Issue   **Article**

Narboy Ganievich Karimov
Tashkent State University of Economics
Professor, Doctor of Economics,
k.narboy@gmail.com

Faridakhon Abdukarimovna Khamidova
Tashkent Financial Institute
Associate professor, PhD,
faridaxon.xamidova@mail.ru

Shakhzod Sherzodovich Saydullaev
Tashkent State University of Economics
Chief specialist, Independent researcher.
Uzbekistan
saydullaev0077@gmail.com

ENSURING ECONOMIC SECURITY THROUGH BENCHMARKING IN THE CONTEXT OF DIGITALIZATION

Abstract: In this paper, the issues and problems posed by digitization in the context of the analysis and evaluation of the economic security of the region under contemporary conditions of the economy are taken into consideration. Definitions are provided for the fundamental ideas and categories pertaining to the economic security of the region. Studies have been conducted on the various methodological approaches to the formation of integral characteristics of regional economic security. When developing forecasting methods, it is important to take into account the requirement to analyze the potential characteristics of the level of economic safety in the future. It is important to take into consideration the indicators in order to ensure that the forecasts that are developed are accurate.

Key words: economic security, region, digital technologies, forecasting, judgmental methods, indicator.
Language: English
Citation: Karimov, N. G., Khamidova, F. A., & Saydullaev, Sh. Sh. (2022). Ensuring economic security through benchmarking in the context of digitalization. ISJ Theoretical & Applied Science, 08 (112), 266-270.
Soi: http://s-o-i.org/1.1/TAS-08-112-23   Doi: crossref https://dx.doi.org/10.15863/TAS.2022.08.112.23
Scopus ASCC: 2000.

Introduction

Active digitization is one of the most important priorities that needs to be addressed in order for Uzbekistan to achieve a high level of economic security. The conveniences that are associated with digital technologies, in addition to the high level of precision that can be achieved in one's calculations when using said technologies, are what drive the relevance of the use of digital technologies across all areas of social and economic activity. Therefore, digital technologies are of critical significance for providing a precise estimation of the level of economic security and modeling a variety of scenarios for how it can be provided. The widespread application of digital technologies across a wide range of economic fields not only makes it possible to raise the overall level of economic security in the region, but it also makes it possible to develop a comprehensive set of preventative measures aimed at mitigating the adverse effects of a variety of macroeconomic dangers.

Modern Practice For Evaluating The Level Of Economic Security Of The Region

The ability of the territory to ensure sustainability and progressive advance in terms of economic self-sufficiency and integration with the national economic system of the economy despite the credible negative impact of adverse factors (security threats), as well as the ability to bolster resistance to various threats, lessen, and neutralize the effects of those threats, is referred to as the economic security of the region.

The difficulties associated with evaluating and monitoring the level of regional economic security that has been achieved are not caused by an insufficient lack of approaches and concepts; rather, these difficulties are caused by the presence of a large number of developed models within separate aspects of the performance of the modern economy.

In the broadest sense, monitoring economic security can be accomplished through either conducting an all-encompassing evaluation or making a priority selection of one of the economic security components and conducting an in-depth study on that component.

The economic security benchmarks and indicators are a set of parameters that provide an overall description of the state of the economic system. This group of indicators does not apply consistently across all geographic areas. In addition to the significant parameters that were selected, these indicators are meant to evaluate the distinctive qualities of regional economic systems and the potentially risky areas.

Uzbekistan has not yet established a common adopted, statutory methodology (practice) for calculating indicators and their thresholds to analyze the level of economic security of the regional economy. This is despite the fact that the security indicators system is a crucial component in ensuring and improving the economic strength of regional reproduction complexes. Despite this, Uzbekistan has not yet established a common adopted, statutory methodology (practice).

Expert estimation is carried out in order to give quantitative characteristics and qualitative description of the processes that are being analyzed; scenario evaluation and analytics, optimization methods, pattern recognition techniques, game-theoretic methods of multivariate sta.

Utilizing a number of different approaches, each of which has a number of benefits and drawbacks, is required in order to evaluate the level of economic security that the region possesses. In this context, we can differentiate the following procedures: methods that are based on the calculation and monitoring of key macroeconomic indicators, in addition to the benchmarking of these indicators; Methods based on the indicative analysis; the Delphi approach, which results in ranking regions by threat level; methods assuming the use of relative rate indices based on key macroeconomic indicators and their comparative movements; methods of technical analysis, including multivariate statistical analysis, game theory with nature, and other similar methods; methods using economic tools to assess the negative consequences of security threats through asset losses quantitative assay [3].

Existing methods for determining the economic security of a region include three main groups of indicators that involve: a single index (most often, these are relative values that are determined per capita); decomposition by singling out aggregated groups of primary indicators; assessment of damage (calculating an integral compromise (trade-off) estimation of the socio-economic security of the region); and so on.

In addition to these, it is necessary to conduct an analysis of the indicators that not only characterize the region that is the subject of the investigation, but also the average values of all universal indicators and, if at all possible, the average values by district, which the region that is the subject of the investigation is a part of.

The following are some suggestions that can be made based on contemporary methodological approaches to the integrated assessment of regional economic security: clarification of the objectives of the ongoing research; selection of estimated figures that make it possible to give account of economic security by the main substantive modules (most of the time, these are characteristics of economic, social, and innovative development); and establishing cutoff points for each individual indicator of the region's economic health; the determination of the integrated index of economic security; determining the extent to which individual indicators contribute to the formation of the overall indicator of the region's economic security; interpretation of the integral indicator of the economic security of the region based on the results of the study in terms of its semantic meaning ("Fig. 1").
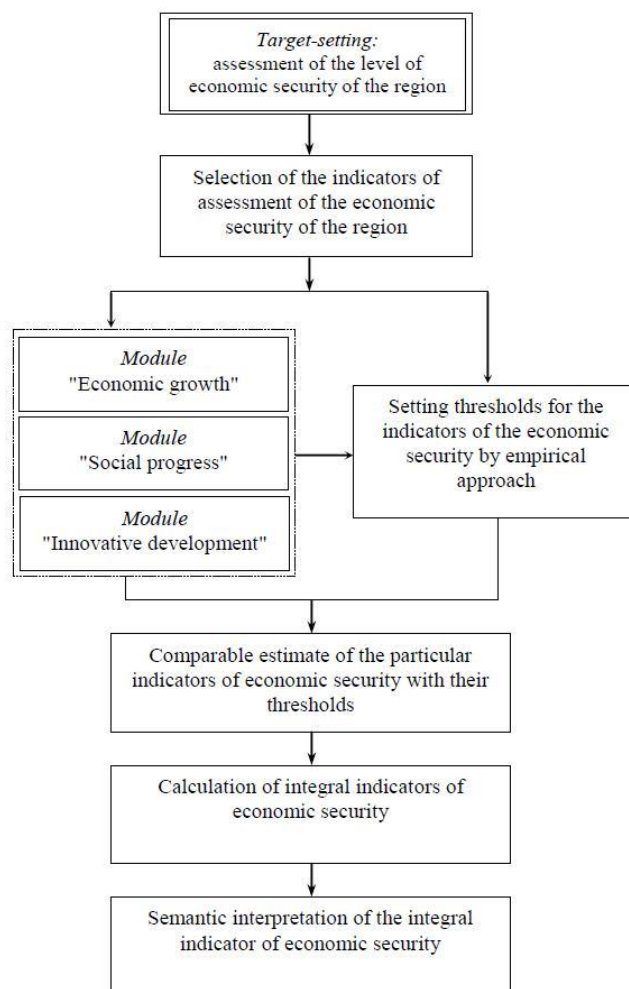
Fig. 1. Methodological approaches to the calculation of the integral indicator of economic security of social and economic systems.

There have been a significant number of different indicators developed to characterize the level of economic security, as well as approaches to determining how they should be determined. This is because there are a variety of factors that influence the level of economic security, as well as a multilevel system for measuring it. It is difficult to find a solution to this problem because there is no system in place that provides the opportunity to categorize the existing indicators through the lens of economic security (as a distinct category).

The following group of fundamental indicators [4] is used to characterize the degree to which a particular region enjoys a secure economic status:

• Level of economic security and sustainability of business entities operating in the region;

• Level of economic security of the population in the region.

• Stability of functioning and development of the regional capital and insurance market.

An insightful analysis (overview) of the existing methodologies of foreign scientists in this field makes it possible to develop an integrated approach to the selection of quantitative characteristics of the economic security of the region. This requires an analysis of the following strands of research, covering the most important areas of the regional economy and taking into account the specific features of its current state and development. In order to develop this approach, it is necessary to conduct an insightful analysis (overview) of the existing methodologies of foreign scientists in this field.

Within the context of this strategy, the following components are to be distinguished as distinct modules:

• Economic advancement: GRP per capita, billion USD

Rate of inflation on an annual basis, expressed as a percentage of GRP; amount of fixed assets created; expressed as a percentage of foreign trade surplus; expressed as a percentage of the region's consolidated budget balance.

• Social progress: the ratio of the average income to the average cost of living, in times; the ratio of the

average pension to the average wage, in percent; the unemployment rate calculated using the ILO methodology, in percent; life expectancy at birth, in years The standard square meters of living space allocated to each individual in a home;

The percentage of total funds devoted to social policy initiatives like health care, education, and welfare.

• Innovative development: the share of innovative products that were shipped as a percentage of the total number of industrial products that were shipped, in percent;

Number of people working in R&D as a percentage of the total employed population per 10 thousand; percentage of total internal expenditures devoted to R&D as a proportion of GRP.

Fundamentals Of Forecasting The Level Of Regional Economic Security

Formalized methods are used almost exclusively when forecasting the level of economic security. These methods are primarily founded on mathematical theories, which improves the dependability and accuracy of forecasts while also significantly reducing the amount of time needed to ensure information processing and outcome evaluation.

The extrapolation method involves applying the tendency for the development of the economic process that is unique to the base period to the forecast period. This method is based on the assumption that the conditions that were previously present for the development of the process will continue to exist in the future. In order to apply this method, you will need information on the degree to which the development trends of the process (phenomenon, object) will be sustainable over a period of time that is two to three times longer than the forecast period. The following items are included in the order of activities that make up the process of extrapolation:

• A precise articulation of the issue at hand, the formation of a hypothesis regarding the potential courses of action that might be taken in the development of the anticipated process, an examination of the factors that contribute to or impede the growth of this process, as well as the establishment of the required extrapolation and the duration of its validation;

• The selection of a set of parameters, the unification of various units of measurement that relate to each parameter on its own,

• The collection and compilation of quantitative data, as well as an analysis of the consistency and similarity of those data;

• The identification of patterns or indications of change in the parameters that are the focus of the research through the use of statistical analysis and the extrapolation of data in a direct fashion.

The most general form of the extrapolation operation can be represented as the process of determining the value of a function, which is as follows:

Yi + L = F (Yi × L)

where Yi + L stands for extrapolated level value;

L is a pre-emption period;

Yi stands for the level taken as an extrapolation base

The use of the extrapolation method is distinguished by the production of reliable results in the prediction of specific processes (phenomena, objects) for a period of between five and seven years.

The accuracy of the forecast will improve provided that the minimum error value is determined by the disparity between the value that was predicted and the value that was actually observed for the variable that was being investigated.

Due to the fact that the actual value of the predicted indicator will not be known until some point in the future, the primary challenge consists of calculating the forecast error. As a consequence, the procedures for determining the accuracy of a fait accompli (also known as a posteriori) do not have any practical value because they are merely a statement of the facts. For a forecast to be developed, its accuracy must first be pre-evaluated (a priori) even though the actual value of the indicator being predicted has not yet been determined.

To estimate the forecast accuracy, the calculation of the root mean square error (RMSE) of prediction is made according to the formula:

$$\overline{S}_{RMSE} = \sqrt{\sum \frac{(y_t^{obs} - y_t^{mod})^2}{n}}.$$

The correlation coefficient between the forecast (model output) and observed values of the variable is used as a comparative indicator of forecast accuracy, which is calculated using the following formula:

$$r_y^{act}, y^{pr} = \frac{\sum (y_t^{pr} - \overline{y}_t^{pr}) \cdot (y_t^{act} - \overline{y}_t^{act})}{\sqrt{\sum (y_t^{pr} - \overline{y}_t^{pr})^2 \cdot \sum (y_t^{act} - \overline{y}_t^{act})^2}}$$

When using this coefficient to assess the accuracy of forecasting the level of economic security, it is necessary to take into account that the pair correlation coefficient, by its nature, describes a linear relationship between two variables and reflects only the relationship between the time series of observed (true) values and the series of forecast (modelled) values of the indicators under investigation. In addition, even if the correlation coefficient reaches a value of 1, this does not mean a complete coincidence of actual (observed) values and forecast estimates, but indicates only the presence of a linear relationship between the time series of modelled and observed values of the indicator.

One of the indicators of the accuracy of statistical forecasts is the Theil Inequality Coefficient (IC), which was proposed by G. Theil and can be calculated using the formula:

$$IC = \sqrt{\frac{\sum (y_t^{act} - y_t^{pred})^2}{\sum (y_t^{act} - \overline{y}_t^{act})^2}}.$$

IC = 0 indicates that the model predictions are as accurate as the mean of the observed data (actual values).

Furthermore, the forecast accuracy can be estimated by the value of the confidence band for a specified probability of its implementation, and accuracy means a quantitative estimator of the probability of forecast implementation within the specified confidence band. Thus, the accuracy of the forecast can be expressed through the probability limits of the actual magnitude of the predicted value. Therefore, possessing economics and statistics tools for predicting potential threats, regional authorities taking control of the social and economic systems have the opportunity to develop a comprehensive set of preventive measures that will ensure the business continuity of regional reproductive systems.

Conclusion

The application of digital technologies in the modern context is one of the most promising techniques for improving management systems at regional levels. This technique ensures the following results: improving the manageability of regional reproduction systems and the national economic system, and creating uniform, valid methods of assessing the level of economic security of regional economic systems. In the grand scheme of things, this makes it possible to form a common base of business insights that can be used for making justified managerial solutions, obtaining objective information on the performance results of regional authorities, which provides for more effective controlling.

References:

1. Shekhovtsova, Yu. A., & Zinakov, E. A. (2018). *The Economic Security Strategy of the Russian Federation until 2030, Its Advantages and Opportunities for Improvement, Economics, Management, Finances:* Materials of the VIII Intern. scientific conf. (Krasnodar, February 2018). (pp.34-37). Krasnodar: Novation.
2. Molchan, A. S., & Zimakova, I. V. (2016). Methodological Approaches to Assessing the Competitive Opportunities of Economic Systems, *Economics and Entrepreneurship*, No. 11-1 (76), pp. 192-198.
3. (2018). *Methodological aspects of the Formation of a Niche Targeting Approach to the Substantiation of Economic Security of Regional Economic Entities*. Ed. A.S. Molchan, (p.162). Krasnodar.
4. Shadrina, J. A., Tleptserukov, M. A., & Kochyan, G. A. (2018). Problems of Creating an Adaptive System for Ensuring and Managing the Economic Security of the Region, *Financial Economics*, No. 4 (Part 3), pp. 381-384.
5. Molchan, A. S., Ternavshchenko, K. O., & Zimakova, I. V. (2019). *Factors and conditions for the functioning and development of the regional socio-economic system (a case study of Krasnodar Krai)*. (p.164). Krasnodar.
6. Hyndman, R. J., & Koehler, A. B. (2006). Another Look at Measures of Forecast Accuracy. *International Journal of Forecasting,* October 2006, Volume 22, Issue 4, Pages 679-688.
7. Eriashvili, N. D., & Tepman, L. N. (2013). Forecasting in Economics. *Bulletin of Moscow University of the Ministry of Internal Affairs*, No. 1, pp. 193 -197.