THE PRIMARY INDICATORS TO MEASURE ECONOMIC PERFORMANCE

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Abstract

In the presenting and analyzing this article, the author took into account statistical indicators of economic activity for substantiating managerial decision at the company level.

The characterization of the results of the economic activity implies the use of a system of result indicators, which include both indicators of physical production and synthetic - money indicators.

Physical indicators are related to the specific nature of the economic branch of the economic agent, being different in industry from agriculture, construction, transport, commerce or tourism. Within the branches, indicators are different across groups and subgroups of activities. The classification of a company in one or another branch of activity is carried out according to the principle of preponderance of the volume of activity

Keywords: *macroeconomics, macroeconomic account, macroeconomic model, regression model, dynamic analysis, statistical indicators*

JEL Classification: C15, O11

Introduction

According to the specialists in the field [9], in order to analyze the production processes, balancing the resources with the use of the economic goods, the economic subjects aggregate by branch, ie by types of activities. Branches are homogeneous units that produce the same product or a group of similar products. The use of this criterion allows the analysis of the technical and economic relations in the production process, independent of the institutional context in which they take place. The use of this criterion in the *National Accounts System* allows the compilation of the input-output table and, based on it, the analysis of the links between the branches.

The statistical dictionary[1] presents the term of the branch of the national economy: „an ensemble of units constituted according to the criterion of the social division of labor, whose activity takes place in an organized form (enterprise, organizations, institutions) and performs identical or similar socio-economic functions.

1. Under the editorial board prof. M. Biji, „Economic statistical dictionary", Editura Centrală de Statistică, Bucharest, 1961, p. 107

The notion of the branch of the national economy (industry, agriculture, construction, etc.) and the notion of branch of industry, agriculture etc. have to be distinguished. The latter include those activities that share the characteristics of the production process and the products obtained.

According to some authors [15], the branch of the national economy is: „*the totality of activities that have a homogeneous character and are organized in the social division of labor. Separation of activities within the whole of the national economy in homogeneous groups is a statistical work known as < Classification of the branches of the national economy> For complex economic units where activities belonging to different branches are carried out, the classification is distinct for each activity in the branch branch".*

Literature review

Andreou, Ghysels and Kourtellos (2013) addressed aspects of how to use data in macroeconomic analyzes. Anghel, Anghelache and Samson (2017) analyzed the methodological provisions regarding the comparability of the result indicators. Anghel (2015) highlighted the importance of using statistical indicators in economic analyzes. Anghelache, Anghel, and Dumitru (2018) analyzed how macroeconomic performance indicators were calculated. Anghelache and Anghel (2016) presented the indicators used in the studies of financial and economic results. Anghelache, Mitruț and Voineagu (2013) highlighted the main aspects of macroeconomic statistics. Anghelache (2008) presented and used indicators and models applied in the analysis of macroeconomic outcomes. Chetty (2009) researched aspects of welfare analysis. Clark and Ravazzolo (2015), and Ftiti (2010) studied elements of macroeconomic performance.

Research methodology, data, results and discussions

• Physical indicators for industrial firms

Industrial production (PI), as defined by the NIS [17], is the direct and useful result of the economic agents with industrial activity, as well as of the subunits assimilated to them, being characterized by

a) is the result of direct business, and indirect results such as reusable materials, raw material scrap etc are not taken into account;

b) it is the result of useful activity, not including the scrap;

c) it is the result of the business activity of the economic agents, so it will not include the goods purchased outside the unit and delivered as such without any processing;

d) is the result of industrial activity, so it will not include results from other activities (agricultural, commerce, construction, etc.) carried out as extraprofile.

After finishing, the elements included in industrial production are:

a) Finished products (PF), representing those products whose processing has been completed in the unit and are intended for delivery to other economic agents or consumed in the investment or non-industrial sector of that unit.

(b) Semi-finished products (S) are products of their own production which have undergone one or more stages of processing and which either pass to the following sections for processing finishing in order to obtain a finished product or are delivered as such to other agents economic.

c) Unfinished production (N) is an intermediate element between the raw material and the semi-finished product, or between the semi-finished product and the finished product, representing the production whose execution, finishing or assembly process has not been completed, the process being underway. The value of unfinished production is included in the volume of the economic activity of a period as a balance, ie as a difference between the volume of the unplanned production stock at the end of the N2 and the beginning of the N1 period, the valuation being made at the cost of production.

d) Industrial services (services) include activities for other economic agents, but also for non-industrial sectors in their own unit or for investments, works aimed at: restoring the value of using certain products or raising the qualitative performance of some existing products by finishing, painting, etc.

Industrial Physical Production (PFZ) [15], [16] measures the results obtained in the production process under „natural" physical-material expression, by receiving the quantities of the various material and non-material goods (finished products, semi-finished products, services and industrial works) by an economic agent over a certain period of time.

After [14], industrial physical production is a „vector indicator", its components being interpreted and judged distinctly, according to their specificity and destination, which can not be totalized or aggregated.

The physical expression of the results of the activity is related to the main particularities and characteristics of the different values of use, being performed:

- in natural (physical) units: by length, surface, weight, capacity, concentration, number of copies etc .;
- in conventional natural units, by transformation into equivalent products (eg coal, coal-fired power, tractors, conventional power tractors, etc.);
- in work units.

I consider that the physical production includes the results of the economic activity carried out at the firm level, structured according to the phy-

sical - material measure unit in which it is expressed. In order to quantify production in natural units, a homogeneous set of products must be identified in terms of their technical and economic characteristics and their utility. Quantification in natural units is the basis for applying all other forms of quantification of production.

The advantage of the method is the accuracy with which it reflects the volume of economic activity for a particular type of product.

The disadvantage of the method lies in its limited scope. If a product i is made up of several organizational sections or links belonging to the same producer or several manufacturers, the variety of which is denoted by j $(j = \overline{1; m})$, then the total physical volume of production for the product i, vertical aggregation is:

$$\sum_{j=1}^{m} qij$$

Aggregation of physical volume is possible only for the multitude of product manufacturers of the same type and not for the variety of products. It can be seen that products can not be summed up only vertically, as only homogeneity characteristics are present, namely, similar physical-technological characteristics. Even if the unit of measure of the products is the same, however, it is not allowed to sum them up.

Another form of quantification of industrial production is the conventional natural units

Quantification in natural - conventional units applies to a multitude of homogeneous products in terms of utility but heterogeneous in terms of technical - economic characteristics. Homogeneity is achieved with a coefficient k_i, which can be chosen according to the main characteristic of the product, the unitary realization time and the price.

The transform coefficient k_i is determined as the ratio between the product characteristic to be transformed and the characteristic of the standard product:

$$k_i = \frac{CPT}{CPE} \quad (1)$$

where:

CPT = feature of the product to be transformed;

CPE = characteristic of the standard product.

If the variety of products is considered in relation to the technical characteristic level $(i = \overline{1; n})$, then for the whole homogeneous production from the point of view of the utility of the products, the model becomes:

$$\sum_{i=1}^{n} q_i * k_i \quad (2)$$

If we take into consideration the possibility that the product, in a varied range, can be made within a single production unit or organizational links belonging to a single producer or considering that several manufacturers produce the respective products and their variety is denoted by j ($j = \overline{1; m}$), then for the whole volume of production the relation of determination becomes:

$$\sum_{i=1}^{n}\sum_{j=1}^{m} q_{ij} * k_i \quad (3)$$

k_i is the coefficient of equivalence determined as the ratio between the characteristic of the product and the characteristic of the standard product and thus serves as a homogenization factor of the production. This method widens the scope of production, but has the disadvantage of limiting itself to a lot of products that have the same utility. It is used as a form of quantification of industrial production and time units. In this case, the homogenization element of the production is the time for the output of a product, expressed in hours. Due to this fact, the method is considered by some authors to be the most faithful form of reflection of production, but its scope of applicability is reduced due to the high volume of work required.

If the variety of products $i=\overline{1; n}$, the technological operations to which the products $k=\overline{1; p}$, the variety of production units of the same manufacturer $j=\overline{1; m}$, to determine the volume of production in units of working time becomes:

$$\sum_{i=1}^{n}\sum_{j=1}^{m}\sum_{k=1}^{p} q_{ij_k} * t_{ijk} \quad (4)$$

relationship in which:

t_{ijk} = the unit time associated with the k technological process, to obtain the product and the organizational link j.

The advantages and functions of physical indicators in the managerial process:

- simple form of expression allows identification and tracking of orders and contracts;
- correlations with other indicators of economic activity such as consumption of raw materials, materials, energy, working time, salary fund can be made;

- it is possible to calculate the efficiency of using the factors of production (natural productivity, unit consumption of fixed and circulating capital, etc.);

- correlations can be made with financial indicators of economic activity such as costs, profit, etc.

- with their help, the index of the physical volume of production can be cached by groups of products;

- are used to develop useful indicators in international comparisons regarding the level of economic development (eg electricity / inhabitants).

The physical indicator of industrial production also has a number of limits:

- does not refer to the total volume of business carried out by an economic operator, not including, for example, the balance of unfinished production, which in large-scale enterprises may record high values;

- does not allow to highlight the technical level of production;

- does not differentiate results according to the qualitative performance of the products;

- the results can not be characterized either by economic agents or by higher levels of aggregation.

The main deficiency of physical indicators is that they can not be aggregated and can not be totalized for different products or services expressed in different units of measure.

For this, monetary expression is used.

In the case of the method of quantification of industrial production in units of value, the homogenization element is the price of a product and practiced by a producer j.

At product level, the value of physical output is:

$$q_{ij}\,p_{ij} \tag{5}$$

At the level of a manufacturer, the value of physical production is:

$$\sum_{i=1}^{n} q_{ij}p_{ij} \tag{6}$$

At the level of the producer group, the value of physical production is:

$$\sum_{i=1}^{n}\sum_{j-1}^{m} q_{ij}p_{ij} \tag{7}$$

The expression of production in aloric units allows all components of production, all products and all producers to be included in production indicators. As such, the main advantage of the method is its wide scope and its

disadvantage is the price level, which may benefit or disadvantage certain producers. As an example, the same physical volume of production is considered, for which the producer who practices a higher price is more advantageous in terms of the value of the produced output.

Physical expression of economic performance indicators allows them to be calculated on each branch of activity. Thus, in the following series we presented the physical indicators in agriculture, construction and transport.

- Physical indicators for agricultural firms are calculated on separate activities, the forms of identification being presented in table no.1.

- The physical indicators in the construction activity are established for each category of works have a category of building objects: industrial buildings, agro-technical constructions, social-cultural constructions, residential buildings, etc. For each type of building object, some indicators are used, which are presented in table no.1.

- Physical indicators for the characterization of the business of transport enterprises Transport enterprises have as their object the movement of persons and goods by means of vehicles. in relation to the means of transport used and the subject of the transport, there are the following indicators of the transport companies:

1. The rail freight transport indicators shall be calculated on the basis of the document entitled „consignment note" which provides the necessary information for the calculation of benefits and income at the cost of transport.

2. The indicators of freight car transport

The accounting documents that provide the information used in the calculation of the indicators are the roadmap and the transport letter, which confirm the transport and settlements between the beneficiary and the transport undertaking.

3. Indicators of shipments of goods

In external relations related to freight transport, shipping is predominant. The information for calculating the indicators specific to this type of transport is presented in the specific documents called chartering and bill of lading, which certify the goods loaded on the ship.

Port activities, through their diversity, involve the determination of a set of port-specific indicators, such as:

- the number of ships operated, which depends on the traffic capacity of the ladder (part of the port in which the vessels are waiting).

- the quantity of goods transiting through the port and which is dependent on the capacity of the berth front (ship mooring and operating front), the capacity of the plant and machinery storage facilities, and the capacity of the railways and ports within the port.

- port traffic expresses, in tonnes, the quantity of goods entering and leaving in and from river and sea ports.

4. Air Freight Traffic Indicators

The air freight transport has a reduced share in the total transport activity due to the high value and perishable character of the goods that are the subject of transport, but also the long distances that have to be traveled in a very short time. The document providing the cargo data, the sender and the recipient for the calculation of the indicators is the airframe.

5. Indicators of passenger transport in railway traffic

Transport activity indicators are calculated on the basis of travel documents called travel tickets.

6. Indicators of passenger shipping: number of traveled passengers (thousands of travelers); journey time (km).

7. The indicators of the transport by main oil pipelines refer to the weight of petroleum products pumped by main oil pipelines and arrived at the destination. The transport activity also uses a number of conventional natural indicators, such as conventional tonne - km in rail, road and water transport, and in conventional air traffic the traveler - km indicator is used.

In conventional units the transport volume ($\sum P_t$) is calculated by the relationship:

$$\Sigma P_t = \Sigma P_q + k \cdot \Sigma Pc\,, \tag{8}$$

ΣP_q represents the course of goods in tonne-km physical;

ΣP_c represents the journey time (in passenger-km);

k - the conversion factor, which is determined on the basis of the ratio between the cost of the traffic that is transformed and the cost of the base comparison traffic. The transform coefficient values are:

- in rail traffic 1 tonne-km = 1 passenger-km;
- in car 1 tonne-km = 0,18 passenger-km;
- in river traffic 1 tonne-km = 5,8 passengers-km;
- in maritime traffic 1 tonne-km = 4,966 passenger-km;
- in air traffic 1 tonne-km = 12,5 passenger-km.

- **The physical indicators for measuring the performance of economic agents in the field of internal trade and public food**

Businesses with economic activity ensure the closure of the economic circuit, mediate the relations between suppliers and beneficiaries: in the form of the exchange of goods. For the continuity of the supply and sales activity at the level of the wholesale and retail units, stocks are formed.

The main indicators of commodity stocks are:

- the absolute stock level;

- the average stock level ($\bar{S}$), which is calculated as a weighted chronological average of stock values (S_t) at different times and time intervals between moments (t_i);

- the stock rate is established as a ratio between the stock size existing at a time of the analyzed period (S) and the sales recorded in that period (Q). $r = \frac{S}{Q} * 1000$ The indicator expresses the required stock size for every 1000 RON (RON) receipts from the sale of the goods. The stock rate can also be calculated on the basis of the average stock of the survey period (month, quarter or year):

$$r = \frac{\bar{S}}{Q} \cdot 1000 \tag{9}$$

- the sales safety can be expressed using the stock indicator - expressed in days - turnover (s) for wholesale units or stock - day expression - sales (S') for retail units:

$$s = S: \frac{R}{\Delta Z} \tag{10}$$

or

$$s' = S: \frac{R}{\Delta Z} \tag{11}$$

in which:

S = existing stock at a time;

R = total turnover of the month, quarter or year;

Q = retail sale or sale;

ΔZ = the number of days of that period.

This is the indicator that estimates the number of days that the sale is assured without performing any replenishment of the unit under review.

- the speed of movement of goods (V) is the indicator showing how many days the average stock is exhausted if average daily sales.

$$V = \frac{\bar{S}}{Q} = \bar{S}: \frac{\bar{Q}}{\Delta Z} = \frac{\bar{S}}{Q} * \Delta Z \tag{12}$$

$\bar{S}$ - average stock of the surveyed period;

$\bar{Q}$ - average daily sales.

- inventory rotation is a qualitative indicator of the activity of commercial enterprises, showing how many times the stocks are renewed during the research period or how many times the volume of sales is covered by the average stock, and is calculated by one of the following relationships:

$$nr = \frac{Q}{S} \quad (13)$$

or

$$\frac{\Delta Z}{V} \quad (14)$$

• Indicators for measuring the performance of foreign trade firms

The presentation of the activity of economic agents with foreign trade activities is performed by the following physical indicators:

- volume of exported / imported goods;
- the share of export to production (g) is established by the relationship:

$$g = \frac{E}{Q} * 100 \quad (15)$$

in which:

E = the volume of exported production;

Q = the whole production.

- the rate of dependence on external supply markets (m) expresses how much of the consumption of raw materials (M) is ensured from import (I) or how much of internal resources (R) are filled in from import.

$$m = \frac{I}{M} * 100 \ \ or \ \ m' = \frac{I}{R} * 100 \quad (16)$$

• Activity indicators for tourism companies

The results of the activity of the tourism companies are the tourism product, which is a service performance. The main indicators of this activity are:

- total number of tourists $(\sum T)$;
- the total number of days - tourist $(\sum z * T)$ (17)

z = duration of tourism activity expressed in days

- the average number of tourists $(\overline{T} = \frac{\sum z*T}{\sum z})$ (18)
- the average duration of stay $(\overline{z} = \frac{\sum zT}{\sum T})$ (19)

In companies operating in the service sector, I believe that the following indicators for assessing the economic activity can be calculated:

1. Refused Order Rate (RCR) expressing promptness in delivering orders and preoccupation to ensure quality of service:

$$RCR = \frac{Command\ value\ declined}{total\ orders\ delivered} \quad (20)$$

or

$$PCR = \frac{order\ number\ refused}{total\ orders\ received} \quad (21)$$

1. The delivered order rate (RCL) expresses the company's respect to customer requests, as well as the existence of organizational problems in the operation of the firm.

$$RCL = \frac{value\ of\ delivered\ orders}{value\ of received\ orders} \quad (22)$$

or

$$RCL = \frac{number\ of\ delivered\ orders}{number\ of received\ orders} \quad (23)$$

In public administration, the results of the activity can be assessed using the following indicators:

1. Finalized Investment Ratio (RIF), expressing the efficiency of using available funds for investment.

$$RIF = \frac{value\ of\ completed\ investments}{funds\ available\ for investment} \quad (24)$$

2. The interest for investment activity (IAI) expresses the public administration's preoccupation for obtaining extra-budgetary funds for the investment activity.

$$IAI = \frac{fonduri\ obţinute\ din\ proiecte}{fonduri\ de\ la\ buget\ destinate\ investiţiilor} \quad (25)$$

3. The rhythm of the use of project funds (extrabudgetary) and their materialization in finalized investments is calculated by the rate of investment in completed projects (RIPF).

$$RIPF = \frac{investment\ value\ of\ completed\ projects}{total\ value\ of\ completed\ investments} \quad (26)$$

4. The finality of the investment activity (FAI) is the indicator that expresses the concern of the public administration for the completion of the investment works.

$$FAI = \frac{investment\ value\ completed\ from\ projects}{investment\ value\ completed\ from\ budget\ funds} \quad (27)$$

The physical indicators of the economical activities carried out at the level of the company were synthetically presented in table number 1, expanding the coverage to other branches of the economic activity.

Conclusion

On the basis of economic circuits, the macroeconomic indicators that express the results obtained in the national economy are determined. Macroeconomic outcomes can be expressed in quantitative form, based on physical or value indicators, thus obtaining a totalizing magnitude that expresses the results obtained across the national economy over a period of time.

The calculated macroeconomic indicators offer the possibility of analyzing concrete results over a period of time and can help with a structural analysis so that, by applying statistical methods, they can intervene in order to increase production. It should also be noted that macroeconomic aggregates play an important role in this direction.

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Physical measurement indicators for company results

Table no.1

Industry	Agriculture	Construction	Rail freight transport	Freight car transport	Shipping of goods	Air freight transport	Passenger transport in rail traffic	Passenger shipping	The volume of transport by main oil pipelines	Indoor trade and public catering	Foreign trade	Tourism
Industrial production with elements: - finite product; - semi-finished goods; - unfinished production; - industrial works and services	- harvest volume; - landscaped or treated areas; - no. of animals derived products obtained therefrom	For the hall: - , sq m built-up area'. For deposits: - „tones or cubic meter capacity". For roads or railways: „Km length". For roads or railways: „Km length". For accumulation lakes „cubic meter". For hotels, showrooms „no. places". For housing: „no. apartments „ „ sq m area" Surface indicators for locks.	- goods shipped in tonnes); - goods arrived in tonnes; - goods carried on subdivisions of the railway network; - the volume of goods transported in containers; - the number of containers transported; - wagons loaded; - unloaded wagons; - the course of goods.	- goods shipped in tonnes); - goods flow:PARAM = Σqd q- tonnage of goods transported; d = distance in km.	- shipped goods = goods carried; - the weight of goods loaded on ships, - goods flow; - No of goods operated; - the quantity of goods transiting through the port; - port traffic.	- goods shipped; the course of goods;	- traveled passengers; - incoming travelers; - traveled passengers; travelers' parks; - average passenger distance.	- no. traveled passengers (thousands of travelers); - travelers' journey;	- the volume of „transported goods" includes the weight of petroleum products pumped by oil pipelines reaching the destination.	- the absolute level of stocks, - average stock levels, - stock rate; - sales safety; - the speed of movement of goods; - inventory rotation.	- the volume of exported / imported goods. - part of the export to production; - the rate of dependence on external supply markets.	- no. total tourists; - total number of tourist days; - the average number of tourists; - average length of stay.