

# Assessment of Passive Economic Security of the Socio-Economic System of the Region

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**Abstract.** Ensuring economic security is a priority for the development of both regional socio-economic system and the economy of the state as a whole. Maintaining the safe development of the economy is due to two components that form a generalized structure of the concept of economic security: ensuring the prerequisites for economic growth and improving the quality of life in the region. In this paper we review the methodological framework and assess the economic stability of the region to external threats. At the heart of the process of forming the region's resistance to external threats are its components, among which we evaluate the financial, industrial and labor components. This approach allows us to quantify the formed internal immunity of the subjects of the Russian Federation, which reflects the economic stability of the region. Indicators are included in the integral indicator with a certain weight. In this embodiment of testing, all the weighting factors of indicators balanced with each other. The result of approbation of the method is a quantitative integrated assessment of the level of internal immunity of the region. We define the concept of internal immunity of the region as ensuring the stability of the functioning and continuous development of the economic system at the expense of the reserve of financial, industrial, labor and other resources formed in the region.

**Keywords:** integral assessment, economic growth, economic security, economic system, economic sustainability, internal immunity, labor market.

## INTRODUCTION

Economic security is a priority for the development of both individual regional socio-economic systems and the economy of the state as a whole. We consider economic security as a set of economic, geopolitical, environmental, legal and other conditions that provide the prerequisites for the stability of the system in the event of a crisis and for its future development. At the same time, it is necessary to protect the vital interests of the state in terms of its resource potential, balance and dynamics of development and growth. This requires the creation of internal immunity and external protection from destabilizing effects. As a result, it is important to increase the competitiveness of the state in world markets and the stability of its financial position. To ensure the creation of decent living conditions and, as a consequence, harmonious development.

This definition can be applied both for the case of economic security of the country and the region, as regional socio-economic systems are considered as full participants in economic relations within the country and at the world level [2]. One of the main elements of the process of ensuring economic security is the formation of the region's immunity as an ability to provide opportunities for its own sustainable development under the influence of external threats. From the point of view of the economy, immunity is the ability of the region to use the opportunities formed during its socio-economic development in order to: confront destabilizing factors; restore the prerequisites for the normal functioning of the economy; maintain the trend towards further sustainable development [1]. Because internal and external threats affect the development of the region, we can distinguish internal and external immunity [6-7]. The internal immunity of the region assumes ensuring stability of functioning and continuous development of

economic system at the expense of the reserve of financial, production, labor and other resources created in the region. External immunity of the region is to ensure a certain degree of immunity of the economy through the introduction of additional measures to protect the interests of the region from the effects of globalization of economic systems. Ensuring a high level of external immunity depends on the formation of an effective system of regulation of foreign trade. This paper will review the methodological framework and assess the internal immunity of the region.

## THEORETICAL FRAMEWORK

The basis of the process of formation of internal immunity of the region are its components, which include indicators from several spheres of the economic system: financial, industrial, labor. The inclusion of these areas of the economy in the structure of internal immunity ensures high reliability of its quantitative assessment.

The financial component of the study of the internal immunity of the region is the reserve of funds and the possibility of its mobilization in case of threats. A sufficient financial base ensures the independence of the region as a subject of economic relations, as well as determines the speed of adaptation of the region's systems to the new conditions of functioning. We consider the financial component of immunity in relation to the three levels of functioning of the regional economy: the state of the business sector, the stability of the budget system, the financial viability of the region as a whole [3].

Taking into account the production component as part of the internal immunity of the region provides an opportunity to assess the competitiveness of the production structure of the region, as well as its ability to quickly and with minimal losses to respond to emerging threats [4]. As a production component of the immunity of the region, such characteristics of the real sector are taken into account, which provide the region with the opportunity to form an effective sectoral economy, as well as the territorial organization of production forces [5].

We consider the labor component as part of the internal immunity of the region from the position of assessing the provision of the resource base for the development of all spheres of the economic system. In an unstable economic situation, the security of the labor market, as well as the absence of demographic tensions create prerequisites for the formation of a high level of internal immunity of the region.

The inclusion of the considered parameters in the methodological apparatus makes it possible to quantify the formed internal immunity of the subjects of the Russian Federation. To solve this problem, we used an adapted methodological apparatus to assess the sensitivity of the subjects of the Russian Federation to external threats. The calculation of the integral index of internal immunity based on different-scale indicators can affect the reliability of the result, so it is necessary to normalize the calculated indicators.

## ASSESSMENT METHODOLOGY

As part of the adaptation of this technique, 6 indicators corresponding to the structure of the concept were chosen to assess internal immunity. Within the framework of the financial component, state investments per capita, the coefficient of autonomy, the coefficient of budgetary provision are considered. For the production component selected: the Share of single-industry towns in their total number of subjects of the Russian Federation and the share of mining in the structure of the economy of the subject of the Russian Federation. We describe the labor component by the coefficient of the total demographic load on the able-bodied population.

Indicators of the methodology have different units of measurement, as well as different vectors of influence on the value of the integral index. The index contains positive (public investment in fixed capital per capita, the share of "mining" in the structure of the economy of the Russian Federation, etc.) and negative (the coefficient of the total demographic burden on the working population) indicators. Calculation of the integral index of internal immunity based on different-scale indicators can affect the reliability of the result.

Thus, if the indicator is conditionally positive, its value is calculated based on the formula (1):

$$I_{ij} = \frac{X_{ij}^P - X_{i\_min}}{X_{i\_max} - X_{i\_min}}. \quad (1)$$

where  $I_{ij}$  is the calculated value of the indicator  $i$  of the region  $j$ ;  
 $X_{ij}^P$  – the value of the  $i$ -th positive indicator  $i$  of the region  $j$ ;  
 $X_{i\_min}$  – the minimum value of the indicator  $i$  among the regions;  
 $X_{i\_max}$  – the maximum value of the indicator  $i$  among the regions.

Otherwise, we calculate the indicator value by the formula (2):

$$I_{ij} = 1 - \frac{X_{ij}^N - X_{i\_min}}{X_{i\_max} - X_{i\_min}}, \quad (2)$$

where  $X_{ij}^N$  is the value of the negative indicator  $i$  of the region  $j$ .

Indicators are included in the integral indicator with a certain weight. In this version of the approbation of the method, we balanced all the weight coefficients of the indicators with each other. The sum of all weights equals one.

Based on the above methodological tools we made a calculation of the value of the integral index by the following formula (3):

$$I = \int \sum_{i=1}^m w_i I_{ij}, \quad (3)$$

where  $I$  is the value of the integral index;

$w_i$  – weight coefficient of the indicator  $i$ ;

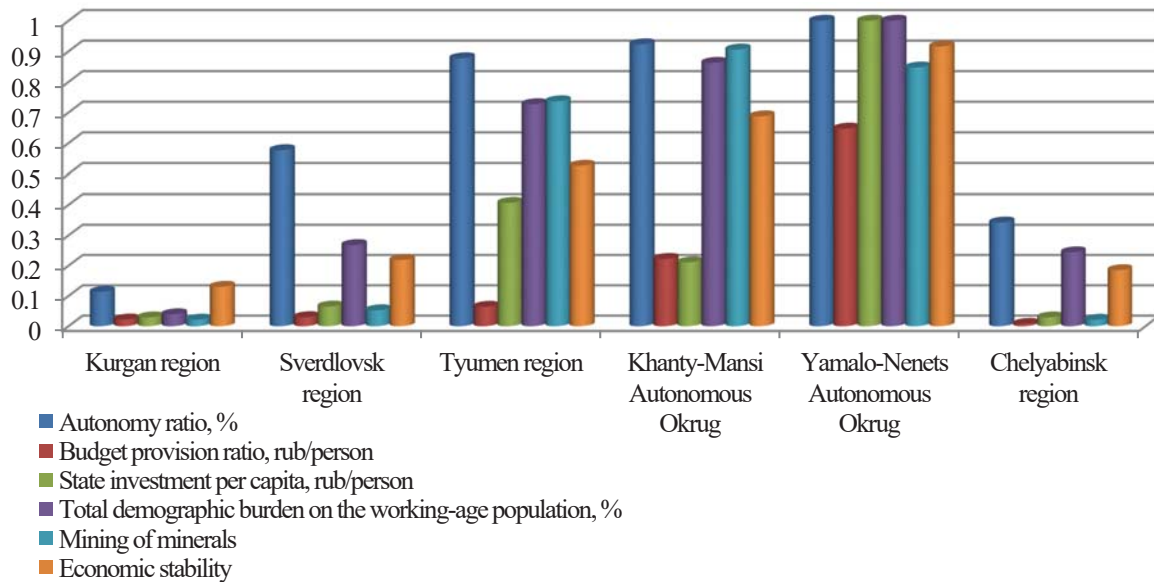
$I_{ij}$  – number of indicators.

We divide the index values into four levels of the formed stability of the socio-economic system of the territory.

**TABLE 1.** Levels of region's economic stability.

Level of region's economic stability	The value of the integral index
High level of stability	$I = 1,0$
Medium level of stability	$0,6 \leq I < 1,0$
Low level of stability	$0,2 \leq I < 0,6$
The lack of level of resistance	$0,0 \leq I < 0,2$

The labor component and a large share of mining industries bring a significant contribution to the process of forming the immunity of the region. Accordingly, the weakest aspects of the region's internal immunity are the volume of public investment and the amount of expenditure on public services and goods per capita, which certainly increases the susceptibility of the region's economic system to possible external threats.



**FIGURE 1.** Integral assessment of the economic stability.

Based on the analysis of the presented parameters, we conducted an integrated assessment of the economic stability of the subjects of the Ural Federal district. The least affected regions with an average level of immunity to external threats, namely export-oriented regions with raw materials specialization (Yamal-Nenets, Khanty-Mansi Autonomous districts). The mentioned subjects of the Russian Federation have the maximum values for almost all

calculated indicators, in addition to the high level of achieved socio-economic development. The economic systems of these entities are adapted to the conditions of the world market. Conventionally, we assigned three subjects of the Ural Federal district to the group with a low level of immunity. This group includes industrial regions (Chelyabinsk, Sverdlovsk and Tyumen regions).

The next group is the subjects of the Ural Federal district, which are not immune to the expected changes (Kurgan region). These entities are unprepared for the new requirements of the functioning of the economy and do not have significant advantages in the structure of their economy, which would allow them to compete freely in the world market and avoid the risk of losing their positions in the domestic market.

## CONCLUSION

We defined the concept of internal immunity of the region as ensuring the stability of the functioning and continuous development of the economic system at the expense of the reserve of financial, industrial, labor and other resources formed in the region. The paper presents a quantitative assessment of the level of internal immunity of the region based on adapted methods of sensitivity of the subjects of the Russian Federation to external threats.

In almost all subjects of the UrFO, the largest share in the overall level of immunity of the region is the labor component, with the exception of the Kurgan and Chelyabinsk regions. This demographic situation is due to the influx of able-bodied population in the raw areas of the North and the more industrialized Sverdlovsk region than the Kurgan and Chelyabinsk regions.

However, the analysis of economic stability in the context of individual components does not allow us to give the most detailed assessment of the strengths and weaknesses of each subject of the UrFO in this context. In addition to the integrated assessment, the developed method allowed to assess in detail the strengths and weaknesses of each subject, which will serve as the basis for the development of a program-target set of measures to improve the level of immunity of the region under the influence of external threats.

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