# NATIONAL ACCOUNTS IN THE INFORMATION SYSTEM

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#### Abstract

The macroeconomic record is organized in two systems, namely the concept of balances in the Material Production System and in the National Accounts System. The difference between the two macroeconomic record systems is how services are considered. In the Material Production System, only the concrete result of the activity materialized from goods is considered as a producer of new value, while in the National Accounts System, everything that includes the gross added value is considered to bring added value. So, consequently, the scope of services is included in the activity producing new values.

From this point of view, the National Accounts System was introduced in Romania after 1989, at the beginning of 1990, thus aligning us with the situation that exists worldwide. Even before, even if they were reported in the Material Production System, the elements from one system were converted to the other system based on transformation coefficients, thus ensuring international comparability.

Currently, the National Accounts System is the only one that provides information for calculating macroeconomic performance indicators, starting with Gross Domestic Product and ending with National Income, as well as to ensure international comparability between countries that use this system, but also with other countries that use it. does not use this system.

Keywords: macroeconomic records, systems, services, goods, value added, coefficients.

JEL classification: E01, E42, E63

## Introduction

The national accounts represent the macroeconomic system of evidence and analysis of the economic situation in our country. In this context, the authors present in detail the concept of the system of national accounts. It also ensures the presentation of some principles and conditions in which the System of National Accounts is applied, makes a description of the economic principles in which the respective elements are provided and concludes by establishing that in fact the System of National Accounts represents the macroeconomic information system of the Gross Domestic Product and other indicators, chronological and territorial comparisons can be made in the country, but they can be calculated based on the calculated aggregates and international comparisons of Romania's results compared to the results obtained by other states in the European Union, Europe as a whole or world plan.

The information system provided by the national accounts is almost perfect, unaffected by errors, especially since the macroeconomic indicators of results, in this case the Gross Domestic Product are calculated in several stages, just to eliminate possible aspects that could contort a little or lead to some results less conclusive.

#### Literature review

The System of National Accounts represents the system of national records and is the basis for the calculation of macroeconomic indicators of results. This issue is in the attention of researchers and specialists, who have approached in various forms the significance of the system of evidence and measurement at the national level. This system of macroeconomic records is the basis of information for all concerned. Approaches to this topic have been made, domestically and internationally by Abraham W.I. (1969), who produced the work National income and economic accounts. Anghelache C., Isaic-Maniu Al., Mitrut C. and Voineagu V. (2007) have done an extensive work on the system of national accounts, and Anghelache C. makes an extensive analysis in the work Statistics - theory and applications. In 1996 Anghelache C. makes an analysis of the two systems of macroeconomic analysis in the paper: Measuring and comparing economic development. Barro J.R. (1987) presents a paper on macroeconomic analysis, and Biji M., Biji M.E., Lilea E. and Anghelache C. (2002) published a treatise on statistics. Gilbert M. and Kravis I. (1954) published an extensive handbook on international comparability. User D. (1980) focused on the analysis of measuring economic growth internationally. Lilea P.C., Sfetcu M. and Marinescu R.T. (2018) published an article on the system of national accounts, accounting system and macroeconomic calculation, and Carp A. and others address some issues regarding macroeconomic accounts.

## Methodology, data, results and discussions

National accounts in the information system refer to the aggregate values and price indices associated with these aggregate values in an integrated system of economic statistics.

The aggregate value for a domain of goods and services is defined as the sum of the product between the price and quantity of those goods and services part of that domain.

The price index can be characterized as a factor by which the relative change in this aggregate value is measured as a result of the change in prices. As a result, all important formulas for measuring price indices can be expressed as a weighted average of the relative prices whose weights are represented by the contribution of each item in the total value. Among the best known formulas that express the method of measuring price indices expressed as a weighted average of relative prices can be mentioned: the Laspeyres index, the Paasche index, the Walsh indices, respectively the Tomgvist index. Expressed as the geometric mean of the Laspeyres and Paasche indices, the Fischer index can also be considered a function of the weights of expenditures derived directly from the total value.

In order to develop a price index, some characteristics of aggregate value must be known from the outset. The aggregate value defines the following aspects of the price index: the category of the commodity or item to be included in the index; how to set the price per item or goods; the type of transaction involving the elements included in the index and the manner of establishing the weights, respectively the source from which these weights are constructed.

In addition to the content of aggregate value used for the main price indices, the ways of evaluating and recording them, necessary for practitioners in setting prices and weights used to build indices, will be addressed.

In the system of economic statistics are known and monitored mainly four important categories of price indices, namely: Consumer Price Index (CPI); Manufacturer Price Index (PPI); Export Price Index (IPE) and Import Price Index (IPI).

These indices are taken into account for the direct measurement of the purchasing power of money in different types of transactions or other flows involving goods and services. Therefore, these indices can be considered an important means in designing and implementing the monetary and fiscal policies of the central banks and governments of a country. They are also used as deflators to measure the volume of goods and services produced and consumed in the economy and to substantiate economic decisions in the private sector.

These indices should provide a consistent and integrated picture of price developments in production, consumption and international transactions in goods and services. Therefore, the significance of these indices derives to a large extent from the significance of the aggregate value to which each one refers. Although there are other price indices, most of them will be presented in this paper, these four indices mentioned above, represent the backbone of the price statistical system in most countries and special attention is paid to them.

The relationships between the four most important price indices are defined by their association with the centralized aggregates defined by the National Accounts System (SNA) - a system that is periodically reviewed, being a combinatorial algorithm of accounting, statistics and macroeconomic analysis used in economic summaries. of market economy countries, in UN statistics and other international bodies. National accounting consists of a coherent and complete set of macroeconomic accounts and tables based on a series of internationally accepted accounting concepts, definitions, classifications and rules.

#### • Macroeconomic indicators used in the system of national accounts

In order to highlight the rationality of the economic activity and to determine the efficiency of the use of the productive factors, it is necessary to quantify and measure the obtained results, both at microeconomic and meso and macroeconomic level. If the microeconomic results highlight the activity carried out by different economic agents at the level of economic units, the mesoeconomic results refer to the activity carried out at the level of branches and of some territorial-administrative areas. The macroeconomic results (at the level of the national economy) represent the outputs from the activities of the aggregated economic agents, which the market validates, and the knowledge and analysis of their evolution has a special practical significance. Thus, for economic agents, macroeconomic results are the starting point for making decisions on the future direction of attracting and using factors of production, establishing the size, structure and quality of supply and demand for economic goods. Also, based on them, international comparisons are made on the economic potential, efficiency and competitiveness of economic goods produced in different countries, the place of each country in the hierarchy of the world economy is established. There are two methodological systems for calculating and measuring these results: the Material Production System (S.P.M.) and the National Accounts System (S.C.N.).

The system of material production (S.P.M.) was conceived and used with the appearance on the stage of the history of the socialist states. This system is based on the theory of productive labour and labour value, according to which only labour performed in the sphere of material production creates economic goods and, therefore, income. Also known as the system of balances of the national economy, S.P.M., has a complex construction, which includes four main balances: the material balance of the national economy (balance of production, consumption and accumulation of social product and national income); the financial balance of the national economy (the balance of production, distribution and use of national income); the balance of labour and the balance of national wealth.

This system characteristic of the former socialist countries, as they transition to a market economy, is replaced by the System of National Accounts (S.C.N.). The system of national accounts is a complex tool of evidence, analysis and economic decision and is based on the theory of factors of production, according to which the factors participating in multiple economic activities are rewarded in relation to services provided and / or interest).

The main objective of the S.C.N. it is the measurement of national production and its main constituent elements. The calculation and analysis methodology has undergone, over time, changes and adaptations to the current system, gradually reaching a significant role, having its adoption by the UN Statistical Commission. in 1969. In 1977, it was decided to separate the activities into material and intangible branches and to group the production into material goods, productive services (goods) and social services.

The system of national accounts is composed of three basic elements: economic agents, grouped into four categories (units producing goods and services; producers of government services; producers of domestic services; non-profit institutions providing services to households); operations, which include all economic and financial acts performed and relate to material and financial flows; accounts, which highlight material and financial flows separately.

The national accounts comprise four accounts of production, consumption, accumulation and the rest of the world.

Based on the data from the shown accounts, overall tables are elaborated in the form of a matrix, which highlight the multiple interdependencies between economic agents, operations and accounts.

# • Resulting macroeconomic indicators

In the Material Production System (S.P.M.), based on the information provided by the main economic balances, the following synthetic indicators are calculated: the social product (PS), the final social product (PSF) and the national income (VN). The social product (PS) represents the value of material goods and economic services produced within the branches of material production, within one year. It is presented both in terms of material and in terms of value. From a material point of view, it is materialized in the totality of the means of production and of the consumer goods produced, while, in terms of value, it includes the production expenses related to the goods produced and services provided, the primary incomes of the population employed in the productive sphere as well as the primary revenues of the state.

The final social product (PSF) consists of the exchange value of the material goods and economic services produced and reached during the calculation period in the last stage of the economic circuit. The size of this indicator is calculated as the difference between PS. and intermediate consumption.

From a material point of view, PSF includes all goods produced in a certain period of time and which are intended: to satisfy personal and social consumption, to replace the fixed capital consumed, accumulation, stockpiling, export. In terms of value, PSF. is equal to the size of the national income, to which is added the depreciation of the fixed capital. By means of this indicator, that part of the production of the economic units reached in the final stage to the economic circuit is highlighted, reason for which it serves better to characterize the economic dynamics. National income (GNI) is the synthetic (aggregate) indicator that expresses the newly created value in the sphere of material production and economic services within a year. The size of this indicator is determined by subtracting from the PS. of the value of the material goods consumed in the process of its production. In material terms, it includes all consumer goods (material goods and services) and that part of the means of production (producers) that are intended for accumulation and reserves. In terms of value, it includes the primary incomes of the population employed in material production, the primary incomes of the productive units and those of the state.

Unlike the Material Production System, which includes only the results of material production, highlighting the material flows in the economy the System of National Accounts (S.C.N.) encompasses the entire activity of the economy and gives priority to financial flows.

Based on the information provided by the SNA, the following synthetic indicators are mainly calculated to reflect the size of the macroeconomic results: gross global product (GDP), gross domestic product (GDP), net domestic product (PIN), gross national product (GNP), net national product (GNP), national income (GNI).

The gross global product (GBP) represents the total value of goods and services of a commodity or non-commodity character, created in the subsystems of the national economy, in a determined period, usually one year. Because, on the real productive flow, the goods and services go through different processing phases, it is necessary to avoid repeated registration and accumulation in the P.G.B. of intermediate consumption. As a result, as an expression of macroeconomic results, the GBP can be calculated in three ways:

- by summing the intermediate consumption with the value of the final production, ie of the production reached the last stage of the economic circuit and which is destined for the final consumption (production method);
- by summing up the intermediate consumption with elements that represent the remuneration of the production factors, the amortization of the fixed capital and the indirect taxes (value added method);
- by summing the intermediate consumption with the value of the final consumption expressed by the expenses made by all economic agents for final consumption and for the gross capital formation (end-use method).

Gross domestic product (GDP) expresses the amount of gross value added of economic goods reached in the last stage of the economic circuit, which were produced in the country by domestic and foreign economic agents, in a certain period of time, usually one year.

The gross domestic product by the production method is obtained as follows:

GDP = GVA + IP + TV - SP,and gross value added by relation:
(1)

$$GVA = PBS - CI \tag{2}$$

Where:

**GDP** Gross domestic product at market price;

- GVA Gross value added at basic price;
- *IP* Product taxes;
- **TV** Customs duties and other duties on imports;
- *SP* Product subsidies;
- **PBS** Production of goods and services;
- *CI* Intermediate consumption.

The production of goods and services is valued on the basis of market output own final consumption output and non-market output, represented by goods and services provided by units belonging to general government or nonprofit institutions, free of charge or at insignificant prices economically.

Intermediate consumption is represented by the value of goods and services used as inputs throughout the production process and are either transformed or consumed in full in the production process. Intermediate consumption excludes fixed assets whose consumption is recorded as consumption of fixed capital.

The gross domestic product by the method of expenditure is thus obtained:

$$GDP = CF + FBCF + VS + E - I$$
(3)
Where:

**GDP** Gross domestic product at market price;

- *CF* Effective final consumption;
- **FBCF** Gross fixed capital formation;
- *VS* Stock change;

*E* Export of goods and services;

*I* Import of goods and services.

The cost of actual final consumption consists of the actual final consumption of households and general government. Consumption can be seen in the form of expenditure incurred or in the form of actual consumption, which also includes the consumption of goods and services obtained free of charge.

Gross fixed capital formation, FBCF, includes all expenses related to the acquisition of new fixed assets and / or expenses for the improvement of existing ones, including capital repairs, less disposed of fixed assets. Fixed assets are those tangible or intangible assets used repeatedly or continuously for more than one year in the production process. According to the SEC2010, the R&D also includes research and development expenses.

Inventories represent all goods stored by resident units for future use and further in the production or sale process. The change in inventories is measured by deducting from the value of the inputs the value of the outputs.

The estimation of exports and imports is based on the balance of payments made by the National Bank.

The gross domestic product by the income method is thus obtained:

$$GDP = GVA + IP + TV - SP, \text{ respectively:}$$
(4)  

$$GVA = R + EBE + AIP - ASP$$
(5)

Where:

**GDP** Gross domestic product at market price;

- GVA Gross value added at basic price;
- *IP* Product taxes;
- *TV* Customs duties and other duties on imports;
- **SP** Product subsidies;
- *R* Remuneration of employees;

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- **EBE** Gross operating surplus;
- AIP Other taxes on production;
- ASP Other production subsidies.

The calculation of GDP by the income method implies its estimation as the sum of the components of gross value added. The operating account, which is the basis of GDP through the income method, is calculated not only on homogeneous branches, consisting of units with economic activity at the local level, but also on institutional sectors, simultaneously with the production account. This calculation stage is an integral part of the Inputs -Outputs Table and of the Integrated Economic Accounts Table, constituting the table of primary inputs.

In order to obtain a single estimate of GDP, reconciliation between GDP values calculated independently by the three methods is performed, according to the methodology of preparation of national non-financial accounts.

The net domestic product (PIN) reflects the size of the net added value of economic goods intended for final consumption, which were produced within a given country, by domestic and foreign economic agents, in a certain period. It is calculated by subtracting from GDP the consumption of fixed capital, ie depreciation:

PIN = GDP - A

(6)

Where:PINNet domestic product;GDPThe gross domestic product;ADepreciation;

The gross national product (GNP) consists in the value expression of the gross final production, obtained by the local economic agents, which act inside or outside the country, during a certain period of time, usually one year. GNP is determined by adding the gross final production of domestic economic operators operating outside national borders and by decreasing the value of goods made by foreign producers in the reference country (the balance of gross value added of domestic economic agents abroad and that obtained by foreign agencies) domestic economic growth, expressed in market prices) at the value of GDP:

GNPpp = 0	$GDPpp \pm SVABpp,$
Where:	
GNPpp	Gross national product at market prices;
GDPpp	Gross domestic product at market prices;
SVABpp	The balance of gross value added at market prices.

GNP can be higher, lower or equal to GDP, depending on the size (positive or negative) of SVAB. Thus, if the balance is favourable to domestic economic agents then GNP and vice versa, GNP is expressed in nominal and real terms. The size of GNP in nominal terms is that expressed in current market prices. Real GNP means the size it would have had if the reference prices had not changed compared to the previous year. The ratio between nominal GNP and real GNP is called the GNP deflator. It measures the average change in the prices of material goods and the tariffs of services produced in a year and are used to determine the real changes in production. These changes are best captured by the consumer price index (the cost of living index).

The net national product (NNP) represents the monetary expression of the net added value of the final goods and services obtained by the domestic economic agents, which operate inside and outside the country, in a certain period of time, usually one year. It is determined by deducting from the GNP the depreciation of the fixed capital, respectively:

NNP = GNP - A, (8) Where: NNP Net national product; GNP Gross national product; A Depreciation;

In the national accounting and in the macroeconomic analysis, the national income (NP) is also calculated, which expressed in the market prices represents the NNP, and expressed in the prices of the production factors represents the GNP.

Measured statistically, these concepts become macroeconomic indicators or economic aggregates that highlight different aspects of the production of material goods and services obtained over a period of time in the national economy. These indicators characterize and analyse the size and structure of national production, dynamics, and, by correlating with other macroeconomic indicators, calculate and analyse the efficiency of capitalizing the economic potential both at the level of the national economy and for its structural elements.

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(7)

# Conclusions

The study on which this article was conducted leads to some especially theoretical conclusions. Thus, the organization of macroeconomic records is done in a single system that of national accounts adopted by all Member States of the European Union and used by UN bodies, as well as by Eurostat in calculating the macroeconomic indicators of the countries considered.

The aggregates on the basis of which the macroeconomic performance indicators are calculated are distributed in the nine macroeconomic accounts, on the basis of which the known methods of calculating the macroeconomic performance indicators, namely the production method, the income method and the expenditure method, lead to the assessment of the economy at a certain time or at a time interval.

The information provided by national accounts is undistorted and in principle unaffected by errors, so that macroeconomic performance indicators are calculated on the basis of them. These macroeconomic performance indicators are then brought to real values by eliminating the effect of inflation, so that the data can be compared in a real sense and lead to clear conclusions. Deflation, as a macroeconomic process, consists precisely in harmonizing the data, bringing them to a comparative level, taking into account a certain period of time as the basic period.

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