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**DEFINITION OF RISK FACTORS OF ECONOMIC SECURITY IN
THE REGION**

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Abstract

The paper considers principles of economic security in the region and creates the pyramid of economic security modules thus making it possible to calculate risk indicators of economic security through the matrix of elasticity coefficients. The main purpose of this study is the quantitative assessment of the level of economic security in the region performed via the analysis of dynamic changes and risk factors of economic security in the Chechen Republic. At present the impact of economic security risk factors in the Chechen Republic is not well studied. In terms of assessment and analysis of the compliance to principles of economic security the generalizing table is created without considering the degree of importance of each characteristic caused by factors only within the integrated assessment and analysis of obtained results. The author analyzes dynamic changes of the integrated indicator of economic security with BCG-matrix thus characterizing current and intact state of social and economic development. The study considers the differentiated approach to indicators serving as generalizing production-resource and indicative-social factors and analyzes indicators of economic security of the republic via the matrix of elasticity parameters. It defines zones and types of risk and loss indicators of economic security of the region. Key risk factors and their types within the ranking are calculated based on the elasticity coefficients for each indicator in relation to specified key factors in each subgroup. The designed model allowed considering the influence rate and the strength of relationship between factors and the intensity of factors separately.

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Keywords: Elasticity, economic security, threat, mechanism, region.



1. Introduction

In the conditions of Russia's transition towards innovative development the risks ensuring the economic security have increased significantly. Risk-contributing factors of economic security of the state became quite relevance and triggered the risks reducing the level of economic security in the Chechen Republic during sanctions. Besides, sociopolitical, socioeconomic and ethnocultural situation in the North Caucasus contributing to the escalation of economic risks and threats causes the need to create a full-fledged immunity of the economic sphere with the introduction of international sanctions against Russia and its residents (natural and legal entities) and hence the study of this problem in this region becomes ever more urgent.

2. Problem Statement

In the post-war period high rates of recovery and development of social and economic situation of the Republic allowed the following: first, claiming that the positive demographic dynamics and social and political processes regarding the consolidation of the population shall be considered stabilized; second, permanently growing social differentiation, low (Khadisov, 2016; Tsakaev & Khadisov, 2017) level and quality of life of the population, increased prices for goods and services, high level of food, agricultural and financial dependence (Khadisov, 2016), as well as unregistered economic income generate high volatility of social and economic features and pose risks and threats of economic security of the region.

The study of economic security in the Chechen Republic, in particular the analysis and monitoring of threats is not completely studied today, especially risks reducing the level of economic security of governmental entities. At present, there is no authorized list of key indicators of economic security of the region, which would provide for the most objective assessment of the level of social and economic condition of the republic and identification of key zones of risks and threats of economic security. The approved state strategic documents ensuring the economic security of the republic need rational adjustments, new tools and mechanisms aimed at regional and national threats of the real sector of economy. All the above give occasion to study the problem of economic security of governmental entities with regard to assessment, analysis and development of effective preventive measures to identify risks threatening the economic security of the territorial subject of the Russian Federation.

3. Research Questions

The analysis of the concept of "economic security" and its methodological bases by modern scientists in the context of the national economic security made it possible to define the following elements: characteristics defining purpose, directions to achieve the purpose and state, which regulation will lead to the required outcomes. Besides, any category is accompanied by factors limiting it within the studied issues and factors of the regulatory function.

Almost all interpretations of economic security refer to characteristics of its state: stability, development and improvement. These measures and states shall correspond to the interests under study (Tsakaev & Khadisov, 2017). Independence in its various directions mainly acts as the key purpose.

External and internal risk factors realizing the criterion function include the independence, for which it is typical to enter the regulatory function as a factor of counteraction to given threats.

Having considered the above factors as risk assessment indicators reducing the level of economic security, as well as indicators of stability and other factors causing static and dynamic processes in the region, we can define a common trend (Khadisov, 2018). It is not sufficient to choose the list of indicators to form a complex range of estimated characteristics unless they satisfy methodological rules.

Therefore, we consider it necessary to identify 3 main projections of the blocks of indicators:

1. Projection of dynamic and structural changes and ratios.
2. Projection of consistency of transaction unit.
3. Vector projection.

The assessment indicators regarding risks reducing the level of economic security presented in the works of domestic economists Balabanova, Guseynovna, Grigoryevich, and Alekseevna (2004), Getmanova and Kozyr (2016), Illarionov (1998), Novikova and Krasnikov (2014), Senchagov (2005), Kostrova and Minat (2014), Tsakaev (2011), Perroux (1961) were analyzed and integrated in terms of element features and purpose.

It shall be noted that the study of social and economic situation in the region, critical situations and the growth rates are also covered in the works of other famous scientists: Perroux (1961) (growth pole theory), Pottier (1963) (development axes theory), Hagerstrand (1966) (innovation diffusion theory), Friedmann (1973) (center-periphery model), Richardson (1978) (urban agglomeration effect), Guriev (2009) (measurement of happiness), Pareto (1964) (influence of various factors on the development of the studied process).

4. Purpose of the Study

The main purpose of the study is to provide the quantitative assessment of the level of economic security in the region and to improve the mechanism ensuring management of economic security in the Chechen Republic.

5. Research Methods

To study and create the stochastic models all relevant data shall correspond to the requirements of compatibility, definability, continuity and longitude nature. According to the above criteria, the representative sampling included 40 indicators, of which 11 were general, 16 – indicative and social and 13 – production and resource indicators. It shall be noted that the suggested tools and indicators allow assessing and analyzing risks reducing the economic security of any territorial subject of the Russian Federation (Khadisov, 2018). The correlation level, mainly the binding force, does not decrease below 0.16, except for extremes falling within the interval [0.45; 0.6], which confirms their importance as dependent factors. The last group of indicators is multidirectional and only includes indicators reflecting various aspects of the social sphere and opportunities of their application (from X_{14} to X_{40}). Among indicative indicators the most preferable are social factors ($Y_4, Y_5, Y_6, Y_7, Y_8, Y_9$), first of all, due to their high informative value and identification of stochastic dependences. The received values generally exceed the

correlation coefficients by 0.7, except for such indicators as the number of graduates from higher educational institutions and the number of doctors.

Then, the influence rate of these factors was defined based on the analysis of one-factor models chosen against objective conditions and available statistical data. The time series contains 11 points. It is impossible to analyze more longitudinal series in the Chechen Republic due to famous events of the middle of the 1990s-the beginning of the 2000s, absence of initial statistical data during the previous periods and high heterogeneity of available data.

The analysis of stochastic relations and comparison of each indicator allows stating that the elasticity coefficient changes with the change of exposure X_i by 1% similar to the change of a performance indicator Y_i . Hence we get comparable data ensuring subsequent integrated calculations. The elasticity coefficients for each Y_i are calculated according to X_i indicators.

The indicators considered within the sampling of risk factors reducing the economic security are mainly direct. The reverse indicators are as follows: unemployment ratio, wear of fixed production assets, emission of pollutants and the number of all forms of crimes. Special emphasis is placed on regional subsidies reflecting both negative and positive trends. This depends on sign changes in accompanying indicators. According to express assessment, 235 points (65.28%) are in the instability zone, which characterizes the situation as unstable and requiring additional detailed study. The obtained result is heterogeneous, i.e. 30.7% belong to negative values. Undoubtedly, the factor of established stochastic relation shall be in the positive field. This comparison confirms a considerable share of values, which require special attention due to increased level of threat.

6. Findings

Now let us consolidate the obtained data into a matrix of risks reducing the level of economic security described earlier. These results are made with the allowance that the level of influence of each factor, importance and intensity are equal in terms of the degree of importance of characterizing values describing the economic security.

Mainly, the received values fit within the positive zone. However, there is a need for some specification concerning the arrangement of points, namely:

- the zone of instability is located in the range from -0.25 to 0.25;
- the zone of compliance to the parameters of economic security lays in the range from 0.25 and above;
- the risk zone – from -0.25 and below.

The actual distribution of integrated values of the Chechen Republic mainly falls within the instability zone – 48% of sampling. The second position is taken by points located within the stability zone – 46%. This ranking makes it possible to say that the subject of the study is stable with a considerable share of factors having neither unstable nor stable character of risk-contributing factors.

The obtained results allow considering this trend by unit factors in earlier received values for each value in the analysis. The major disadvantage and typical problem of dynamic analysis is the impossibility to consider the development of indicators. For this purpose, we will use the transformational BCG-matrix, where in x-direction – average value according to development and stability criteria, and in y-direction –

average value according to independence and improvement criteria. As a result, we get values across 2017 – (0.5; 0, 37).

The sore points of instability of the Chechen Republic are caused on the one hand, by social and economic, and on the other hand, by foreign policy and criminal factors, which are mutually correlated and strengthen the general destructive influence (Tsakaev & Khadisov, 2017).

To achieve the purpose and implement the tasks it is critical to define the force and extent of influence of the above risk factors. Hence, there is a need to use the results obtained through calculations of the one-factor equations of regression.

In the one-factor equation the model coefficient – b_i presents the biggest interest since it serves an objective characteristic of the influence rate. However, for integrated analysis and synthesis of data, the b_i parameters of the entire system of equations are not comparable therefore we normalize them through the calculation of elasticity coefficient – E_i . The elasticity coefficient for each comparison will mean the percentage of change of the dependent indicator Y_i with the change of the independent indicator X_i by 1. As a result, we get the comparable data allowing further generalizing calculations.

Let us sum up the elementwise calculated values across Russia according to Y_i (Fig. 3). The diagram shows that the factors in their integrated expression have relatively strong influence.

Weaker influence is expressed by life expectancy, agricultural production and the number of economically active population. Regarding agricultural production and life expectancy the value is caused by a considerable share of negative values and low number of economically active population. These results are indicative and deserve special attention, but it shall be noted that within this study we avoid this since the purpose of the study and analysis of results in the Russian Federation is to identify the common trends and range of elasticity coefficients to define the nation-wide tendencies.

Thus, the key risk factors reducing the economic security are as follows:

- demographic factors and age shifts towards aging;
- production factors causing high dependence on external factors (Khadisov, 2018) high dependence on external indicators jointly with aging, basic production assets and resulting high social sensitivity to changes;
- focus on external R&D.

Regarding modality in extreme values of risk factors, life expectancy holds the leading position.

Next, regarding the quantitative value of identified risks in the block of generalizing indicators we have the following: agricultural production, R&D costs, population, number of its economically active part; indicative and social indicators: birth rate and graduation rate.

Table 01. Ranking of risk factors of economic security in the Chechen Republic by the degree of importance

I.	Life expectancy, years
II.	Income, mln. rub.
	Agricultural production, mln. rub.
	R&D, number of the organizations
	Population, thou. ppl.
	Number of economically active population, thou. ppl.
	Graduation rate (HEI), thou. ppl.

	Graduation rate (vocational education institutions), thou. ppl.
	Number of library users, thou. ppl.
	birth rate index per 1000, thou. ppl.
III.	Gross regional product, mln. rub.
	Budget deficit, surplus, mln. rub.
	Wear of fixed production assets, %
	Unemployment rate
IV.	Gross fixed capital formation, mln. rub.
	Expenses, mln. rub.
	Regional benefits, mln. rub.
	Investments, mln. rub.
	Processing industry, mln. rub.
	Emission of pollutants, thou. t.
	Number of HEIs
	Number of reported crimes per 100,000 ppl.

The last group is less numerous and mainly consists of generalizing indicators: gross regional product and regional fiscal position, in general they can be defined as the indicators of economic activity of the region (Table 01).

Special attention shall be paid to the rate of unemployment and wear of basic production assets (Tsakaev & Khadisov, 2017; Khadisov, 2018). The unemployment rate is duplicating, though not completely, the characterized graduation rate and economically active population and therefore we consider it necessary to include this problem into the previous risk group. The wear of basic production assets is an accompanying factor of agricultural production and income. It characterizes the increased importance of this factor due to its structural elements and relations to earlier received indicators.

The initial results of the study may be distributed according to the following aspects:

- principles of economic security of the region and the pyramid of economic security modules of the region;
- criteria of sources of risks reducing the economic security of the region;
- assessment tools and analysis of risk factors reducing the economic security of the region;
- calculation of risk indicators reducing the economic security of the region via elasticity coefficients.

7. Conclusion

To sum up, let us summarize the main scientific results and conclusions:

1. The paper analyzed factors and problems of economic security studied by modern western and domestic scientists-economists. Taking into account the above analysis, the system of indicators of economic security of the Chechen Republic revealing more objectively the risk issues in the economy of the Chechen Republic threatening the economic security of the region was developed.

2. The differentiated analysis of the following factors was developed: generalizing, production-resource and indicative-social. This model allowed considering the degree of importance, the influence rate, and its intensity for each factor separately and obtaining the integrated value. The calculation resulted in the hierarchical list of critical zones.

3. Serious risk factors affect the economic security of the Chechen Republic. For the most effective use of available resources there is a need to define key factors from among a variety of problems and to concentrate efforts on their solution. It shall be noted that the positive scenario of the region's development is more likely to happen than the negative one.

4. The major risk-contributing factors of economic security in the Chechen Republic are caused by the intensification of existing "weak points". The weak points of the region are caused by social and economic, foreign policy, criminal factors, which are mutually correlated and strengthen the general destructive influence.

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