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Theoretical and Methodological Approaches to the Statistical Support of the Structural Transformations in the Economy

The challenges of today caused by the aggravating economic crisis in Ukraine, numerous threats to the national security, in particular the ones resulting from invasion and occupation of the Ukrainian territory by the Russian army, massive destruction of the national economy are the evidence of the need in revision, elaboration and development of efficient structural transformation processes in the Ukrainian economy. This involves the need in devising and implementing an adequate information and analytical support that would allow to set up tactical and strategic dimensions of this reconstruction. This determines the relevance of the research topic.

The research objective is to highlight the meaning of the notions “structure”, “structural shifts”, “structural crisis”, “transformation”, “transformation process”, “structural transformation”, to reveal their common and distinct features, to outline the criteria of the efficiency of structural shifts and ways of enhancing the structural transformation processes in Ukraine, and to describe their assessment techniques. The objective was achieved using empirical, theoretical and complex methods of statistical research: observation, comparison, abstraction, analysis and synthesis, formal logic, analogy and deduction. The importance of information and analytical support at each hierarchical level of economic management, from business enterprise to macro-economy, is demonstrated. A series of meaningful approaches are given, with proposing to use them, depending on the need and circumstances, either separately or in various combination or as an integrated set.

Characterizations of existing types of assessment from the qualitative and quantitative perspective allowed to give descriptions of their statistical algorithms, and to substantiate the feasibility of the universal approach based on a universal metric. It enables to assess qualitative and quantitative parameters of transformations, determine their efficiency, and (in case of need) to rank the objects under study. The practical value of this article is that the proposed techniques can be used in the decision-making process pertaining to structural transformations in Ukraine at all the hierarchical levels of economic management, from business entities to the macro-economy.

Key words: *transformation process, structural transformation, structure of economy, mass of structural shifts, speed of structural shifts, intensity of structural shifts, structural policy.*

Introduction. The present-day economy of Ukraine focused on an extensive development has an ineffective structure dominated by resource-, material- and energy-intensive industries. The negative impact of financial crisis, unstable financial performance in business sector caused by volatility of demand and supply, prices of production inputs and outputs pushed up the debt burden on the domestic budget system, accompanied by the shrinking budget support of enterprises that suffered direct financial losses due to the changed global economic conjuncture. Besides that, the devastating effects of the Russian invasion necessitate all-out reconstruction, recover and growth

of the national economy, dissemination of advanced technologies capable to enhance the quality of output in the business sector (compliant with international standards), reduce production and distribution costs, energy consumption, increase the environmental safety, and ensure the transition to the sustainable growth in financial and economic performance. It is important to devise a system of targeted and well-designed actions aimed at the efficient formation and utilization of the resource capacity, implementation of innovation-based strategic directions of development with due consideration to the impact of factors originating in the internal and external environment.

It means that Ukraine needs to create an effective and flexible system for management of structural-dynamic transformation processes capable for comprehensive and effective utilization of resource, innovative, financial, economic, institutional and technical resources, in order to achieve and implement strategic competitive advantages in the business sector and manufacture the products with the quality compliant with global standards.

The efficiency of a structural transformation, like any other complex socio-economic phenomenon or process, is heavily dependent on a right choice of methodological approaches to interpreting this notion as an economic category and providing an objective performance assessment. These requirements can be met by using a statistical toolkit of the study. It is important that the structural transformation process per se be effectively guided and consistent with the preset goal and objectives. The postwar renewal of the economic structure in its transformation context, therefore, requires specific analytical approaches to the performance assessment with the coherent the actions on their implementation, which are proposed in this article.

Literature review. Issues pertaining to the structural transformations in the economy have been given worthy attention in the literature on economics. Their research has been in focus of prominent foreign (K. Arrow, D. Bell, E. Domar, C. Drury, C. Edquist, C. Freeman, R. Harrod, A. Johnson, B.-A. Lundvall, G. Mankiw, A. Marshall, C. McConnell, S. Metcalfe, R. Nelson, P. Samuelson, R. Solow, R. Stone, and others), and domestic researchers (V. Aleksandrova, L. Antoniuk, V. Besedin, B. Danylyshyn, S. Dorohuntsov, V. Heiets, A. Khodzhaian, E. Libanova, D. Lukianenko, I. Lukinov, O. Osaulenko, Yu. Pakhomov, T. Romanov, T. Shynkarenko, S. Yerokhin, and others). Their research covers the interpretation and typology of structural transformation shifts, essential features of transformation processes in socio-economic systems of various scales, structural assessments of the processes in various dimensions (evolutional, sectoral, institutional or technological).

Yet, we are witnessing radical transformations, both socio-economic and structural, in almost all the hierarchical chains of the national economy. They cover the territories affected by warfare that caused all-out destruction of factories, industries and regions. This motivates us to searching for unconventional approaches to facing the challenge of economic recovery of Ukraine, in practical and theoretical and technical dimensions.

There is an urgent need in elaborating and implementing a robust, accurate and effective information and analytical support that would allow for detailed analyses and predictions of the scales, dynamics, quality, speed and intensity of the

structural-dynamic transformation processes using an evidence-based system of relevant metrics, techniques and methods, which would be laid as the basis for optimal management decisions.

Research results. The formation and development of business sector and economy as a whole is commonly associated with their structural transformation process. It has manifestations at all the hierarchical levels of management, from international and national, to business entity, activity or production. At each management level, the structural transformation complies with a certain set of criteria. The criterion of structural policy efficiency at country level is the secured interests of individual, community and government in the economy, domestic and international policies, defense, information and social domains, in moral and cultural life, with reference to the national security concept.

It needs to be born in mind that Ukraine has accumulated a heavy negative potential over years, which is a source of regressive structural change: technological degradation of factories, outdated facilities and equipment, shortage of circulated assets, insolvencies, etc. at micro-level; increasing distortions in industrial and regional economic structure dominated by monopolies at meso-level; growing macroeconomic disproportions between heavy and light industries, saving and consumption, industries and regions, structures of imports and exports, etc. at macro-level. It is compounded by the warfare that led to massive destruction of industrial facilities and infrastructures in Ukraine. This circumstance prioritizes the problem of effective structural-dynamic transformations.

The abovementioned topic has been on the agenda of theoretical and practical scientists. The issue of structural-dynamic transformation processes has been in focus of generations of researchers in many countries. The current scientific literature offers many theoretical, methodological and practical developments on the issues in question. However, a single approach to the definition of the notion “structural transformation”, standard methods for its statistical assessment and improvement have not been elaborated so far, with many current developments being on the crossroads of the research effort.

As regards the notion “structure” (lat. structura), its Latin meaning is location and interlinks of the components in an integrated object. A structure features stable orderliness in space and time, immutability, integrity and cohesion of components and subsystems.

It should also be born in mind that researchers often use notions like “structural crisis” and “structural shifts” that essentially denote a short-time structural change. In the first case, a structural change seems to reflect a conflict of the old economic structure with the challenges of the new one, has negative

implications for the business performance. Its features are production recession, massive unemployment, etc. Given that the structural shifts include both negative and positive segments of the assessment scale, the structural crisis is their component characterizing only the negative dimension. In the second case, the occurrence of structural shifts tends to feature the positive side of the process. As far as “structural change” is concerned, it is prolonged in time. Besides that, the notion of structure is interpreted in the general and applied context, i.e., with reference to either a set of interacting elements in a specific location or a socio-economic system.

It needs to be noted that the notions “transformation” and “transformation process” are not fully identical, although they have common origins and characterize a change in a phenomenon or a process supposed to stabilize the performance of an object under study. The difference between them is that “transformation” implies a characterization of the static condition of an object under study at a given moment of time, whereas “transformation process” refers to a dynamic process evolving in space and time. This notion can be extended or narrowed in view of the research purpose and objectives. Based on this approach, a transformation process is defined as one reflecting the performance and development of economic systems [1]; a combination of changes entailing a new economic status, specific economic results, setting up new objectives and missions [2]; system development involving evolutionary and revolutionary change, transitions from stability to instability and vice versa [3]; extinction of some elements, features or qualities along with the occurrence of another ones [4]; radical transformations in an economic system, its destabilization and sliding to disequilibrium state, quantitative and qualitative change of various intensity and directions [5]; a process involving not only the system’s transformation, but its formation [6].

As regards the structural transformation as an economic category, it constitutes a set of correlating components of an economic system at various levels of national economy management, integrated by the single hierarchical system and characterized by qualitative transformations, quantitative dimension of dynamic processes, mobility and ability to change under the effect of endogenous and exogenous factors. This allows for exploring socio-economic trends and their correlations, assessing structural variations, with giving them required economic and statistical characterizations. Research into structural transformations involves absolute and relative indicators.

The process of structural transformations has cross-industry nature, because it occurs in almost all the human activity domains. It can be found in agriculture, economy, medicine, biology, geology,

politics, law enforcement entities, etc. This research is devoted to analysis of its economic dimension.

The following criteria for structural transformations are outlined in economic literature [7]:

- industry: the occurrence of industry disproportions and change in cross-industry links;
- technology: changing proportions between low, medium and high technology segments, resulting from the growing share of advanced technology segments;
- structure of production assets: a higher share of the disposed equipment than the one put in operation, reflecting the process of overall ageing of production assets.

The structural transformation is country-, region-, enterprise- or firm-specific. But it has a set of common features due to uniformity in operation, formation and development of the economy. This uniformity determines the nature, phases, terms and schemes of the structural transformation. At enterprise level, the structural transformation aims at enhancing the efficiency of technological renovation management, which determines the development of the business components. They can be:

- more rapid increase in the share of revenues from sales of high-tech products than the overall sales;
- increasing exports of high-tech products;
- labor productivity growth entailing an increase in salaries, social deductions, amortization and operational profit; these are the main components in the added value creation, which, in proportion to the average number of employees, reflects the labor productivity;
- the increasing serviceability of fixed assets, innovation activity and business profitability.

The structural transformation at business enterprise level aims at enhancing the efficiency of resource concentration in more effective units, i.e., the ones most capable to create new products and technologies, inventions and patents per unit of expenditure, to accelerate the capital turnover, and to increase the overall performance and financial resilience in view of the market demand and risk. To implement these objectives, a business entity must consider the specifics of management in the competitive environment, factors of risk and success. Improving the management on knowledge-based principles has significant importance in this context.

As regards the structural transformation of the Ukrainian economy, its main purposes are as follows [6]:

- changing the proportion between military and civil sectors, which is especially important today;
- increasing the share of R&D intensive technologies that determine the global technological evolution;
- increasing the share of products for domestic final consumption;
- economic restructuring, to reduce the resource consumption in the industry through

technical and technological solutions helping decrease production costs, energy- and material-related costs in particular;

- changing the proportion between foreign and domestic investment;

- changing the share of capital investment in the active part of production assets, with emphasis on the latest technology – electronic, computing, optical and other;

- changing the economic structure by ownership form;

- changing the distribution of taxes;

- restructuring the exports and imports;

- restructuring the market by commodity, segments and competitive environment;

- restructuring of the production capacities;

- restructuring of the R&D sector, etc.

A criterion of the structural policy success is the efficient spatial distribution of resources for their rational use as a premise for social welfare compliant with national interests and global standards.

The appropriate management toolkit is theoretically known. But the knowledge-based management has not yet become a common business practice, in particular due to the lack of adequate methods for actual performance assessment. Statistical methods for assessment of the structural policy efficiency should, therefore, be elaborated and used.

The structural transformation has conventionally been studied by the distribution of a variable determined by a scale, more often a nominal one. This method is attributed to the purpose of structural transformation analyses – to reveal the tendencies and patterns in the formation of a population of statistical units under study. A typology of the population units is made by grouping the units with priority, dominant or insignificant character. Indices characterizing the structural transformation process are measured using individual and composite parameters. In the former case, these are share, accumulating share, absolute and relative change in the share, load factor and coordination factor. In the second case, it is a set of composite indices of distribution, with extreme values of an index in overall and by group, average level of varying index (with accounting for asymmetry of distribution), character of variation and form of distribution; composite indices used in comparisons of two or more units in space and time. Special scientific literature [7–14] offers various techniques for structural transformation assessment by qualitative and quantitative indices. They include the mass of structural shifts, which algorithm is given below. This index lays the basis for estimations of other indices, its components are used in analyses of structural transformation processes across economic sectors [8; 15]. However, this index does not give an adequate characterization to small structural shifts

that may have an annual cumulative impact on the final result. Often this is caused by the birth of new more advanced sectors of activity and extinction of old and ineffective ones.

The scale of structural transformation processes is, therefore, measured by index of mass of structural shifts (M), estimated as the difference between the value of a structural component (share) in the reporting period d_1 and the reference period d_0 by the formula (%):

$$M = d_1 - d_0. \quad (1)$$

Given the qualitative-quantitative and dynamic-structural nature of the structural transformation process, the expediency of its in-depth study from the perspective of its efficiency and impact of exogenous and endogenous factors on it, and the need for a quantitative measurement of the intensity and pace of economic changes, a special economic-statistical methodical toolkit is used.

An important part of the structural transformations analysis over time is determining the pace and speed of the analyzed processes, which are measured by indices of average pace (T) and speed (V) of the processes [10]. The average pace index is estimated as follows:

$$T = \frac{d_1/d_0}{t}, \quad (2)$$

where t is the time in which a structural shift occurred.

This index measures a structural transformation tendency over a unit of time.

The average speed index is estimated by the formula:

$$V = \frac{d_1 - d_0}{t} = \frac{M}{t}. \quad (3)$$

This index measures the change in the mass of structural shift per unit of time.

It is also important to understand that the process under study is subject to significant impact from the structural shift inertia due to the ostensibly stable course of development, non-intervention (or minor intervention) of certain factors, including the factors of local, regional or government origins. This problem can hardly be avoided, as their impact cannot be eliminated. Besides that, due to non-linearity and impossibility to separate the shifts from one another (because it would violate the causality principle), this index can never be accurately estimated or predicted.

An important index in analyses of structural transformation processes is the one characterizing the shift's potential. It can be determined as the value of shift mass up to the exhaustion of its full energy. Basically, it is the value of structural change in an economic object under study. In global and Ukrainian

practices, the structural transformation is measured by linear coefficient of absolute structural shifts, linear coefficient of relative structural shifts, mean square coefficient of relative structural shifts and average coefficient of absolute structural shifts with a constant or variable base of comparison.

The linear coefficient of absolute structural shifts allows to characterize the overall transformation of all the structural components, but does not allow to assess their vectors. It is estimated by the formula:

$$K_{LA} = \frac{\sum |d_1 - d_0|}{n}, \quad (4)$$

where n is the number of gradations in the structures.

This index enables for quantitative assessment of the dynamics and scales of the structural transformation processes. Its value varies from 0 to 1 or from 0 to 100% [10].

Essentially, this index is a ratio of the cumulative absolute accretion in the share to the number of structural parts, and it characterizes an average change in the share over the period under study. The function of module is used to eliminate positive and negative values that may occur in estimating.

The linear coefficient of relative structural shifts (K_{LB}) characterizes an average relative level of the transformations, it is estimated as follows:

$$K_{LB} = \sum \left| \frac{d_1}{d_{1-1}} \right| / d_1. \quad (5)$$

This coefficient characterizes the intensity of the process in question. Its growing value means the increasing significance of structural transformations in an object under study. When the structural transformations do not occur (with the coefficient's value being zero), the structural shifts are considered as nonexistent [9].

It should be noted that when heterogeneous populations are analyzed, the values of abovementioned indices will often be formal, because structural transformations of various orders can be averaged. Using the mean square coefficient of relative structural shifts is, therefore, expedient, which shows an average difference of deviation of compared structural transformations measured as percentage points. It is estimated by the formula:

$$K_{kvw} = \sum \left(\frac{d_{ij}}{d_{ij-1}} - 1 \right)^2 \cdot d_{ij-1}. \quad (6)$$

This index can more adequately react on strong fluctuations in the structure and less prone to the impact of insignificant factors [9].

We believe that the intensity of structural transformations should be estimated using the coefficient of structural transformation which algorithm accounts for the number of economic activities. The average deviation of the compared shares is determined by the mean squared coefficient

of absolute structural shifts (K_{KA}) (in percentage points), estimated by the formula [13]:

$$K_{KA} = \sqrt{\frac{\sum (d_1 - d_0)^2}{n}}. \quad (7)$$

In a comparative analysis of structural transformations in two studied economic objects, the Spearman's rank correlation coefficient (ρ) is also used, estimated by the formula [8]:

$$\rho = 1 - 6 \sum d^2 / n(n^2 - 1). \quad (8)$$

or, in case of related ranks:

$$\rho = \frac{\left[\frac{n(n^2 - 1)}{6} - \sum d^2 - A - B \right]}{\sqrt{\left[\frac{n(n^2 - 1)}{6} - 2A \right]} \sqrt{\left[\frac{n(n^2 - 1)}{6} - 2B \right]}},$$

where $\sum d^2$ is the sum of the squares of the difference between ranks;

$$A = U^3 - U, B = V^3 - V,$$

U, V are the number of correlations in each analyzed structure; n is the number of paired observations.

It is a non-parametric measure of the statistical correlation between two variables, and it is used in analyses of correlation between phenomena by an ordinal scale. Due to this, analyses acquire the system nature. At the same time, this index estimates a level and vector of the correlation. Its value varies from -1 to $+1$. When the Spearman's rank correlation coefficient equals to 0, the correlation is none, when it equals 1, the correlation is direct.

The significance and dynamics of structural transformations is measured by integral indices of A. Salai and K. Gatev. A specific feature of these indices is that their value accounts for the intensity of changes in groups, the share and number of groups in compared structures. When their value is higher than 10%, it shows instability of the structure recommended for analysis.

An analysis of structural transformations involves the solution of a dual problem. It is about (i) concentration of the population units in groups and their distribution; (ii) estimating the structural shifts over time. This assessment is usually performed by indices such as disparity ratio of Kurisheva and concentration ratio, with the values varying from 0 to 1. The distribution is more even when the indices approach zero and less even when the indices approach one. The same variation range is featured by the Gatev coefficient, allowing to characterize transformation processes over time, with the significance of structural change increasing as the coefficient is approaching one. It can be estimated by the formula:

$$K_{Gatev} = \frac{\sum (d_1 - d_0)^2}{\sum d_1^2 + \sum d_0^2}. \quad (9)$$

A specific feature of this index is that apart from the parameters measured by the previous index it shows the number of analyzed groups. When it is used in analyses, it should be remembered that if the shares of structural components are equal in each time period, the resulting estimate will equal to 0, which puts its expediency in question [9].

The Salai coefficient (index) of structural shifts is estimated by the formula:

$$K_{Salai} = \sqrt{\frac{(d_1 - d_0)^2}{(d_1 + d_0)^2} \cdot n}. \quad (10)$$

Another worthy index is the Riabtsev coefficient of structural shifts. It allows to derive more accurate values for the deviation of indices of two structures from “normalized development of the structure”, and to produce the result by the proposed scale rather than by comparison. This coefficient is estimated by the formula:

$$K_{Riabtsev} = \sqrt{\frac{(d_1 - d_0)^2}{(d_1 + d_0)^2}}. \quad (11)$$

It is known that any kind of activity has a final goal, with the final result measured by effect and efficiency. This requires a specific research toolkit for determining an effect of structural transformation processes for the efficiency dynamics of the object under study. We believe that one of these tools may be the integral coefficient of the structural transformations' efficiency, estimated by the formula [13]:

$$\Delta E(d) = \sum (d_1 - d_0)(W_1 - W_0), \quad (12)$$

where $\Delta E(d)$ is the economic effect gained due to the structural shifts; d_0, d_1 are the respective shares of an activity and industry in the total output in the reference and reporting period; W_0, W_1 are the respective profits (or other measure of the effect) resulting from the business entity's operation in the reference and reporting period.

The abovementioned methodologies for structural transformation analysis, found across special literature, have analogous economic-statistical and technical features, but differ in width and depth of analysis, abbreviation marks, etc. Apart from elaborating on the author's opinion, this article attempts to sum up and unify a theoretical and methodological toolkit required in explorations of the structural transformation as an economic category. Hence, the theoretical and technical approaches highlighted in the article allow to compare several structural transformations in time and space, provide a substantiated description of the structural transformation processes in question, and lay a logical background for taking well-informed management decisions.

However, a structural transformation assessment should involve index method. It allows for breaking

the efficiency dynamics into two components: resulting from (i) change in the distribution of units or activities within a business entity by selected criteria, and (ii) the efficiency dynamics in economy's segments. This allows for estimating the distribution of resources and costs.

The efficiency tends to be measured by average rather than individual figures. An efficiency estimates like labor productivity measured for the population of business entities consists of the average estimates in individual entities. The overall labor productivity depends on the labor productivity in individual entities, on the one hand, and on each entity's contribution (share) in the total labor productivity, on the other. An analysis of average dynamics involves the problem of estimating a change in the average level under the impact of each mentioned factor. It can be solved by a set of related indices, with index of structural shifts (I_d) estimated as the ratio of variable composition index (I_z) to fixed composition index (I_f):

$$I_d = \frac{I_z}{I_f}. \quad (13)$$

Using index method supports well-informed management decision-making to be laid as the basis for actions on enhancing the structural transformation efficiency. We believe that this action must be as follows:

- enhance the structural transformation efficiency in the distribution and utilization of resources;
- enhance the efficiency through regulating the proportionality in distribution of resources and outputs;
- enhance the competitiveness by diagnostics of the market conjuncture;
- enhance the efficiency and intensity through regulating cost-effect dynamics;
- regulate the dynamics of effect with accounting to the cost-effect dynamics of resources;
- enhance the performance through assessing and regulating intrafirm relations;
- enhance the performance through assessing and regulating investment activities;
- secure the terms of compliance with norms and criteria though assessing their compliance.

Index of structural shifts constitutes the basis for determining the quality (Q) of structural transformations across economic sectors and shows a vector of socio-economic progress. It is estimated by the formula:

$$Q = I_d N, \quad (14)$$

where N is a vector of socio-economic progress [7].

It should be also born in mind that a positive effect of structural transformations in business entities' operation tends to be associated with an indirect impact caused by external effects in the business sector. A technology designed and created in one enterprise (firm) can be used, after modifications

or customizations, in other enterprises (firms). Structural shifts in the activities of business entities (firms) can be observed when own profit is not shared but invested in economic projects. One example of this effect is a positive impact of R&D on investment. Another example is digitalization of production processes across the business sector due to investment inflows once business entities (firms) have become investment-attractive [8].

Conclusions. Given the harsh conditions of today, the war-torn economy and previous sweeping crises, including economic ones, the Ukrainian nation faces a challenge of restoring the powerful structure of the national economy. But the postwar industrial reconstruction must rely on radical technological

modernization and structural transformation of the innovation capacity in the business sector as a pool of existing and potential resources to be used in implementing both tactical and strategical objectives. Methodological approaches to the definition of the notion “structural transformation”, elaborated on in the article, and a set of indicators, methods, techniques and theoretical approaches for its assessment allows for a sound economic analysis of the current situation and its objective assessment. They should be applied in view of the objectives and problems of research. A promising area for further research is the statistical support of economic management, in particular, the tourism and hotel complex.

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Національна академія статистики, обліку та аудиту

Теоретико-методологічні підходи до статистичного забезпечення структурної трансформації економіки

Проблеми сьогодення, пов'язані з поглибленням економічної кризи в країні, численними загрозами національній безпеці, насамперед унаслідок вторгнення й окупації нашої території військами РФ, масштабним руйнуванням структури національної економіки, засвідчують потребу в перегляді, розробці та розвитку ефективних структурних трансформаційних процесів в економіці України. У зв'язку з цим об'єктивною необхідністю є опрацювання й упровадження відповідного інформаційно-аналітичного забезпечення, що надає можливість визначати як тактичні, так і стратегічні напрями такої перебудови. Це й обумовлює актуальність окресленої проблематики.

Мета дослідження – висвітлити сутність і особливості понять “структура”, “структурні зрушення”, “структурна криза”, “трансформація”, “трансформаційний процес”, “структурна трансформація”, виявити їх загальні риси та відмінності, виділити критерії ефективності структурних зрушень, окреслити шляхи вдосконалення структурних трансформаційних процесів у країні, а також охарактеризувати методичні підходи до їх оцінки. Задля досягнення поставленої мети використано емпіричні, теоретичні та комплексні методи статистичного дослідження, а саме: спостереження, порівняння, абстрагування, аналізу та синтезу, формально-логічний, методи аналогії та дедукції.

Доведено важливість відповідного інформаційно-аналітичного забезпечення кожного ієрархічного рівня управління економікою країни, починаючи від фірми, бізнес-структури, підприємства і закінчуючи народногосподарським рівнем. З метою надання всебічної характеристики та оцінювання структурних трансформаційних процесів наведено низку конструктивних підходів, які (залежно від потреби та ситуації) запропоновано використовувати як кожний окремо, паралельно з іншими, так і в цілому в повному обсязі.

Виокремлення наявних видів оцінювання з позиції якісно-кількісної характеристики дало змогу сформулювати статистичну оцінку кожного з них, обґрунтувати доцільність використання універсального підходу, що ґрунтується на побудові універсального показника. Це надає можливість оцінити якісні та кількісні характеристики структурних трансформаційних перетворень, визначити рівень їх ефективності та за необхідності – визначити рейтинговий рівень об'єктів, що розглядаються. За результатами

дослідження рекомендовано забезпечувати інформаційну спрямованість показників з огляду на процедури їхньої стандартизації з поділом на стимулятори і дестимулятори.

Практична цінність цієї статті полягає в тому, що запропоновані методичні підходи можуть бути використані під час обґрунтування та прийняття управлінських рішень у процесі проведення в країні структурних трансформаційних перетворень на всіх ієрархічних рівнях управління економікою, починаючи з підприємств і закінчуючи економікою країни в цілому.

Ключові слова: трансформаційний процес, структурна трансформація, структура економіки, маса структурних зрушень, швидкість структурних зрушень, інтенсивність структурних зрушень, структурна політика.

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