered anymore as a component of NOE and are treated and as such included in the "formal" part of GDP. Before revision of 2018 their activities were indirectly estimated using the LFS data.

Estimates for actual rentals for housing presented are an integral part of this type of non-exhaustiveness since there is a relatively large number of households that rent apartments in Serbia. The estimates of this type of NOE are based on number of dwellings (2011 census) and average rentals (prices) obtained from real estate agencies and media.

Type N2. Illegal activities

According to Eurostat's Tabular Approach to Exhaustiveness this type of non-exhaustiveness involves producers in illegal goods and services.

According to the Serbian legislations the production, distribution and possession of certain quantity of drugs is illegal, so the production, consumption and income deriving from this activity are a part of the hidden economy and according to the ESA 2010 should be included in the estimates of GDP. Estimation of NA indicators related to narcotics is based on the following data ("demand approach"): number of drugs users, prices of narcotics and average daily and annual consumption by types of drugs. The main data come from the criminal and border police, Institute of Addictive Disorders, other countries' experiences, results of international investigations and recommendations from the Annual report of the European Monitoring Centre for Drugs and Drug Addiction (EMCDDA) and The United Nations Office on Drugs and Crime (UNODC).

Income from prostitution is also according to the ESA2010 treated as the part of NOE and as such included in the calculation of GDP. Main data sources for estimation of this component of NOE are data from the Ministry of Interior, the results of studies and surveys conducted by independent researchers and experience of other statistical institutes estimation in this area of NOE.

Type N3. Producers not required to register

According to Eurostat's Tabular Approach to Exhaustiveness this type of non-exhaustiveness involves producers that are not obliged to register, for example if they have no market output. These could be non-market household producers involved in the production of goods for own consumption or for own fixed capital formation, and non-market household producers involved in construction of and repairs to dwellings or producers that have some market output that is below the level at which the producer is expected to register as an entrepreneur.

Production of food for own final consumption is estimated using the quantity-price method based on HBS quantitative data and Price statistics data (basic prices).

Construction and repairs to dwellings for own account are estimated using quantity price methods based on Construction Statistics data (number of newly built dwellings and major repairs of dwellings) and Price statistics data (prices of newly constructed dwellings and prices of various repairs).

Type N4. Enterprises (registered legal persons) not included in statistics

According to Eurostat's Tabular Approach to Exhaustiveness this type of non-exhaustiveness involves registered legal persons that are not included in statistics, for example because the business register is out of date, updating procedures are inadequate, the classification codes (activity, size or geographic) are incorrect, or the legal person is excluded from the survey frame because its size is below a certain threshold. This type of NOE in Serbia is manifested usually in the form of missing financial reports of companies which could happen for various reasons such as liquidation or other structural changes and similar. Preliminary checks of primary data usually signalize existence of such cases and appropriate measures are taken. Usually, additional information is asked from SBRA or directly from companies and, based on the available data from previous years, the best estimates are derived and substituted for the missing data. Moreover, these types of non-exhaustiveness, even if they are not initially identified and measured as the N4, they are presumably implicitly covered as the parts of N6 or N7 types and eventually included in the NOE and GDP during the balancing process.

Type N5. Registered entrepreneurs not included in statistics

According to Eurostat's Tabular Approach to Exhaustiveness this type of non-exhaustiveness involves registered entrepreneurs - natural persons conducting business activities (owners of unincorporated enterprises or self-employed persons) not included in statistics. Registered entrepreneur may not be included in the statistics for many reasons. First, there could be deficiencies of administrative data sources but also the reasons could be the same as listed in the N4 section (business register out of date or incorrect classification codes etc.) or non-existent statistical surveys for their appropriate statistical coverage. In case of Serbia the first reason - the lack of accurate and comprehensive administrative data (financial statements) - is predominant. The problems with statistical surveying of natural persons is widely recognized even if there are established statistical survey which could compensate for the lack of administrative data sources: non-response, low quality of results and technical issues related to their addresses, activity codes and outsourced bookkeeping which makes collection of data particularly difficult so as the derivation of NA indicators.

Unincorporated enterprises in Serbia are registered in the SBRA and the Tax Administration but most of them are not obliged to have double-entry bookkeeping and to submit the financial statements to SBRA. Thus the statistics does not have complete information about their output and intermediate consumption except data on their taxable income and employment. Therefore the NA indicators for these enterprises are indirectly estimated using the income approach not directly as for the incorporated enterprises for which full set of financial statements is available and can be used for estimation of GDP. NOE related to unregistered employment is calculated using LIM i.e. LFS data. Due to the fact that there is no administrative records i.e financial statements, the threshold to measure the amount of NOE practically does not exist so it is difficult to define precisely what actually constitutes non-exhaustiveness. Thus, non-exhaustiveness presented in this chapter covers only the part related to unregistered employees. It is assumed that the other components of NOE related to this segment of national economy are covered implicitly using the income approach and, eventually, through the NA discrepancy method – the balancing process which is, as it is already explained, closely interlinked with N6 and N7 types of NOE.

Type N6. Enterprises deliberately misreporting

According to Eurostat's Tabular Approach to Exhaustiveness this type of non-exhaustiveness involves misreporting by producers, for example, gross output being understated, or intermediate consumption overstated in order to evade or reduce income tax, VAT or social security contributions. Misreporting often involves maintenance of two sets of books, unregistered employees and payments of “envelope salaries” which are recorded as intermediate consumption; payments in cash without

receipts, undisclosed barter transactions, overstated intermediate consumption in form of extraordinary non-operating costs and expenditure, unrecorded consumption of goods and materials for own use (or as salaries in kind) and similar.

This part of NOE is estimated using the Labour input method with additional adjustment related to the payments i.e. sales in cash.

In line with the OECD Handbook (2002), and Eurostat Tabular Approach for Exhaustiveness (2005), the Labour Input Method (LIM) is the most significant method for estimating exhaustiveness for the production approach. LIM is aimed to identify the non-exhaustiveness of employment i.e. differences between the registered (formal) employment and unregistered (informal) employment. GVA generated by the informal component of employment is then estimated and joined with the formal part to complement it in estimation of GDP.

The first step in the implementation of LIM is to determine the total informal employment which was not recorded in administrative and statistical data sources and consequently in the inputs for the GDP calculation. Formal employment data coming from administrative data sources are confronted with LFS data by activity. The second step is to estimate the unreported („missing“) GVA which is the consequence of inappropriate registration of employees and their wages and salaries which constitute the major part of GVA.

Firstly, total informal employment is calculated as the difference between number of registered employees based on the CROSO database complemented with data on number of employees from financial statements (for S.11) and, on the other side, total LFS employment. Then, the informal employment is distributed by activities separately for the S.11 (incorporated enterprises) and S.14 (unincorporated enterprises). Firstly, for all active incorporated enterprises (with reported sales and costs in financial statements) with zero reported employees in the financial statements (approx. 30000 in 2017, 28000 in 2016 and 25000 enterprises in 2015), one employee is imputed. The residual of informal employment for S.11 is allocated according to the distribution of number of employees for micro enterprises (1-5 employees) which are considered as the main generator of this component of NOE. For unincorporated enterprises, estimates of informal employment are also based on LFS as the difference between total LFS employment and registered number of employees coming from the CROSO.

As the final (second) step, non-exhaustiveness GVA is estimated, based on estimates of non-exhaustiveness employment data and the average productivity (GVA per employee) estimated from financial statements. Using the corresponding input/output ratios, also at two-digit level of NACE, Gross Output and IC are calculated.

However, it is widely recognized that LIM method for measuring NOE, using discrepancy between official and actual labour force, does not sufficiently capture all the components of shadow economy that are not directly related to employment, foremost the sales in cash (unregistered cash turnover) without receipts reflected as misreporting in financial statements which are used as the main data source for NA compilation. Moreover, exclusive application of the labour-input method has other observed deficiencies. Namely, discrepancy between formal and informal employment might have many other explanations other than increased efficiency of the Tax administration or tax morality and compliance of business owners. The discrepancy, especially if it is observed at the level of individual industries, could be caused by increased emigration, ageing population (especially in agriculture) and other distortions on labour market causing movements and relocation of workforce between industries. In addition, people can have a job in formal economy but, at the same time, they can be engaged in activities of „grey” economy. Moreover, enforced registration of unregistered employees, often could be offset by increased sales in cash and difficulties aroused from increased labour costs which could negatively affect production, prices and investments, cuts in wages and salaries and, eventually, could have negative or neutral consequences regarding GVA generation. After a close examination of different possibilities to enhance exhaustiveness of the GDP it was decided to

complement the existing estimates based on the labour input-method with additional layer of NOE generated by misreporting i.e. by sales/payments in cash without receipts which represents (together with unregistered employees) the main source of grey economy in Serbia. The calculation was restricted to micro and small incorporated businesses who are generally considered as one of the main generators of NOE and whose financial statements are burdened with higher risk of misreporting compared to medium-sized and large enterprises (the majority of which are under VAT system, audited and under scrutinized inspections by the State Tax Administration. Based on the results of independent surveys on grey economy in Serbia, the declared Turnover of micro and small incorporated enterprises by is increased by 15% and then, by applying Turnover/GVA ratio by activities, the additional GVA resulting from unregistered sales was derived.

Type N7. Other statistical deficiencies

According to Eurostat's Tabular Approach to Exhaustiveness this type of Type N7 comprises various kinds of deficiencies regarding the data used for the GDP calculations caused by external data providers (incorrect, incomplete, not collected) or which are incorrectly handled, processed or compiled by statisticians before their entering the GDP calculation process. As it is said before, the main part of this component of NOE is the consequence of the balancing process.

Apart from NA discrepancy adjustments N7 includes allowance for the tips. Tips are estimated by applying tipping ratio (3 – 5 %, based on experts estimates and experience of other countries) on value of the output for certain activities (Sectors: G – Wholesale and retail trade, repair of motor vehicles and motorcycles; H – Transportation and storage; I – Accommodation and food service activities; Q – Human health and social work activities and S – Other service activities).

N7 also covers income of household employees, persons who are permanently or temporary employed by households (cleaning, washing, babysitting and similar). The main data sources are HBS and data from the special ad hoc survey on personal services conducted in 2013.

Table 43. Structure of NOE by types, 2015–2020 (RSD mill.) *

	2015	2016	2017	2018	2019	2020
Total	457 003	400 054	396 115	395 059	377 489	321 516
N1	52 175	46 484	43 365	51 118	55 752	53 123
N2	26 554	28 958	31 152	32 220	24 058	29 988
N3	12 470	12 431	9 075	8 916	8 957	10 719
N4	-	-	-	-	-	-
N5	76 103	82 074	86 230	96 418	98 289	96 823
N6	272 603	211 804	207 882	186 505	173 413	114 358
N7	17 099	18 303	18 410	19 883	17 018	16 506

* The revised estimate, based on the results of IPA 2017 progamme that included the upgrading of the non-observed economy calculations.

8.4 Allowance for exhaustiveness in the expenditure approach

The NOE adjustments of GDP by production approach must be distributed on different uses depending on the consumption of goods and services produced within underground, illegal and unregistered activates. On the expenditure side, adjustments for different types of exhaustiveness are made to HFCE (for production of food and beverages for own consumption, illegal consumption of narcotics and prostitution and adjustments for various household services), to gross fixed capital formation - GFCF (for construction and repair of dwellings for own account) and to unregistered exports and imports of goods and services (including tobacco and narcotics).

As previously mentioned, the commodity flow analysis, closely connected with the NA discrepancy method, is an important tool for identification of necessary NOE adjustments on the expenditure side. Here as well, some adjustments are implicitly made within the balancing process, during the confrontation of GDP by production and expenditure approach.

ANNEXES

ANNEX 1 Revision: GDP 2015 – 2017 (Methodological explanations and revision effects on GDP change)

Introductory notes

The main objective of the revision of 2018 was to improve reliability, accuracy and exhaustiveness of GDP estimates and consistency of annual accounts estimates with QNA and STS by:

- Applying improvements related to methods and data sources that came available in the period after the previous revision in 2014;
- Applying the new, improved sectorization i.e. delineation of the Government institutional sector;
- Eliminating observed deficiencies in methods and data sources in the calculations before 2018.

The overall objective was to enhance compliance of National Accounts with the European System of Accounts – ESA 2010.

It should be noted that the annual GDP for 2017 was calculated directly applying the new methodology (i.e. no previous unrevised data existing). The previously published GDP data for 2017 were provided as the sum of four quarters, which due to the method of calculating quarterly GDP were based on old unrevised data for 2016. Therefore, when comparing the new annual data for 2017 with the previously published ones (the sum of four quarters) it should be taken into account that the differences resulted not only as a consequence of the implemented revision, but also from the specific methodological features of annual and quarterly accounts that as well existed before the revision.

A. CHANGES CONCERNING GDP BY PRODUCTION APPROACH

1. Agriculture

One of the major changes implemented in the process of the new revision concerns the direct implementation of the economic accounts for agriculture when calculating the gross value added of agricultural production, instead of the so far applied calculations based on the combination of financial statements of economic subjects and estimates for individual agricultural producers. Exclusion of economic accounts for agriculture from the GDP calculations presented a major shortcoming of the previous revision implemented in 2014, which was also stressed by the IMF, and which has been successfully eliminated now. Simultaneously, upgraded was the consistency of the data on agriculture in national accounts with the statistics of agriculture.

The increased GDP resulting from the implementation of the economic accounts for agriculture in 2015 amounted to **RSD 16.5 billion**, and in 2016 – **RSD 29.3 billion**, namely the GDP increased by **0.4%** and **0.7%**, respectively. In 2017, the GDP increased for **RSD 17.2 billion**, namely, by **0.4%**.

In addition, it should be noted that the GDP increased on a relatively low scale, which resulted from the better coverage in the area of forestry, i.e. the estimates of values of wood stock felling and sales as regards households, which so far have been excluded from the GDP calculations. The subject increase amounts to about **RSD 2.5 billion** for all three years.

2. Mining and energy production

The GDP changes concerning the activities of mining came as the result of significantly improved data sources in 2016. Namely, the data of financial statements of economic subjects registered in the section of mining (primarily the mines Kolubara and Kostolac) from 2014 were practically unusable for calculations because of two main reasons. Firstly, in 2014, due to severe floods, the coal mining and production collapsed, which further caused problems in the calculations of gross value added for the needs of national accounts; further on, in 2015 the *Electric Power Industry of Serbia* (*EPS*) was restructured and as a result the mines were closed as individual legal entities and incorporated within *EPS.* Practically this meant that no financial statements were available for two major mines that up to that moment had been used as the main data source for the needs of GDP calculations. Because of the mentioned reasons the value of production for mining was estimated by extrapolating the data from 2013 by the means of quantitative indicators. The situation has changed when SORS in 2016 managed, on the basis of newly introduced SBS module, to obtain from *EPS* the detailed financial data for all organizational units, including the mines. For the period 2015 – 2017 these data were used as the main source for the GVA calculations, both for mining and electricity production. This difference added to the increased GDP for about **RSD 30 billion** both in 2015 and 2016, i.e. by about **0.8%** and about **0.7%**, respectively. In 2017 the subject difference amounted to **RSD 26 billion**, meaning that GDP increased by **0.6%**.

In addition, it is worthwhile stressing the differences relative to the data before the revision for the activities 35 – Electricity, gas and steam supply, and 4950 – Transport via pipeline (gas pipeline transport falling within the section H – Transportation and storage). Along with the upgraded and more precise calculations concerning *EPS*, implemented was the reclassification of the *Srbijagas* Company starting from 2015 (from the division 49 to the division 35). It resulted on one side in the increased GVA for the activity 35, and on the other side in the decreased GVA level for the activity of Transportation, where this company used to be classified before the revision.

3. Non-observed economy

In the process of revision additional efforts were made to ensure better exhaustiveness of GDP estimates. Improvements of methods and data sources resulted in increase of NOE part of GDP for **about RSD 121 billion in 2015**, **about RSD 125 billion in 2016**, and **about RSD 140 billion** in **2017**, namely, by **about 50%** when compared to the value of NOE before the revision. By introduction of new estimates of NOE GDP increased by by **about 3%** in the years observed, i.e. **somewhat less than a half of the total increase that resulted from the GDP revision**.

The basic method applied so far for the calculations of non-observed economy, LIM has not substantially changed apart from better underlying data sources which also indirectly contributed to the better exhaustiveness. The major changes concern the following two newly introduced components of ‘grey’ economy:

1) For the first time included is the estimated value of production or turnover ‘in cash’ (unregistered cash turnover) for small-sized and micro enterprises, amounting to **about RSD 80 billion** for all three years.

2) Based on the comparative analysis of data provided by the Central registry of compulsory social insurance (CROSO) and LFS, identified and included for the first time was the value of production of self-employed persons (without employees) and without registered business. The increase of GDP resulting from this adjustment amounts to about RSD **34 billion on average.**

The remaining increase of non-observed economy when compared to the values before the revision (between RSD 10 – 20 billion for the period 2015 – 2017) presents the differences that are hard to identify and measure explicitly, and that come as a consequence of other changes that are stated hereinafter, as well as of the process of balancing the production and expenditure approach in GDP calculation. For the year 2017, as stressed before, since no 'old' calculations existed, this difference is the result of estimating the possible effects of the new calculation on the growth of non-observed economy.

The improved methods and data sources or estimation of NOE resulted in its increased share in GDP in 2015, from **8.4%** before the revision to **10.7%** after the revision, while in 2016 the share of 'grey' economy increased from **6.2%** to **8.6%** in GDP.

In 2017 the share of 'grey' economy equals 7.6% in GDP, i.e. 9.2% in GVA.

As regards the **output value** generated within the grey zone, in 2015 it equalled **23.2%**, in 2016 – **20%**, and in 2017 it equalled **17.3% of GDP**.

Table 1. NOE share in GDP, %

	2015	2016	2017
Non-observed economy – Gross Value Added	**10.7**	**8.6**	**7.6**
Non-observed economy – Output	**23.2**	**20.0**	**17.3**

4. Income of self-employed persons - outworkers

Until 2016 the data on income of outworkers related to the various contract based employment (freelancers, authors, royalties etc) has not been available for the purpose of GDP calculations. Before the revision, the income of these categories used to be estimated according to the LFS data, which included only a part of this segment of self-employed persons, without precise financial indicators, i.e. the value of their services. In 2016, SORS for the first time obtained from the Tax Authority the data on all kinds of personal taxable income, including contract-based earnings that are now fully included in the GDP calculations. In 2015 the GDP increase on this basis amounted to about **RSD 45 billion**, in 2016 – about **RSD 43 billion**, and in 2017 it amounted to about **RSD 49 billion**, which increased the GDP level by about 1% in all three observed years.

5. Sectorization

The implementation of the new sectorial classification within the system of national accounts has also significantly influenced the GDP level. Pursuant to the qualitative and quantitative criteria of sectorial classification defined in ESA 2010, the re-classification of certain institutional units was carried out[25]. It should be stressed that the requirement for the new sectorization and therefore the imperative for the GDP revision are grounded on the obligations imposed to SORS by the European Commission and Eurostat as regards the implementation of EDP (Excessive Deficit Procedure) reporting, i.e. the calculation of budgetary deficit and public debt according to the EU methodology.

[25] Distribution into market and nonmarket producers is implemented according to various (quantitative and qualitative) criteria, on the basis of which it is determined whether market conditions and sufficient market behaviour of producers are in place; namely, whether the sales of goods and services is based at economically significant prices. According to quantitative criterion, a unit is regarded as market producer if by income from sales of its goods and services it covers more than 50% of production costs (the sum of intermediate consumption, compensation for employees, consumption of fixed assets, other taxes on production and capital costs). However, quantitative criterion is not the only relevant criterion for determining the belonging institutional sector for a unit. The specific nature of the activity of an institutional unit and its relations with the general government sector shall also be taken into account.

Observed by years, the number of units re-classified into general government from other institutional sectors equals 750, 784 and 793 in 2015, 2016 and 2017, respectively. Because of the methodological changes introduced for the calculation of macroeconomic aggregates for the general government and the sector of non-financial institutions (non-financial sector), the implementation of the new sectorization influenced the increase of the GDP level: in 2015 by 1.2%, in 2016 by 1.1%, while in 2017 the GDP increased by 1.1% (about RSD 49 billion, RSD 47 billion, i.e. RSD 49 billion, respectively).

The GDP increase due to the relocation of the mentioned units into the general government sector is caused by the application of a different formula for calculating gross value added that is used for this sector belonging units. Namely, according to the ESA 2010 methodology of national accounts, for economic subjects that are market producers in the sector of non-financial institutions, GVA is calculated as the difference between the market income from the sales of products and services (output measure) and, as negative, minus item, the costs of intermediate input (intermediate consumption). On the other side, for the general government sector units, gross value added is estimated according to so-called expenditure approach. Expenditure approach assumes that the output value, and therefore also GVA is calculated not based on income from sales of products and services, but as the sum of operating costs, where gross value added, after deducting intermediate consumption from the sum of total costs, is equalized with the costs of earnings/salaries & wages plus depreciation. It is worthwhile noting here that the units relocated into the general government sector are mainly economic subjects characterized by low efficiency that in the period before the revision had generated relative low or even negative GVA ('loss makers'), so the application of expenditure approach for GVA calculation resulted in its increase, and finally in the GDP growth.

6. Summary: Effects of certain changes on GDP

Table 2. Changes as regards GDP calculation by production approach

	2015		2016		2017	
	RSD billion	GDP change, p.p.	RSD billion	GDP change, p.p.	RSD billion	GDP change, p.p.
Implemented Economic Accounts for Agriculture (EAA)	16.5	0.4	29.3	0.7	17.2	0.4
Mining and energy	30.6	0.8	29.7	0.7	26.0	0.6
Non-observed ('grey') economy	121.3	3.0	125.1	2.9	139.7	3.1
Income of self-employed persons / employees under contract	44.7	1.1	43.2	1.0	48.9	1.1
Sectorization	48.5	1.2	46.9	1.1	48.5	1.1
Other effects of revision	7.0	0.2	-14.8	-0.3	9.6	0.2
GDP change	**268.6**	**6.6**	**259.3**	**6.1**	**289.7**	**6.5**

All the changes above mentioned resulted in the increased GDP level: **in 2015 by 6.6%, in 2016 by 6.1%, and in 2017 by 6.5%** (**RSD 269 billion, RSD 259 billion, i.e. RSD 290 billion**, respectively), while we should take into account also the other effects of the revision that are difficult to be precisely identified, since they resulted from the combined effects of the above stated changes (methodological changes, method of calculation, classifications, upgraded data sources, etc.). The effect of these changes can be estimated to equal about **0.2%** in 2015, about **-0.3%** in 2016, and **0.2%** in 2017.

B. CHANGES CONCERNING GDP BY EXPENDITURE APPROACH

1. Imports of goods

In October 2017 it was found out that due to incomplete data on storage of imported that were provided to SORS by the Tax Authority, the double counting of the same goods in imports appeared, whereby **the imports of goods** in 2015 and in 2016 were overestimated by about **RSD 31 billion**, i.e. **RSD 34 billion**, respectively, which equals about **1.7%** of the total actual value of imports of goods in the both years observed. By implementing the data revision this error was eliminated, which resulted in the increased GDP by about **0.8%** in the both years.

2. Non-observed economy in exports and imports of goods and services

The revision of data series 2015 – 2017 included as well unregistered external trade transactions that pursuant to the national accounts methodology have the character of 'exports', i.e. imports, and are treated as a part of NOE. So far these transactions have not been covered by the GDP calculations, which presented a significant issue when balancing the GDP calculated by production and expenditure approach. Namely, the transactions, i.e. the sales of goods and services of the companies from Serbia were registered on the production side and increased the GDP, however on expenditure side they the consumption of these goods and services was not recorded. Unregistered export transactions amounted to about **RSD 56 billion in 2016** (RSD 53 billion in 2015 and RSD 62 billion in 2017), while unregistered imports amounted to about **RSD 2.6 billion** (RSD 2.9 billion in 2015 and RSD 3.6 billion in 2017). By including these transactions on the expenditure side of GDP, the total exports was increased by about **2.6%**, while imports was increased by about **0.1%**, which resulted in the GDP increase by about **1.3%** in 2016.

3. Non-profit institutions serving households (NPISH)

The revision 2015 – 2017 for the first time included the estimations of the income of the clergy (clerical workers), more precisely of the religious communities that belong to the sector of non-profit institutions and which before the revision were not covered by the GDP calculations. The estimations were carried out according to the number of priests and the average earnings by municipalities, which led to increase to final expenditure of NPISH, along with other smaller corrections (in the first place based on sectorization) for about **RSD 15 billion** in 2015, **RSD 11 billion** in 2016, and **RSD 11 billion** in 2017; This adjustment resulted in increase of GDP by **0.4%**, **0.2%** and and **0.2%**, respectively.

4. Other adjustments of GDP by expenditure approach

As regards the differences concerning the households final consumption expenditure before and after the revision, they primarily resulted from the upgraded data sources, as well as from capturing a part of final consumption that originates from the increased levels non-observed economy on the production side of GDP. The increase in 2015 amounted to about **RSD 70 billion**, in 2016 – about **RSD 111 billion**, and in 2017 – about **RSD 147 billion**, which caused the GDP increase by **1.7%**, **2.6%** and **3.3%**, respectively. Since HFCE is the largest aggregate on expenditure side of GDP calculation, logically the effects of the GDP adjustments made on production side were mostly reflected on this aggregate of GDP use.

As far as the government final consumption expenditure, the adjustments mainly resulted from implementing the new sectorization and some smaller conceptual changes. The increase in 2015 amounted to about **RSD 52 billion**, in 2016 – about **RSD 41 billion**, and in 2017 – about **RSD 58 billion**, which caused the GDP change by **1.3%**, **1.0%** and **1.3%**, respectively.

Regarding the gross fixed capital formation, a large part of conceptual and statistical changes was implemented in the previous revision (2014), and in 2018 revision, the changes are mainly result of

the upgraded data sources. The increase in 2015 amounted to about **RSD 8 billion**, in 2016 – about **RSD 11 billion**, and in 2017 – about **RSD 20 billion**, which caused the GDP change by **0.2%**, **0.2%** and **0.4%**, respectively.

The adjustments related to the changes in inventories are the result of the final balancing, mainly because this item was used as a residual after the major adjustments were made on the HFCE. However, it should be noted that the increase of this GDP component corresponds to the significant GDP increase calculated by production approach, which in itself entails respective corrections of the changes in inventories, i.e. also the increase in absolute amount of the share in GDP when compared to the amounts before the revision.

Table 3. Changes concerning GDP calculation by expenditure approach

	2015		2016		2017	
	RSD billion	GDP change, p.p.	RSD billion	GDP change, p.p.	RSD billion	GDP change, p.p.
Final consumption expenditure of households	69.5	1.7	111.5	2.6	146.7	3.3
Final consumption expenditure of non-profit institutions serving households (NPISH)	15.4	0.4	10.6	0.2	10.9	0.2
Final consumption expenditure of general government	52.0	1.3	40.5	1.0	58.1	1.3
Gross fixed capital formation	7.6	0.2	10.5	0.2	19.7	0.4
Changes in inventories	30.7	0.8	-14.0	-0.3	-25.7	-0.6
Acquisitions less disposals of valuables	0.0	0.0	0.0	0.0	…	…
Exports of goods and services	65.0	1.6	66.1	1.6	61.2	1.4
Imports of goods and services (-)	-28.3	-0.7	-34.1	-0.8	-18.8	-0.4
GDP change	**268.6**	**6.6**	**259.3**	**6.1**	**289.7**	**6.5**

ANNEX 2 Main classifications used

Classifications used for the production approach

Classification of institutional sectors (S)

Sectorization of units is based on the Classification of institutional sectors (S), given in ESA 2010. Institutional units are classified in one of the following instituitional sector:

Code	SECTOR
S.11001	Public non-financial corporations
S.11002	National private non-financial corporations
S.11003	Foreign controlled non-financial corporations
S.121	Central bank
S.122	Deposit-taking corporations except the central bank
S.123	Money market funds
S.124	Non-MMF investment funds
S.125	Other financial intermediaries, except insurance corporations and pension funds
S.126	Financial auxiliaries
S.127	Captive financial institutions and money lenders
S.128	Insurance corporations
S.129	Pension funds
S.1311	Central government (excluding social security funds)
S.1312	State government (excluding social security funds)
S.1313	Local government (excluding social security funds)
S.1314	Social security funds
S.14	Households
S.15	Non-profit institutions serving households
S.2	Rest of the world

Classification of activities (NACE Rev. 2 / ISIC Rev. 4)

National classification of activities KD 2010 (fully harmonized with NACE Rev. 2 / ISIC Rev. 4) is used. Data dissemination is performed on 2-digit level (listed in table below), while data compilation takes place up to 4-digit level.

Table 1 NACE Rev. 2 – Sections/Divisions: Codes and titles

Code		Title
Section	**Division**	
A		**Agriculture, forestry and fishing**
	01	Crop and animal production, hunting and related service activities
	02	Forestry and logging
	03	Fishing and aquaculture
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

Code		Title
Section	**Division**	
C		**Manufacturing**
	10	Manufacture of food products
	11	Manufacture of beverages
	12	Manufacture of tobacco products
	13	Manufacture of textiles
	14	Manufacture of wearing apparel
	15	Manufacture of leather and related products
	16	Manufacture of wood and of products of wood and cork, except furniture manufacture of articles of straw and plaiting materials
	17	Manufacture of paper and paper products
	18	Printing and reproduction of recorded media
	19	Manufacture of coke and refned petroleum products
	20	Manufacture of chemicals and chemical products
	21	Manufacture of basic pharmaceutical products and pharmaceutical preparations
	22	Manufacture of rubber and plastic products
	23	Manufacture of other non-metallic mineral products
	24	Manufacture of basic metals
	25	Manufacture of fabricated metal products, except machinery and equipment
	26	Manufacture of computer, electronic and optical products
	27	Manufacture of electrical equipment
	28	Manufacture of machinery and equipment n.e.c.
	29	Manufacture of motor vehicles, trailers and semi-trailers
	30	Manufacture of other transport equipment
	31	Manufacture of furniture
	32	Other manufacturing
	33	Repair and installation of machinery and equipment
D		**Electricity, gas, steam and air conditioning supply**
	35	Electricity, gas, steam and air conditioning supply
E		**Water supply, sewerage, waste management and remediation activities**
	36	Water collection, treatment and supply
	37	Sewerage
	38	Waste collection, treatment and disposal activities; materials recovery
	39	Remediation activities and other waste management services
F		**Construction**
	41	Construction of buildings
	42	Civil engineering
	43	Specialised construction activities
G		**Wholesale and retail trade and repair of motor vehicles and motorcycles**
	45	Wholesale and retail trade and repair of motor vehicles and motorcycles
	46	Wholesale trade, except of motor vehicles and motorcycles
	47	Retail trade, except of motor vehicles and motorcycles
H		**Transportation and storage**
	49	Land transport and transport via pipelines
	50	Water transport
	51	Air transport
	52	Warehousing and support activities for transportation
	53	Postal and courier activities

Code		Title
Section	**Division**	
I		**Accommodation and food service activities**
	55	Accommodation
	56	Food and beverage service activities
J		**Information and communication**
	58	Publishing activities
	59	Motion picture, video and television programme production, sound recording and music publishing activities
	60	Programming and broadcasting activities
	61	Telecommunications
	62	Computer programming, consultancy and related activities
	63	Information service activities
K		**Financial and insurance activities**
	64	Financial service activities, except insurance and pension funding
	65	Insurance, reinsurance and pension funding, except compulsory social security
	66	Activities auxiliary to fnancial services and insurance activities
L		**Real estate acitivities**
	68	Real estate activities
M		**Professional, scientific and technical activities**
	69	Legal and accounting activities
	70	Activities of head ofces; management consultancy activities
	71	Architectural and engineering activities; technical testing and analysis
	72	Scientifc research and development
	73	Adverthising and market research
	74	Other professional, scientifc and technical activities
	75	Veterinary activities
N		**Administrative and support service activities**
	77	Rental and leasing activities
	78	Employment activities
	79	Travel agency, tour operator and other reservation service and related activities
	80	Security and investigation activities
	81	Services to buildings and landscape activities
	82	Office administrative, office support and other business support activities
O		**Public administration and defence; compulsory social security**
	84	Public administration and defence; compulsory social security
P		**Education**
	85	Education
Q		**Human health and social work activities**
	86	Human health activities
	87	Residential care activities
	88	Social work activities without accommodation
R		**Arts, entertainment and recreation**
	90	Creative, arts and entertainment activities
	91	Libraries, archives, museums and other cultural activities
	92	Gambling and betting activities
	93	Sports activities and amusement and recreation activities
S		Other service activities
	94	Activities of membership organisations

Code		Title
Section	Division	
	95	Repair of computers and personal and household goods
	96	Other personal service activities
T		**Activities of households as employers of domestic personnel; undifferentiated goods- and services-producing activities of households for own use**
	97	Activities of households as employers of domestic personnel
	98	Undiferentiated goods- and services-producing activities of private households for own use
U		**Activities of extraterritorial organisations and bodies**
	99	Activities of extraterritorial organisations and bodies

Classifications used for the expenditure approach

Classification of Individual Consumption by Purpose (COICOP)

The COICOP nomenclature is used for the estimation of household final consumption expenditure.

Table 2 Level of COICOP detail for the household final consumption expenditure

COICOP Code	Description
01	**Food and non-alcoholic beverages**
01.1	Food
01.1.1	Bread and cereals
01.1.2	Meat
01.1.3	Fish and seafood
01.1.4	Milk, cheese and eggs
01.1.5	Oils and fats
01.1.6	Fruit
01.1.7	Vegetables
01.1.8	Sugar, jam, honey, chocolate and confectionery
01.1.9	Food products n.e.c.
01.2	Non-alcoholic beverages
01.2.1	Coffee, tea and cocoa
01.2.2	Mineral waters, soft drinks, fruit and vegetable juices
02	**Alcoholic beverages, tobacco and narcotics**
02.1	Alcoholic beverages
02.1.1	Spirits
02.1.2	Wine
02.1.3	Beer
02.2	Tobacco
02.2.0	Tobacco
02.3	Narcotics
02.3.0	Narcotics
03	**Clothing and footwear**
03.1	Clothing
03.1.1	Clothing materials
03.1.2	Garments
03.1.3	Other articles of clothing and clothing accessories
03.1.4	Cleaning, repair and hire of clothing

COICOP Code	Description
03.2	Footwear
03.2.1	Shoes and other footwear
03.2.2	Repair and hire of footwear
04	**Housing, water, electricity, gas and other fuels**
04.1	Actual rentals for housing
04.1.1	Actual rentals paid by tenants
04.1.2	Other actual rentals
04.2	Imputed rentals for housing
04.2.1	Imputed rentals of owner-occupiers
04.2.2	Other imputed rentals
04.3	Maintenance and repair of the dwelling
04.3.1	Materials for the maintenance and repair of the dwelling
04.3.2	Services for the maintenance and repair of the dwelling
04.4	Water supply and miscellaneous services relating to the dwelling
04.4.1	Water supply
04.4.2	Refuse collection
04.4.3	Sewage collection
04.4.4	Other services relating to the dwelling n.e.c. (S)
04.5	Electricity, gas and other fuels
04.5.1	Electricity
04.5.2	Gas
04.5.3	Liquid fuels
04.5.4	Solid fuels
04.5.5	Heat energy
05	**Furnishings, household equipment and routine household maintenance**
05.1	Furniture and furnishings, carpets and other floor coverings
05.1.1	Furniture and furnishings
05.1.2	Carpets and other floor coverings
05.1.3	Repair of furniture, furnishings and floor coverings
05.2	Household textiles
05.2.0	Household textiles
05.3	Household appliances
05.3.1	Major household appliances whether electric or not
05.3.2	Small electric household appliances
05.3.3	Repair of household appliances
05.4	Glassware, tableware and household utensils
05.4.0	Glassware, tableware and household utensils
05.5	Tools and equipment for house and garden
05.5.1	Major tools and equipment
05.5.2	Small tools and miscellaneous accessories
05.6	Goods and services for routine household maintenance
05.6.1	Non-durable household goods
05.6.2	Domestic services and household services
06	**Health**
06.1	Medical products, appliances and equipment
06.1.1	Pharmaceutical products
06.1.2	Other medical products
06.1.3	Therapeutic appliances and equipment

COICOP Code	Description
06.2	Outpatient services
06.2.1	Medical services
06.2.2	Dental services
06.2.3	Paramedical services
06.3	Hospital services
06.3.1	Hospital services
07	**Transport**
07.1	Purchase of vehicles
07.1.1	Motor cars
07.1.2	Motor cycles
07.1.3	Bicycles
07.1.4	Animal drawn vehicles
07.2	Operation of personal transport equipment
07.2.1	Spare parts and accessories for personal transport equipment
07.2.2	Fuels and lubricants for personal transport equipment
07.2.3	Maintenance and repair of personal transport equipment
07.2.4	Other services in respect of personal transport equipment
07.3	Transport services
07.3.1	Passenger transport by railway
07.3.2	Passenger transport by road
07.3.3	Passenger transport by air
07.3.4	Passenger transport by sea and inland waterway
07.3.5	Combined passenger transport
07.3.6	Other purchased transport services
08	**Communication**
08.1	Postal services
08.1.0	Postal services
08.2	Telephone and telefax equipment
08.2.0	Telephone and telefax equipment
08.3	Telephone and telefax services
08.3.0	Telephone and telefax services
09	**Recreation and culture**
09.1	Audio-visual, photographic and information processing equipment
09.1.1	Equipment for the reception, recording and reproduction of sound and pictures
09.1.2	Photographic and cinematographic equipment and optical instruments
09.1.3	Information processing equipment
09.1.4	Recording media
09.1.5	Repair of audio-visual, photographic and information processing equipment
09.2	Other major durables for recreation and culture
09.2.1	Major durables for outdoor recreation
09.2.2	Musical instruments and major durables for indoor recreation
09.2.3	Maintenance and repair of other major durables for recreation and culture
09.3	Other recreational items and equipment, gardens and pets
09.3.1	Games, toys and hobbies
09.3.2	Equipment for sport, camping and open-air recreation
09.3.3	Gardens, plants and flowers
09.3.4/5	Pets and related products/Veterinary and other services for pets
09.4	Recreational and cultural services

COICOP Code	Description
09.4.1	Recreational and sporting services
09.4.2	Cultural services
09.4.3	Games of chance
09.5	Newspapers, books and stationery
09.5.1	Books
09.5.2	Newspapers and periodicals
09.5.3	Miscellaneous printed matter
09.5.4	Stationery and drawing materials
09.6	Package holidays
09.6.0	Package holidays
10	**Education**
10.1	Pre-primary and primary education
10.1.0	Pre-primary and primary education
10.2	Secondary education
10.2.0	Secondary education
10.3/4	Post-secondary non-tertiary education/ Tertiary education
10.3/4.0	Post-secondary non-tertiary education/ Tertiary education
10.5	Education not definable by level
10.5.0	Education not definable by level
11	**Restaurants and hotels**
11.1	Catering services
11.1.1	Restaurants, cafés and the like
11.1.2	Canteens
11.2	Accommodation services
11.2.0	Accommodation services
12	**Miscellaneous goods and services**
12.1	Personal care
12.1.1	Hairdressing salons and personal grooming establishments
12.1.2	Electric appliances for personal care
12.1.3	Other appliances, articles and products for personal care
12.2	Prostitution
12.2.0	Prostitution
12.3	Personal effects n.e.c.
12.3.1	Jewellery, clocks and watches
12.3.2	Other personal effects
12.4	Social protection
12.4.0	Social protection
12.5	Insurance
12.5.2	Insurance connected with the dwelling
12.5.3	Insurance connected with health
12.5.4	Insurance connected with transport
12.5.5/1	Other insurance/Life insurance
12.6	Financial services n.e.c.
12.6.1	FISIM (S)
12.6.2	Other financial services n.e.c.
12.7	Other services n.e.c.
12.7.0	Other services n.e.c.

Household final consumption expenditure estimates are made at the 4-digit level of the COICOP. In the following cases estimation of HFCE is done on lower level:

- Garments (Garments for men, for women and for infants and children);
- Shoes and footwear (footwear for men, for women and for infants and children);
- Gas (natural gas and town gas and liquefied hydrocarbons);
- Solid fuels (coal, firewood and other solid fuels);
- Major household appliances whether electric or not (Refrigerators, freezers and fridge-freezers; Clothes washing machines, clothes drying machines and dish washing machines; Cookers; Heaters, air conditioners; Cleaning equipment; Other major household appliances);
- Glassware, tableware and household utensils (Glassware, crystal-ware, ceramic ware and chinaware; Cutlery, flatware and silverware; Non-electric kitchen utensils and articles);
- Non-durable household goods (Cleaning and maintenance products; Other non-durable small household articles);
- Domestic services and household services (Domestic services by paid staff; Household services);
- Paramedical services (Services for medical analysis laboratories and X-ray centres; Thermal baths, corrective-gymnastic therapy, ambulance services; Other paramedical services);
- Motor cars (New motor cars, Second-hand motor cars);
- Passenger transport by road (Passenger transport by bus and coach, Passenger transport by taxi);
- Equipment for the reception, recording and reproduction of sound and pictures (Equipment for the recreation, recording and reproduction of sound; Equipment for the reception, recording and reproduction of sound and vision);
- Photographic and cinematographic equipment and optical instruments (Photographic and cinematographic equipment; Optical instruments);
- Cultural services (Cinemas, theatres, concerts; Museums, libraries, zoological gardens; Television and radio licence fees, subscriptions; Photographic services/Other cultural services);
- Restaurants, cafés and the like (Restaurant services whatever the type of establishment; Pubs, bars, cafés, tea rooms and the like);
- Other personal effects (Travel goods; Other personal effects n.e.c.);
- Social protection (Child care services; Other social protection services).

For the items Other actual rentals and Other imputed rents there is no data so they are not estimated.

Classification of Fixed Assets (AN.11)

Gross Fixed Capital Formation are compiled within matrix scheme according to three classifications, conforming to the concepts and requirements of the European System of Accounts (ESA 2010):

- Classification of fixed assets (AN.11),
- Statistical classification of economic activities (NACE Rev. 2)
- Classification of institutional sectors (S1).

Following table shows the level of detail at which the GFCF compilation according to the Classification of Fixed Assets (AN.11) is made.

Table 3 Level of AN.11 detail for the GFCF compilation

ESA code	Non-financial assets (AN)
AN.11	**Non-financial fixed assets**
AN.111	**Dwellings**
AN.112	**Other buildings and structures**
AN.1121+ AN.1122	Non-residential buildings and other structures
AN.1123	Land improvements
AN.113	**Machinery and equipment**
AN.1131	Transport equipment
AN.1132	ICT equipment
AN.1139	Other machinery and equipment
AN.114	**Weapons systems**
AN.115	**Cultivated biological resources**
AN.1151	Animal resources yielding repeat products
AN.1152	Tree, crop and plant resources yielding repeat products
AN.117	**Intellectual property products**
AN.1171	R&D
AN.1172	Mineral exploration and evaluation
AN.1173	Computer software and databases
AN.1174	Entertainment, literary or artistic originals
AN.1175	Other intellectual property products

Combined Nomenclature (CN)

The Combined Nomenclature (CN), based on the Harmonized Commodity Description and Coding System, is used for collection and dissemination of external trade statistics data. The National version of the CN, next to the eight digits of CN, adds two additional digits.

Standard International Trade Classification

The national version of Standard International Trade Classification (5 digits of SITC Rev. 4 and 2-digit national extension) is used for the dissemination of external trade statistics data.

Extended Balance of Payments Services classification

The classification used for the external trade of services is based on the Extended Balance of Payments Services classification (EBOPS 2010), which is completely consistent with BPM6 but provides for more detailed breakdowns in a number of areas.

Classifications used in the transition from GDP to GNI

The transition from GDP to GNI is based on the balance of payments (BoP) data. Consequently, the relevant BoP classification, based on the latest BoP methodology (BPM6), is used. Table 9.4 provides the overview of the BoP primary income account items used in transition from GDP to GNI as well as their link to relevant ESA 2010 items.

Table 4 Overview of the BoP transactions used in transition from GDP to GNI

Balance of payments	ESA code
1.B Primary income	
Balance on primary income (+ surplus; – deficit)	
1.B.1 Compensation of employees	D.1
1.B.2 Investment income	D.4
1.B.2.1 Direct investment	
1.B.2.1.1 Income on equity and investment fund shares	
1.B.2.1.1.1 Dividends and withdrawals from income of quasi-corporations	D.42
1.B.2.1.1.1.1 Direct investor in direct investment enterprises	
1.B.2.1.1.1.2 Direct investment enterprise in direct investor (reverse investment)	
1.B.2.1.1.1.3 Between fellow enterprises	
1.B.2.1.1.1 Reinvested earnings	D.43
Investment income attributable to policyholders in insurance, pension schemes, and standardized guarantees, and to investment fund shareholders	D.44
Of which: Investment income attributable to investment fund shareholders	D.443
1.B.2.1.2 Interest	D.41
1.B.2.1.2.1 Direct investor in direct investment enterprises	
1.B.2.1.2.2 Direct investment enterprise in direct investor (reverse investment)	
1.B.2.1.2.3 Between fellow enterprises	
1.B.2.1.2M Memorandum: Interest before FISIM	
1.B.2.2 Portfolio investment	
1.B.2.2.1 Investment income on equity and investment fund shares	
1.B.2.2.1.1 Dividends on equity excluding investment fund shares	D.42
1.B.2.2.1.2 Investment income attributable to investment fund shareholders	D.443
1.B.2.2.1.2.1 Dividends	
1.B.2.2.1.2.2 Reinvested earnings	
1.B.2.2.2 Interest	D.41
1.B.2.2.2.1 Short-term	
1.B.2.2.2.2 Long-term	
1.B.2.3 Other investment	
1.B.2.3.1 Withdrawals from income of quasi-corporations	D.42
1.B.2.3.2 Interest	D.41
1.B.2.3.2M Memorandum: Interest before FISIM	
1.B.2.3.3 Investment income attributable to policyholders in insurance, pension schemes, and standardized guarantee schemes	
1.B.2.4 Reserve assets[26]	
1.B.2.4.1 Income on equity and investment fund shares[31]	D.42
1.B.2.4.2 Interest[31]	D.41
1.B.2.4.2M Memorandum: Interest before FISIM[31]	
1.B.3 Other primary income	
1.B.3.1 Taxes on production and on imports	D.2[27]
1.B.3.2 Subsidies	D.3
1.B.3.3 Rent	D.45

[26] If available for publication. If not available for publication, included in other investment-interest.
[27] Not compiled due to current status of the Republic of Serbia (non-EU country)