THE ECONOMIC-SOCIAL CONTENT OF THE INDICATORS USED IN THE ANALYSIS OF THE MACROECONOMIC PROPERTIES AND CORRELATIONS

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Abstract

The macroeconomic ratios and correlations play an important role in ensuring macro-stability. A series of aggregations that exist in the economic field and based on which the Gross Domestic Product is calculated, must be permanently in a correlative relationship, that is, what is produced must be invested or consumed, and what must be invested or consumed, must be it is produced on the basis of thorough macroeconomic analysis.

The ensuring the macroeconomic balance is determined by maintaining the macroeconomic correlations and proportions that must exist between the calculated statistical indicators, which reveal the evolution of each aggregate and on the whole the evolution of the Gross Domestic Product, the most synthetic indicator of results, which can be calculated at the level of the national economy.

The national economy functions as an economic system, in which in addition to the fundamental law of the market based on the correlation between supply and demand, it must also take into account the maintenance or regularization of the proportions and correlations encountered at the macroeconomic level.

In this article, we aimed to identify the indicators calculated at the macroeconomic level, with emphasis on the main indicators, so as to make concrete details on the economic content, of the social content, aiming precisely maintaining correlations, identifying imbalances and consequently undertaking measures to ensure macroeconomic macro-stability.

In turn, indicators such as the Gross Domestic Product, international economic relations, the structure of the Gross Domestic Product on a series of statistical variables, the role of some indicators unemployment, inflation, on maintaining the balances or influencing some imbalances, which ensure the removal of the macrostability phenomenon. Between these indicators I mentioned, there must be certain proportions and correlations, which must

be continuously ensured, so that the level of stability, macrostability of the economy is maintained.

In the final part of this article, in order to reveal the significance of the knowledge of these indicators, their content and the need to determine and know their evolution, we suggested the use of statistical-econometric models, which ensure macrostability, that is, maintaining or returning. at macroeconomic ratios and correlations. Thus, the Gross Domestic Product is definitely determined by the number of employees at the macroeconomic level, but also by the export that ensures, without comparing it in the study we did with the value of imports, a growth point of the national economy

Keywords: GDP, macroeconomic indicators, correlations, proportions, statistical variables.

JEL Classification: C10, E22

Introduction

In this article, the author started from defining the macroeconomic indicators Gross Domestic Product, import, export, labor force and other aggregates, statistical variables that play an important role in the national economy.

In this context, it was presented the content of each indicator, in the case of the Gross Domestic Product, which is the most representative and complex indicator of results of the national economy, went deeper by presenting briefly the calculation methods, the structural content of this indicator precisely to highlight the role that this indicator, together with others, has on the evolution of the national economy and maintaining its level of balance.

Also, there were suggested and presented some correlations that exist between these aggregates, between the Gross Domestic Product as a resultant statistical variable and other statistical variables (export, import, number of employees, labor productivity and others), which have an effect on the modification of the Product Gross Domestic. There was also a correlated analysis between the evolution of the Gross Domestic Product and the economic growth, concluding that this growth is largely based on the growth of the Gross Domestic Product, and the structure on some aggregates of the Gross Domestic Product was established, and finally an analysis was made concrete on the evolution of the Gross Domestic Product in close correlation with the number of employees and the export. Of course, these econometric models used can be extended to relations between other statistical variables, but we have referred to two correlations using the simple direct regression method to highlight the possibility of analyzing these aggregates.

Literature review

Anghelache, Anghel, Iacob and Bîrsan (2019) addressed a number of issues regarding the accelerator of dynamic models. The main statistical concepts and indicators used in the economic analyzes are highlighted by Anghelache and Anghel (2016), as well as by Newbold, Karlson and Thorne (2010). Anghelache and Sacală (2016) presented a model applied in macroeconomic analysis. Anghelache, Mitruţ and Voineagu (2013) are a reference work in macroeconomic analyzes. Céspedes and Velasco (2012) analyzed elements of macroeconomic performance in the conditions of rising commodity prices. Corbore, Durlauf and Hansen (2006) investigated the role and peculiarities of econometrics in economic studies. A similar theme is studied by Linton (2016). Lucas (2003) and Dornbusch, Fischer and Startz (2007) analyzed fundamental concepts of macroeconomic modeling.

Research methodology, data, results and discussions

The economy of a country must be, as far as possible, in the condition of equilibrium, of macrostability. This macro-stability depends on the existence and maintenance of macroeconomic proportions and correlations. The term equilibrium comes from the Latin "aequilibrium", aequs meaning equal. This concept expresses the qualitative stability of objects and phenomena, determined by the equal weight of the action of the opposites, by the mutual cancellation of their contradictory tensions within a system.

Such a system is also the economy, as a dynamic reality, constantly moving. It is an integrated system of sectors, branches and activities, of distribution, exchange and consumption, economic-organizational and social-cultural legal.

All these activities are realized and ensured by the economic agents and guided, through the mechanisms of the market, of the market relations.

At the level of the national economy, they cannot be carried out under optimal conditions, in accordance with the needs of individuals and of the society, without a certain state of agreement, called macroeconomic balance, between the sectors and economic branches, between the components of the economic mechanism, components that although they are in a certain interdependence, they have their own functionality and are on the move.

Therefore, the problem of macroeconomic balance, or of the general balance of the economy, occupies an important place in economic theory and practice. The definition of balance varies from one theory to another, but, as the Frenchman Edmond Malinvaud, Nobel laureate for economics, shows, in his work „Equilibrium concept in Economics" the basic concept remains the same. Moreover, the economic thinking about balance fascinates so much,

that „it is striking to note that most of the contemporary works of quality carry in their title the word" balance „, as Henri Guitton points out.

Concerns about achieving the match between the available resources and the needs subordinated to the various goals, characterized by a tendency of continuous growth, have existed since ancient times, long before they were concluded in the form of a theory.

Problems of balance are found in the thinkers of antiquity, then in the mercantilists, in the physiocrats.

The one who for the first time realizes an overall scheme of the factors of production, of the factors of balance and of the factors of economic evolution, which will serve as a frame of reference for the whole classical thinking is Adam Smith.

His conception regarding the economic balance is based on the principles of economic liberalism, of the market mechanism, on his optimistic belief in the spontaneous organization of the economic life through the free competition of the particular interests. The principle of economic balance at Smith is the market, with the free play of prices, which ensures the balancing (correlation) of demand with supply.

The term equilibrium was introduced and grounded in the economics of the natural sciences, within the framework of price theory and resource allocation. Leon Walras granted him a prominent place (1874), demonstrating that when the offer of a good is equal to his demand, the respective market is „in a steady state" or in equilibrium.

In 1890 A. Marshall referred to the „balance between desire and effort", on this idea evaluating behaviorist conceptions of later equilibrium, which will exaggerate the elements of consumer psychology, fetishizing the whims of individual consumption.

In order to get closer to this state of equilibrium, each time we must analyze whether the proportions and especially the correlations at the macroeconomic level are respected. In this respect, at the macroeconomic level, a series of statistical indicators are calculated, which reveal certain stages of evolution, which must be in harmonic correlation. I will deal with these indicators and their economic content.

First, I will address a number of issues regarding indicators of macroeconomic stability.

Of these, it is necessary to refer to the Gross Domestic Product, which is a macroeconomic indicator that reflects the sum of the market value of all goods and services for final consumption, produced in all branches of the economy within a state within a year.

Therefore, GDP includes the value of all goods and services resulting from the production processes within the national economy, in order to be invested, consumed, exported or stored.

When we talk about the final goods, we consider the products and services made during the calculation period that are no longer used for the production of other goods. If these are to be used in a subsequent production process, it is referred to as intermediate production.

Failure to keep these intermediate goods in the calculation of GDP allows avoiding double registration which leads to a distorted image of the macroeconomic results. The final goods, retained in the calculation of GDP, are intended to enter directly into consumption, being sold to final consumers.

Gross domestic product is considered the best statistical measure of the performance of an economy.

Foreign trade indicators represent the set of transactions with goods and services that the economic agents in a country make with the outside, that is to those export and import operations carried out by the economic agents.

In the activity of international trade, two types of operations are performed, goods with material existence and invisible trade (services). The last indicator implies the provision of services, sales-purchases of licenses with foreign, tourism, international transport, international consignment, economic assistance and technical-scientific collaboration on commercial bases abroad.

Any foreign trade operation must be judged from the point of view of the economic efficiency, of the ratio between the obtained effects and the efforts made, but also from the point of view of the correlation between the financial effort and the foreign exchange effect of the operation.

The immediate effects of foreign trade are represented by the income obtained from exports and from goods and services obtained through import. The efforts represent expenditures in national currency for export and expenditures in foreign currency for import.

The efficiency of the export is appreciated by the internal expenditure that is made to obtain a currency unit. The direct efficiency of the import is appreciated by the amount of national currency that is obtained by the domestic sale of the imported goods with a currency unit.

The efficiency of foreign trade is very important to establish because it changes the material structure of the gross global product, the growth rate of the net national product or its value volume.

The main ways of increasing the efficiency of foreign trade are: increasing the degree of processing of goods and services for export; deepening the specialization of export production, which should lead to a substantial increase in labor productivity; raising the quality of products and services for

export, in order to ensure their maximum competitiveness; modernizing and adapting the presentation of goods to the requirements of the world market; reducing production costs.

At the level of foreign trade, two synthesis documents (trade balance and balance of payments) are prepared, important for the appreciation of these changes. Foreign trade operations are reflected in the trade balance comprising the total value and by groups of goods (agri-food, raw materials, beverages, fuels, chemicals, machines, etc.). The trade balance is based on all the commercial relations, but also the structure on products.

As we can see the trade balance comprises two main parts: import and export. The difference between export receipts and import payments is the balance of the trade balance. If the balance is deficient, it is balanced by using its own foreign exchange reserves or external loans to be repaid in the future.

Balance of payments is a statistical-accounting document in which the totality of payments and receipts from foreign exchange of a country is recorded and compared in a certain period (year, semester, quarter).

At the national economy level, the financial-monetary decision is made in the form of the balance of external payments.

The balance of payments mirrors the economic strength of the respective country, the state and extent of its economic transactions with the other countries, the health of the national economy, the credibility of one country against other countries.

The structure of the balance of external payments comprises 3 major subdivisions: the current account (the balance of current payments), the capital and financial account (the balance of capital movements), errors and omissions.

The balance of payments includes:

- Current account, respectively: the trade balance (import and export of goods) and the balance of services, the balance of incomes (from work, interests, dividends, rents, profits) and the balance of unilateral transfers (transfers of income of emigrant workers, compensation, donations, external public aid etc.)
- Capital and financial account, respectively: the balance of long-term capital movements (direct investments, portfolio investments, quotations, state loans, transit accounts, clearing or barter accounts, reserve assets) and the balance of capital movements on short term (credits received or granted, repatriation of assets, profits, etc.)
- Errors and omissions

The equilibrium of the payments balance, maintaining appropriate correlations, is one of the important objectives of the economic policy of each

state. Imbalances, representing surpluses or deficits, are the most common situations. They concern the general balance of payments but also its parts (trade balance, service balance, income balance). The imbalance of a balance of payments comes from the imbalance of trade.

The balance of payments is the appropriate instrument for analyzing the balance of international relations.

In recent years the balance of payments of Romania is characterized by the persistence of the trade deficit. The current account ends systematically with deficits, most of which come from the passive balance of the trade balance. The capital account ends with active balances, but the main source is the external loans to the monetary financial organizations (IMF) and to the private financial market.

The public debt indicators involve all the amounts borrowed by the state and other public institutions, from natural persons and legal entities, from the internal and external market, regardless of their maturity and not reimbursed at any given time.

The public debt shows the degree of indebtedness of a country and the relationships between the balance of commitments and the balance of external payments.

The commitments or obligations derive from contracting the loans, namely: repayment of the loan, payment of interest, commissions, special advantages granted to the creditors.

The public debt is established and managed separately on its two forms, internal and external public debt. It also quantifies according to the term for which loans are contracted, the public debt on short, medium and long term (consolidated).

The annual expenses representing payments due on the public debt account form as a whole the public debt service (internal or external). It represents the annual financial effort materialized in expenses with repayment of public debt, expenses with interest payments and other related expenses.

The domestic public debt is generated by: short-term state loans received from the NBR for balancing the state budget; the issuance of treasury bills, for the same purpose, repayable from budgetary resources, by the end of the year - unless the public debt is consolidated; placing medium- or long-term records to procure the resources needed to cover the annual budget deficit; the guarantees granted by the state to internal bank credits of the economic agents for necessities related to objectives of maximum importance for the national economy and the short-term attraction of the availabilities from the public Treasury accounts.

The state loans on the financial market can be contracted by the Government, within the amount approved by the Parliament, from natural or legal persons, in order to provide the necessary financial resources.

Applying for government loans is related to: financing the state budget deficit, refinancing public debt, maintaining the balance of payments and strengthening the state's foreign reserve, financing investment projects for the development of the priority sectors of the economy, financing the projects of small and medium-sized enterprises with capital. Romanian majority, fulfilling the obligations related to the state guarantees for loans, etc.

To cover the financial risks that may occur as a result of guaranteeing these loans, the Risk Guarantee Fund for internal guarantees is set up.

The sources of repayment of the loans, the sources are: the surpluses of the state budget, the state loans for refinancing the internal public debt, as well as from other resources established by legal provisions.

External public debt encompasses all the country's debts to abroad. In the World Bank's conception it includes: the amounts owed by the state to some public and private external creditors, in foreign currency, goods, services, with a repayment period of more than one year; the amounts owed by private persons, guaranteed by public authorities.

The net external debt is the difference between the public and private assets of the residents of a country abroad and the assets held by the foreign residents in the country in question.

The assets of the residents of the country abroad include: currency availability, loans granted, direct investments, securities, other debts and securities.

The assets of foreign residents in our country include: loans received from public bodies (government, government agencies), loans from banks or financial institutions and other creditors, securities, foreign exchange availabilities, capital investments, other securities belonging to foreign persons.

The forms of external debt are highlighted by indicators regarding: external public debt, public guarantee debt, unsecured private debt.

External loans are contracted to finance specific objectives such as: carrying out development programs, economic restructuring, balancing the balance of external payments, creating, maintaining and increasing the state's foreign reserve, providing the necessary resources to eliminate the effects caused by natural disasters or in other cases of force. majeure.

As a guarantor of foreign loans, the Ministry of Finance, on behalf of the state, evaluates the financial risks, the opportunity and the conditions for issuing the guarantee, in order not to affect the financial credibility of the Romanian state internationally, participates in the negotiation of agreements and other international legal instruments. through which external loans are guaranteed by the state. Also, the Ministry of Finance and the National Bank

of Romania exercises the general supervision of the execution of the house of the external public debt commitments, according to the methodological norms. It is mandatory that the destination of external loans is strictly respected.

The expenses related to the repayment of the installments, the interest and the other expenses related to the external loans contracted directly by the Government are borne from the state budget or the local budgets, being: repayments of external credits, the payment of the interests, the commissions related to the contracted loans, other payments of interest related to public debt.

The value of the Gross Domestic Product, expressed in real terms by deflation and the correlations / proportions that exist in the national economy is also influenced by inflation (inflation rate).

The inflation is the process of increasing the general level of consumer prices.

The inflationary processes are realities for all categories of economic agents, being a component of the functioning of national economies.

At the level of perception, as an economic phenomenon, inflation is perceived as a generalized increase in prices and a reduction in the purchasing power of the monetary unit.

Even if the prices do not increase at all the assortments and categories of goods, however, the process is present in the vast majority of them: consumer and capital goods, salaries, prices of financial and monetary assets, the price of money, etc. There are also some price increases that are not the expression of inflation, depending on the quality and the ratio imposed by the market.

As a rule, in developed countries prices rise rapidly during periods of economic expansion and slow down during recessions or stagnation of economic growth.

In Romania, the potential for inflation has accumulated passively in the years of the command economy, but has „exploded" with the transition to price liberalization since 1990.

Although, in the last years, the disinflationary phenomenon is observed, a percentage of the prices increase has an increasing economic significance, and the effects on the economic agents are still of great extension.

The inflation has wide effects, on multiple levels, on the economy, the economic agents, the population and on the social-political climate within the country as well as the economic relations between the partners belonging to different economies. Deciphering all these consequences is a difficult operation, because the magnitude and extent of the effects depends on the intensity of the inflation, on its types; the effects of inflation are contradictory: under certain aspects it favors certain agents and disadvantages them under

other aspects and some categories of economic agents are, overall, winners from inflation, and others are losers as a whole.

In fact, inflation changes absolute prices at different rates and at different times, which changes relative prices, with effect on macroeconomic correlations.

The inflation redistributes assets from the buyer in favor of the seller, from the one who saves in favor of the one who invests or speculates with the resources of the former.

Under moderate inflation, prices often rise faster than wages. Therefore, inflation also determines the redistribution of incomes in favor of the capital holders and those who obtain income from the profit to the detriment of the employees.

If taxes and duties are not indexed, their payers reduce their fiscal burden, as do the state's obligations for non-indexed public debt. Sometimes inflation is premeditated by the public authority to reduce the real value of the public debt by favoring its repayment with less purchasing power.

In inflationary conditions, not all monetary incomes increase identically and concurrently with the increase in prices. Inflation penalizes certain social groups, especially those with fixed incomes and benefits those who live from variable incomes, dependent on performance, activity level and other criteria that they manage to impose.

The inflation introduces a high degree of uncertainty in the business environment: entrepreneurs do not launch into large, long-term, high-risk investment projects.

The economic growth stagnates or returns with a whole host of negative consequences: unemployment, budget deficit, even more substantial price increases, balance of payments deficits, unfavorable social-political climate, obvious and substantial decreases in the standard of living and quality of life for broad categories of the population, numerous bankruptcies among small and medium-sized companies, marginalization of the middle class, going up to the broad processes of disaggregation of life and economic relations. The economy as a whole becomes more unstable, fragile to external shocks and to the interdependence relations generated by the national and international division of labor.

At the microeconomic level, inflation distorts the prices and incomes of the economic agents, breaks the relative prices by the evolution of costs and demand, reallocates the resources and reorients to certain entrepreneurial activities based on relative advantages.

The statistical data shows that, under the open inflation condition, the legally established fixed capital depreciation rates are insufficient for the value

regeneration of the fixed capital elements, the accounting costs being lower than the actual ones.

Another indicator with social content and economic effect is unemployment.

The evolution of the economy of each country and of the world economy has brought to the fore theoretical and pragmatic concerns, the problem of employment resources and non-employment or unemployment. These problems have a complex content and a wide area of manifestation, with important economic and social-human consequences.

The employment in economic and social activities and unemployment show how the labor market works in a given period or at a certain time. The ratio of labor supply and demand determines employment or unemployment under certain conditions of time and space. The issue of employment and unemployment is an important aspect of the macroeconomic balance and an indispensable component of macroeconomic and macrosocial policies.

Although there is diversity in the definition of the concept of unemployment, however, common elements that can be found, to a greater or lesser extent, can be found in all the concepts.

The unemployment, like economic growth, tends to follow a cyclical pattern.

The unemployment is that state of the labor market characterized by an offer greater than the demand for labor force.

It represents the situation in which some people who have involuntarily tried to work and / or cannot be hired because of the impossibility of finding a job. Unemployment is estimated by the unemployment rate, which reflects the fraction of the labor force that cannot find a job. Any increase in unemployment leads to a reduction in real GDP.

I will come back with more details on the most complex and representative macroeconomic indicator, namely the Gross Domestic Product.

The Gross Domestic Product (GDP) expresses the gross value of the final production realized in a period of time, usually a year, by the economic agents that carry out their activity inside the country.

GDP includes the value of all goods and services resulting from the production processes within the national economy, in order to be invested, consumed, exported or stored.

GDP is the sum of the expenditures for consumption of private households and private non-profit organizations, of gross investment costs, of state expenditures, of investments for the purpose of storage, as well as of the export earnings from which the expenses for imports are deducted. Keynesian economists have had a major impact on both modern political and

economic theory and the fiscal policies of some governments, dividing the term of general consumption into two parts: private consumption and public sector spending.

Private consumption is a central concern of the welfare economy. Private investments and commercial subdivisions of the economy are ultimately directed (in the main stream of economic models) towards the long-term growth of private consumption. Because it is separate from endogenous private consumption, public sector consumption can be considered exogenous, so that different levels of public sector consumption can be considered as part of the meaningful field of macroeconomics.

The correlation of the evolution of the Gross Domestic Product and the economic growth, needs to be addressed, to clarify some opinions or appreciations.

Considered as an aggregate indicator on the results recorded in the economy (sum of the participants' incomes in the economic activities carried out in the country or sum of their expenses for consumption, investment plus the balance of foreign trade) the statistical variable GDP, as well as the national income that returns per inhabitant , reports economic growth when these indicators record real growth several years in a row.

The theory of economic growth analyzes the determinants of growth in the short, medium and long term, seeking answers to questions related to the amount of investments required, the efficiency of the use of resources, their efficiency and their quality. The rate of savings and investments, compared to the rate of depreciation of fixed capital and the rate of population growth, is of interest in appreciating the process of economic growth in the sense that the rate of economies must „cover" the capital increase needed to replace (as a result of the depreciation) but also the provision of additional capital.

Important for the economic growth are the net investments and their directing towards high efficiency industries in which the leading technology predominates.

Regarding the causes that determine the economic growth, the economic theory mentions the quantity and quality of the factors of production (land, labor and capital), as well as the efficiency of their combination. More specifically, what ensures economic growth also refers to conditions such as: the political or economic credit system, the internal market, the geographical position of the country, the export and opening to the external market, the international situation.

The evolution of GDP determines, in turn, the use of the labor force, the welfare, the investments in the following periods.

Although the gross domestic product reflects the economic well-being of a country to some extent, this indicator is not a perfect indicator.

The Gross Domestic Product does not reflect many of the elements that can characterize the economic well-being of a country - for example, relaxation, leisure time.

The Gross Domestic Product also does not reflect the quality of the environment. If there were no environmental regulations, companies could produce more goods and services, so that GDP could be higher.

The Gross Domestic Product (GDP) as the main macroeconomic aggregate of the National Accounts System, expresses the gross added value of the goods and services reached in the last stage of the economic circuit, which were produced inside a country by the domestic and foreign economic agents, in a certain period of time, usually one year.

The Gross Domestic Product can be calculated by three methods:

• **The production method**

GDP is defined as the sum of gross value added (VAB) created in all branches and sectors of activity. The gross added value is the surplus of the value of the gross production (PB) compared to the intermediate consumption (ci) and is evaluated in the prices of the factors (pf). In order to estimate the GDP in the market prices (pp) the indirect IND-taxes (TVA, customs duties, excise duties) must be added and the subsidies on products and for imports (SBV) deducted.

$$GDPpp = I\ VAB\ pf + (IND - SBV) = £\ (PB - ci)pf + (IND - SBV) \quad (1)$$

We consider that GDP assessments in factor prices are necessary for the purpose of carrying out analyzes related to the efficiency of branches or production factors, while market price assessments are appropriate for analyzes on the use of final output.

• **The expenditure method**

This method starts from the sum of the elements in which the final use of the economic goods (materials and services) evaluated at the market prices is realized, less the value of the imported goods.

$$PIB\ pp = CPV + CPB + FBCF + VS + (EXP - IMP) \quad (2)$$

where:
CPV = private consumption;
CPB = public consumption;
FBCF = gross fixed capital formation;
VS = stock change;
EXP = export of goods and services;
IMP = tax on goods and services;

• **The method of income**

This method is based on the aggregation of the income of the factors of production: income from employed work, income from entrepreneurial activity, income from heritage. In the abstract, all the shocks in the economy affect both the real GDP and the price level; which means that both affect the volume of goods and services produced, as well as the monetary value of these goods and services. Economists refer to these shocks as having both real and nominal effects. For this purpose we will appeal to the aggregate demand curve and to the aggregate supply curve respectively.

A change in the price level affects the wealth of the holders of assets, expressed in nominal terms, in a manner that acts in the opposite direction, compared with the way in which the wealth of those who issued those assets will be affected.

A change in the price level does not result in a net change in the assets of the private sector, in relation to the domestic assets, but may lead to a change in relation to the external assets, since the issuers are not part of the public sector.

The GDP consists of five components:

• The private consumption represents the total expenditure of households in the economy.

The private or personal consumption has the main share and is represented by the part of the national income destined to purchase consumer goods and services to meet the needs of the people. The consumption of state or public is represented by the part of the national income destined to the expenses occasioned by the purchase of goods and services of social - cultural character, necessary for the normal functioning of the company.

There is a consumption function between consumption and income, namely, as the income increases, consumption also increases, but not as much as the income increases.

To increase global consumption, without shrinking economies, global income must grow faster than consumption:

- the marginal rate of consumption, which represents the proportion of the supplementary income intended for consumption during a given period.

The volume and structure of consumption expenditures depend on a number of factors; objective and subjective.

The objective factors are: the size and structure of wages; modifying the relationship between present and future goods; changes in the volume of capital that were not provided for in the calculation of income; modification of the fiscal policy that can increase or decrease the demand for consumption.

The subjective factors that depend on the characteristics of the human being, on the needs and habits of individuals are: maintaining the standard of living, saving the difference between the actual income and the expenses necessary to maintain the standard of living; the tendency to increase the difference between income and consumption, as people make higher incomes.

The consumption of goods and services is studied with the help of family budgets. They show the structure of consumption and its evolution according to the vital needs of existence, environment, sex, age, income.

Analyzing over time the family budgets, we find certain changes in the structure of consumption, namely: the decrease of the share of the expenses for the food, due to the increase of the quality and its nutritional value: the relatively constant maintenance of the weight of the expenses for the food, due to the increase of the quality and the nutritional value of it; maintaining relatively constant weight of expenses for clothing, footwear and personnel; increasing the share of expenditures for long-term goods and services, especially those related to raising the level of culture and civilization.

The part of the income that exceeds the consumption is represented by the savings S = Y - C, they are used by the economic agents for investments. So, the income is transformed into consumption and production expenses, that is: Y = C + I where, Y = income, C = consumption, I = investments.

- The state expenditures made up of all government expenditure on goods and services;

- Investments. The notion of investment, in a broad sense, is synonymous with: allocation, placement, endowment, and in a narrower sense (financial-accounting) represents an expense made for obtaining high-value material goods and long-term durability.

There is a need for clarification regarding this concept, in the sense that if for many, the investment refers to the acquisition of assets such as: gold or shares in a particular company, economists use this concept with a connotation of acquiring new capital goods, such as cars. new, new buildings, new houses. To refer to asset purchases, such as those presented, economists use the concept of „financial investment".

Under the conditions of centralized economy management, on administrative principles, investment is only what is allocated for the creation and development of the material production base and that for the social-cultural sector. According to a definition, with wide circulation in our country, the investment represents „the totality of the expenses by which new, productive and non-productive fixed funds are created, the existing fixed funds are refined or rebuilt".

- Exports. Exports are represented as an arrow from the foreign sector entering the economy because this flow is an injection that increases the

exporters' income. The value of exports less the value of imports constitutes net exports. If the value of the imports exceeds the value of the exports, we have negative net exports or we can call them net imports.

- Imports. They are defined as the commercial operations for the purchase abroad of some material goods and / or services against a quantity of the agreed currency, implying through them the importer's customs border.

The Gross Domestic Product, seen as one of the main macroeconomic aggregates specific to the System of National Accounts, represents the synthetic expression of the results of the economic activity produced within the economic territory within a period of time, irrespective of the contribution that the internal or foreign subjects had.

In the analysis performed on the factors that determine the variation of the Gross Domestic Product, we started from the methodological elements specific to the method of using the final output (the expense method), considering that this is a source of significant information on the main correlations influencing the evolution of the main macroeconomic aggregate.

Next, using the statistical-econometric model of simple linear regression, we highlighted the correlation between GDP (resultant variable) and the number of employees and export, as factor variables.

Using the simple linear regression model to study the relationship between Gross Domestic Product and the number of employees

Table 1 structured and presented the data regarding the evolution of the Gross Domestic Product indicators and the number of employees during the period from 1990 to 2017.

Evolution of Gross Domestic Product and number of employees

Table 1

Year		1990	1991	1992	1993	1994	1995	1996	1997
GDP		85,8	220,4	602,9	2003,6	4977,3	7213,5	10891,9	25292,6
NSAL		11126	10786	10548	10062	10011	9493	9379	9023
1998	**1999**	**2000**	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**
37379,8	55191,4	80377,3	116768,7	151475,1	197564,8	247368	288955	344651	416007
8813	8420	10508	10440	9234	9223	9158	9267,2	9330,7	9364,8
2008	**2009**	**2010**	**2011**	**2012**	**2013**	**2014**	**2015**	**2016**	**2017**
524388,7	510522,8	533881,1	565097,2	596681,5	637583,1	668590,1	712588	765135	856727
9365,9	8952	8713	8528	8605	8549	8614	8535	8449	8671

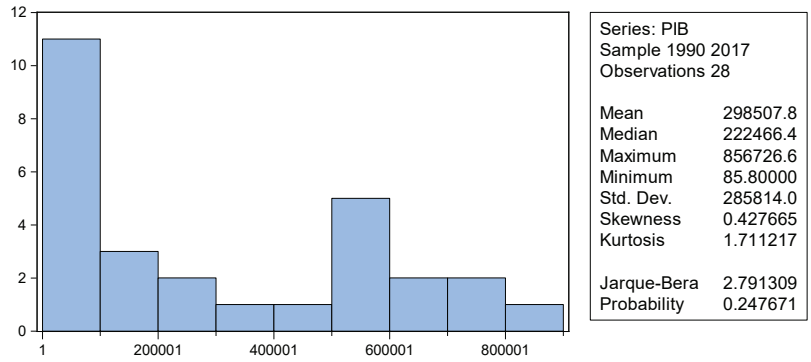
Data source: National Institute of Statistics (data processed by the author)

The evolution of the Gross Domestic Product was presented in the chart 1.

Regarding the evolution of the Gross Domestic Product during the period from 1990 to 2017, the data were analyzed and structured in the following graph:

Evolution of GDP in the period 1990-2017

Chart 1



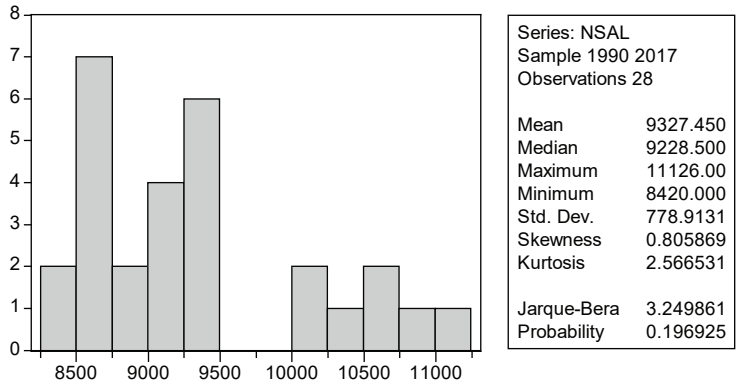
Following the results presented in graph number 1, we find that the average value registered is 298,507.80 Ron annually, and the maximum is reached in 2017, having the value of 856,726.60 Ron. If we look at the value of Skewness, it is not close to zero (0.42), which indicates that the distribution of GDP values is not symmetrical and we also have a slower than normal

distribution, an aspect that is highlighted. of the value of 1.71 of the Kurtosis test, which is less than 3.

The evolution of the indicator the number of employees during the period from 1990 to 2017 will be presented in graph 2.

Evolution of the number of employees in the period between 1990 and 2017

Chart 2



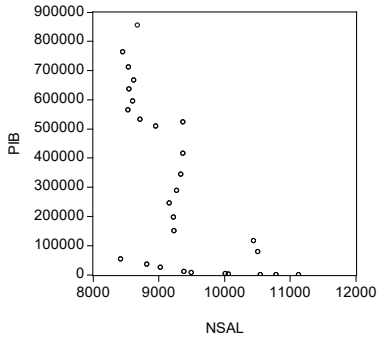
Following the data presented in graph 2, we find that the maximum value of 11,126,000 employees was registered in 1990 and the average is 9,327,450. At the same time after 2008, the number of employees has decreased continuously, registering in 2008 a number of 8,6711.00 employees, very close to the minimum of the period under analysis.

On the other hand, the values recorded for the Skewness and Kurtosis tests, show that the distribution is not perfectly symmetrical, because the value of the Skewness test is significantly different from zero, ie it has a value of 0.80 and at the same time the distribution is slower than a normal one, the value the Kurtosis test being 2.56 lower than 3.

The graphical representation of the correlation between the Gross Domestic Product and the number of employees during the period 1990 to 2017 is presented in graph 3

Correlation between Gross Domestic Product and Number of Employees (NSAL)

Graph 3



From chart 3 it appears that the point cloud described by the values recorded for the Gross Domestic Product and the number of employees describe a line, which indicates a linear evolution. This allows us a statistical-econometric analysis that I will perform using the EViews program, and the data are presented in figure 1.

In this case, the simple linear regression equation used has the following form:

$$GDP = a + b \cdot NSAL + \varepsilon \quad (3)$$

where: GDP is the Gross Domestic Product and it represents the dependent variable;
NSAL is the number of employees, ie the independent variable;
a and *b* are the parameters of the regression model;
ε is the residual variable.

Analysis of simple linear regression between GDP and NSAL

Figure 1

Dependent Variable: GDP
Method: Least Squares
Sample: 1990 2017
Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	2619847.	494904.3	5.293643	0.0000
NSAL	-248.8718	52.88140	-4.706224	0.0001
R-squared	0.460004	Mean dependent var		298507.8
Adjusted R-squared	0.439235	S.D. dependent var		285814.0
S.E. of regression	214029.6	Akaike info criterion		27.45437
Sum squared resid	1.19E+12	Schwarz criterion		27.54952
Log likelihood	-382.3611	F-statistic		22.14855
Durbin-Watson stat	0.417880	Prob(F-statistic)		0.000073

Interpreting the results presented in figure 1, we find that the values of the coefficients are significantly different from zero, which validates the model.

The model is also confirmed by the statistical tests, thus taking into account the value recorded by F-statistic = 22.14 higher than the table and the values for the t-Statistic test. In the same vein, the value recorded by R-squared is significantly different from zero, namely 0.46. In other words, the indicator influence the number of employees in the evolution of GDP is 46%.

Therefore, we can write the equation that allows us to calculate the forecast values of the Gross Domestic Product:

$$\widehat{GDP} = 2619847 - 248.87 \cdot NSAL \quad (4)$$

The influence of other factors on the evolution of GDP is also confirmed by the high value of the coefficient of the free term, namely 2619847. The plus sign of the coefficient value indicates that the influence of the other factors is a positive one.

The use of the simple linear regression model in the study of the relationship between Gross Domestic Product and export

The data regarding the evolution of the GDP and of the export during the period 1990-2017 were structured in the table number 2.

Evolution of Gross Domestic Product and export

Table 2

Anul	1990	1991	1992	1993	1994	1995	1996	1997
PIB	85,8	220,4	602,9	2003,6	4977,3	7213,5	10891,9	25292,6
EXP	15,98	54,93	122,74	477,52	1538,17	1974,44	2650,06	6386,69

1998	1999	2000	2001	2002	2003	2004	2005	2006	2007
37379,8	55191,4	80377,3	116768,7	151475,1	197564,8	247368	288955	344651	416007
7566,91	13894,5	24201,01	36128,73	50480,6	65099,6	84219,3	88576,1	102682	113531

2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
524388,7	510522,8	533881,1	565097,2	596681,5	637583,1	668590,1	712588	765135	856727
140647,7	152448,3	164672,9	201412	214163,5	240095	257190,5	271310	287948	312222

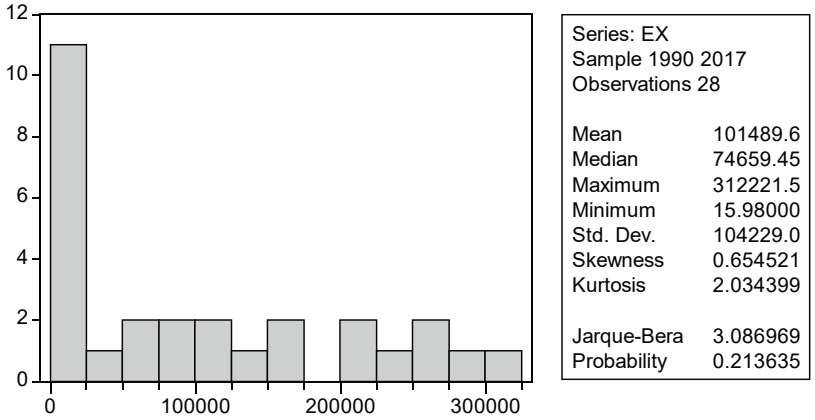
Data source: National Institute of Statistics (data processed by the author)

The evolution of the Gross Domestic Product was presented in graph 1.

Regarding the evolution of the Gross Domestic Product during the period from 1990 to 2017, the data were analyzed and structured in graph 1, and the export evolution is presented in the following chart.

Evolution of exports between 1990 and 2017

Chart 4

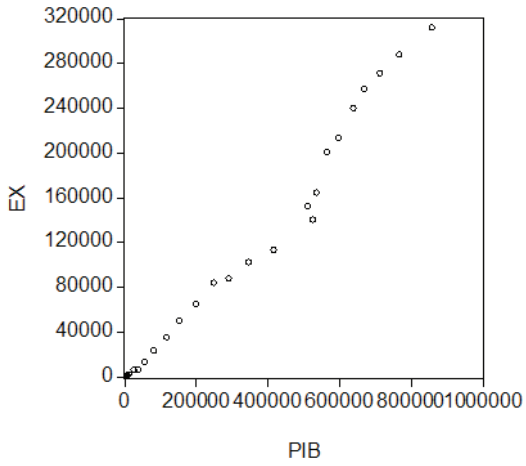


Following the data presented in Chart 4, we notice that the values recorded for the Skewness and Kurtosis tests show that the distribution is not perfectly symmetrical, because the value of the Skewness test is significantly different from zero, that is, it has a value of 0.65 and at the same time the distribution is slower than a normal one, the value of the Kurtosis test being 2.03 less than 3.

The graphical representation of the correlation between Gross Domestic Product and export between 1990 and 2017 is presented in graph 5.

Correlation between Gross Domestic Product and export

Graph 5



From chart 5 it appears that the point cloud described by the values recorded for the Gross Domestic Product and export describes a line, which indicates a linear evolution. This allows us a statistical-econometric analysis that I will perform using the EViews program, and the data are presented in figure 2.

In this case, the simple linear regression equation used has the following form:

$$GDP = a + b \cdot EXP + \varepsilon \quad (5)$$

where: GDP is the Gross Domestic Product and represents the dependent variable;
EXP is the number of employees, ie the independent variable;
a and *b* are the parameters of the regression model;
ε is the residual variable.

Analysis of simple linear regression between GDP and EXP

Figure 2

Dependent Variable: GDP
Method: Least Squares
Sample: 1990 2017
Included observations: 28

Variable	Coefficient	Std. Error	t-Statistic	Prob.
C	23093.29	11137.50	2.073472	0.0482
EXP	2.713722	0.077270	35.12019	0.0000
R-squared	0.979356	Mean dependent var		298507.8
Adjusted R-squared	0.978562	S.D. dependent var		285814.0
S.E. of regression	41848.40	Akaike info criterion		24.19024
Sum squared resid	4.55E+10	Schwarz criterion		24.28540
Log likelihood	-336.6634	F-statistic		1233.428
Durbin-Watson stat	0.287731	Prob(F-statistic)		0.000000

Interpreting the results presented in figure 2, we find that the values of the coefficients are significantly different from zero, which validates the model.

The model is also confirmed by the statistical tests, thus taking into account the values recorded by the statistical tests (F-statistic and t-Statistic), which are superior to the tables. In the same vein, the value registered by R-squared is significantly different from zero, this being very close to the unitary one, namely 0.97, which means that the influence of the export indicator in the evolution of GDP is 97.93%. .

Therefore, we can write the equation that allows us to calculate the forecast values of the Gross Domestic Product:

$$\widehat{GDP} = 23093.29 + 2.71 \cdot EXP \quad (6)$$

The influence of other factors on the evolution of GDP is also confirmed by the high value of the coefficient of the free term, namely 23093.29. The plus

sign of the coefficient value indicates that the influence of the other factors is positive.

Conclusions

This article highlights a number of theoretical and practical conclusions. First of all, it is emphasized that between the macroeconomic aggregates and the indicators that characterize the evolution, the stage of these aggregates at a time, there must be correlations. These correlations sometimes change and dysfunctions appear that need to be regulated by undertaking macroeconomic measures. Thus, the economic-social indicators (Gross Domestic Product, number of employees, export, gross value added, unemployment, inflation, etc.), are in close interdependence and maintaining balance, that is, the correlation that must exist between them. , the macro-stability so necessary for the functioning of a national economy is ensured.

Analyzing global and structural economic and social content, with the economic-financial and social effect on the state of a nation, the article highlights, based on the study carried out, the need to carry out analyzes to ensure the identification of slippages that have the effect of breaking the correlations, modifying them.

On the other hand, it is noted that a series of statistical indicators, reflecting phenomena in the economy such as unemployment rate, inflation rate, export evolution, labor productivity evolution, the evolution of the number of employees and others, must be analyzed both individually from the point of view of content and effect, but must be studied in the close correlation that must exist between them.

From the practical study, using the statistical-econometric model of simple direct regression, we have highlighted the way in which the labor force, that is the number of employees, as well as the evolution of exports play an important role in the national economy. Based on the calculated parameters, future estimation can be made on the way in which these macroeconomic variables, which are in different correlations, must evolve, in order to maintain them within a real economic growth and maintain macrostability. Of course, the two examples of using these simple linear regression, can be extended to the analysis of multiple regressions, in which the influence of several factors on the growth of the Gross Domestic Product, considered in the present analysis as the resultant statistical variable, can be highlighted.

References

1. Anghelache, C., Anghel, M., Iacob, Ș.V., Bîrsan, O. (2019). Analysis of the Effect of Acceleration in Dynamic Models. *International Journal of Academic Research in Accounting, Finance and Management Sciences, 9* (4), October 2019, 43–48

2. Anghelache, C., Anghel, M.G. (2016). *Bazele statisticii economice. Concepte teoretice şi studii de caz*, Editura Economică, Bucureşti
3. Anghelache, C., Sacală, C. (2016). *Theoretical model used for macroeconomic analysis*, Romanian Statistical Review, Supplement, 7, 57-60
4. Anghelache, C., Mitruţ, C., Voineagu, V. (2013). *Statistică macroeconomică. Sistemul Conturilor Naţionale*, Editura Economică, Bucureşti
5. Céspedes, L.F., Velasco, A. (2012). Macroeconomic Performance During Commodity Price Booms and Busts. *IMF Economic Review,* 60, December, 570-599. NBER Working Paper No 18569 (Cambridge, Massachusetts, National Bureau of Economic Research)
6. Corbore, D., Durlauf, S., Hansen, B., (2006). *Econometric Theory and Practice – Frontieres of Analysis and Applied Research*, Cambridge University Press, United Kingdom
7. Dornbusch, R. Fischer, S. Startz, R. (2007). *Macroeconomie - traducere*, Editura Economică, Bucureşti
8. Linton, O. (2016). *Probability, Statistic and Econometrics*, Academic Press
9. Lucas, R.E. Jr. (2003). *Macroeconomic Priorities*, American Economic Review, 93(1), pp. 1-14
10. Müller, U.K. (2007). *A* Theory of Robust Long-Run Variance Estimation. *Journal of Econometrics*, 141, 1331-1352
11. Newbold, P., Karlson, L.W., Thorne, B. (2010). *Statistics for Business and Economics*, 7th ed., Pearson Global Edition, Columbia, U.S.