

Economic Safety of the Regions: Technology, Trends, and Risks



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Abstract: *The article attempted to study the role of management of the region's economic risks. The article is aimed at identifying main regularities determining the risk assessment features in business as a key element contributing to the achievement of economic safety, as well as a comparative analysis of methods of assessment and management of investment risks. The methods of cognition, retrospective and documentary analysis and synthesis, generalization, and systematization were used in the work. The scenario method and the analysis of hierarchies are the most effective ways of reducing the risk in the unstable economic and political situation in Russia. The article discusses important issues of economic safety in the region as part of the country's socio-economic system, as well as economic risks in the region. Decision-making in the context of risk and uncertainty is a fundamental aspect of the activity of an active financial market participant. The logic and probabilistic approach in risk assessment of the sustainable strategy for the region has been analyzed. To create an economic safety strategy, factors that may affect the position of the region are investigated. The most important aspect of the issue of the region's economic safety is the selection of criteria that allow evaluating its level, as well as the calculation of threshold values for each criterion.*

Keywords: *economic safety, economic safety indicators, region, risk, risk management*

I. INTRODUCTION

The research urgency is substantiated by the fact that the economic safety issue is particularly sensitive not only for Russia as a whole but also for individual regions. Each region is influenced by national economic events and trends, at the same time it has its safety problems defined by the peculiarities of the region: the structure of sectors of the economy, climatic conditions, geographical location, national composition of the citizens, and their cultural and historical traditions. Regions of Russia are the object of

research. The subject of the research is the economic safety of the regions of Russia.

The purpose is to study various types and criteria for assessing the economic safety of the region.

As per the object, the subject and purpose of the research, the solution to the following problems takes place:

- To analyze the essence of the socio-economic safety of the regions and its relationship with the country's national safety;
- To consider the economic safety of the regions of Russia: features, trends, and risks; and
- To analyze logic and probabilistic approach in risk assessment of the sustainable strategy for the region.

II. LITERATURE REVIEW

Most of the negative consequences of economy and society reforms have not been eliminated, and today, they are creating difficulties for the sustainable and balanced development of economy and society of the country regions in the long term. That is why today the issues of social and economic safety are relevant and actively studied by domestic and foreign scientists, such as M.I. Krotov, V.I. Muntian [1], O.S. Bezuglyak, M.V. Bedrin [2], K.B. Gerasimov, G.F. Nesolenov [3], M.V. Yakunina, V.K. Krutikov, O.S. Posypanova [4] and many others.

Thus, M.V. Yakunina, V.K. Krutikov, O.S. Posypanova and others note that serving the interests of a country is based on the development of its regions through the implementation of goals and objectives in regional socio-economic policy, which reflects the development of the capabilities of the targeted actions of system to the regional-level threat. Today, the generally accepted understanding of safety is associated with "a certain state in which any subject is protected and does not incur losses from the negative influence of various factors." [3].

In addition, given that it is the economy that generates the region's wealth from the totality of material and spiritual goods created and accumulated by the regional society, its condition actually determines the region's economic independence (independence in the formation and development of productive forces, technical and economic relations, property, economic mechanism), which is a prerequisite for sustainable development, characterized by the controllability and, consequently, by the possibilities of protection against negative influence of external and internal destabilizing factors;

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the ability to progress and maintaining their properties in the long term.

Thus, the analysis of the main approaches of the definition of the "economic safety of the regions" [2]-[10] allows identifying it as the state of the regional economy in which a certain territory characterized by integrity and the relationship of its elements is economically independent, thereby creating the opportunities for sustainable development.

Since the economy is the main activity of the society and the region's fundamental economic basis, since the link between economic safety and economic growth exists, the judgment of O. S. Bezuglyak, M.V. Bedrin that the subcategory of "economic safety of the regions" can be interpreted as the most important one in ensuring the country's national interests should be accepted [2].

However, consideration of the category of socio-economic development as a synonym for the "region's economic safety" is unpractical due to the specifics of the market-oriented regional economy.

The market-oriented regional economy does not always ensure the growth of welfare of all segments of the population in terms of economic sustainability due to the desire of business to maximize profits. Thereby, the unemployment inevitably generated by market economies, social problems and other consequences of competition can cause a social explosion. That is why it is advisable to use the approach based on the consideration of the category of socio-economic safety of the region as a combination of two interrelated subcategories of "economic" and "social" safety. At the same time, the authors consider it expedient to

interpret the "region's social safety" as the subcategory that is directly proportional to the region's economic safety, which, however, is not the guarantee thereof.

III. PROPOSED METHODOLOGY

A. General Description

The methodological basis of the study is the dialectical, system-structural, formal-logical, mathematical, graphical, deduction, and logical method, as well as methods of synthesis and analysis.

B. Algorithm

Taking into account that the territorial organization of production serves as the fundamental economic basis of the region's socio-economic safety, it manifests itself in economic processes and phenomena related to the market development of the economy and its infrastructural features (Fig. 1):

- 1) directly the territory of the region with its characteristic features: material and technical base, environmental conditions, and economic situation;
- 2) the main production and production infrastructure of the region (a complex of industries serving the main regional production and ensuring its effective economic activity);
- 3) the social infrastructure as a set of objects that satisfy the cultural, social, and other needs of the region's population.

C. Flow Chart

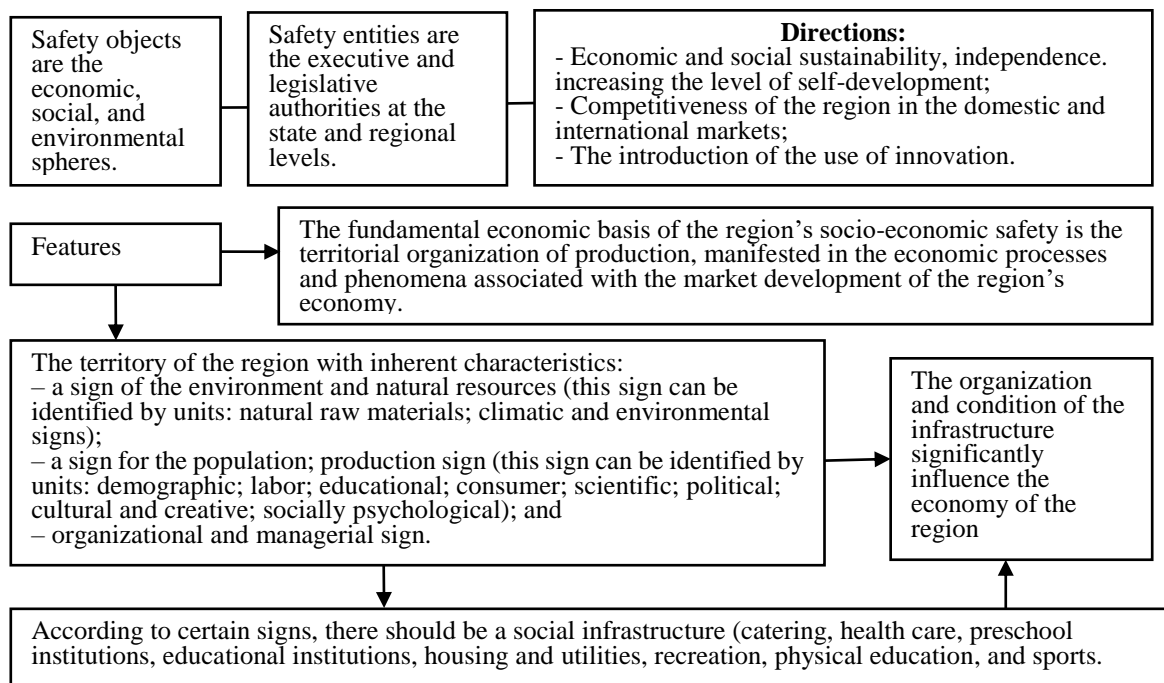


Fig. 1. Main components of the region's socio-economic safety

Thus, the domestic regional and interregional relations are focused on the use of internal resources of regions, to improve the material production structure, the development of social and production infrastructure, and environmental and social safety. The regions with the prerequisites of

participation in the international division of labor also seek to enhance foreign trade activities (which increases the region's economic safety at the expense of the budget).



IV. RESULT ANALYSIS

A. Economic Safety of the Regions of Russia: Features, Trends, and Risks

The features of the regional development of the Russian Federation are formed under the influence of trends in the development of the world economy and changes in the factors determining the country's socioeconomic state. There is a conflict of interests between economic entities within regions, and the interregional one, between the Federal Center, and the regions. This leads to reduced socio-economic stability of the regional territorial systems through the formation of negative influences that can cause damage with a certain probability.

The analysis of the dynamics of economic indicators of our country in 2017 allows estimating it as positive one [11]. The GDP growth amounted to 1.5 %, but in the context of global economic growth, it does not meet the requirement of exceeding the global average growth rate. The achievement of the inflation target of 4 % allows reducing lending rates, thus providing an opportunity for the development of the real sector of the economy. At the same time, the bank rates remain the highest ones in the world economy. The persistence of high interest rates is a key impediment to the availability of loans, therefore, optimizing inflation and increasing the availability of loans are among the ways to solve the macroeconomic task of stimulating the growth of the Russian economy. Analysis of the investment activity of the business in 2017 showed a positive trend. The value of investments grew by 4.4 % primarily due to the growth of mortgage loans by 37 % compared to 2016. Investments in fixed assets grew at the expense of public investment in buildings and structures and the growth of investment in the fuel and energy complex. One of the areas of the budgetary policy was to reduce the debt load of the regions and to improve the effectiveness of the budget expenditures thereof. The debt structure of the regions had become more comfortable since the share of low-cost budget loans became almost equal to the percentage of expensive bank loans. In 2017, the degree of centralization of tax and nontax revenues increased. The share of tax and nontax revenues of regions in tax and nontax budget revenues decreased from 30.2 % in 2016 to 30.0 % in 2017, and the regional share of final expenditure in the budget system expenditure increased from

30.0 to 32.0 % in the same period. In 2017, the functional structure of regional expenditures changed slightly due to the growth of the national economy and the costs of reducing the expenditure on the social sector as related to general education. Data on the execution of the consolidated budgets of the constituent entities of the Russian Federation show an increase in the balance thereof. In 2017, the budget deficit was observed in 47 regions, and the surplus – in 38, and in 2013, the budget deficit was typical for 77 regions, and the surplus – for 6 constituent entities of the Russian Federation. In 2017, the total volume of the intergovernmental transfers from the federal budget to the regions decreased compared to 2016, both in nominal terms (-1.5 %) and in GDP shares (-0.15 pp (percentage points) of GDP). All types of targeted intergovernmental transfers, as well as subsidies to ensure balance decreased. This affected the structure of federal financial assistance to the budgets of the constituent entities of the Russian Federation. In 2017, compared to 2016, the share of subsidies decreased by five percentage points, while the share of grants, by contrast, increased by 7.3 percentage points. In 2017, it was possible to strengthen the trend to stop the accumulation of significant amounts of debt at the subnational level and to increase the transparency of intergovernmental relations.

The economic safety of the region is distinguished by protecting from the effects of negative impacts that entail the nonfulfillment of social obligations to the public or dissatisfaction of the population's needs. The recession of 2015 – 2016 had the most negative impact on people's standard of living, causing a significant increase in the number of poor people and declining consumption. The dynamics of 2017 are controversial in this respect. The real wages began to increase by 3.4 % over the year, even though in 2017 the real income continued to decline by 1.7 %.

Despite the difficult situation in the Russian economy, assessments of the business climate in the regions improved in several areas [12]. Fig. 2 shows the business community's assessment of the activities of regional authorities in shaping the entrepreneurial climate. The share of negative responses decreased from 15.3 % to 11.3 %, primarily due to the increase in the share of neutral ratings. In 2014, one-fifth of the surveyed companies stated that the regional authorities did not affect the business climate, and in 2017, 27.1 % of the respondents thought so.

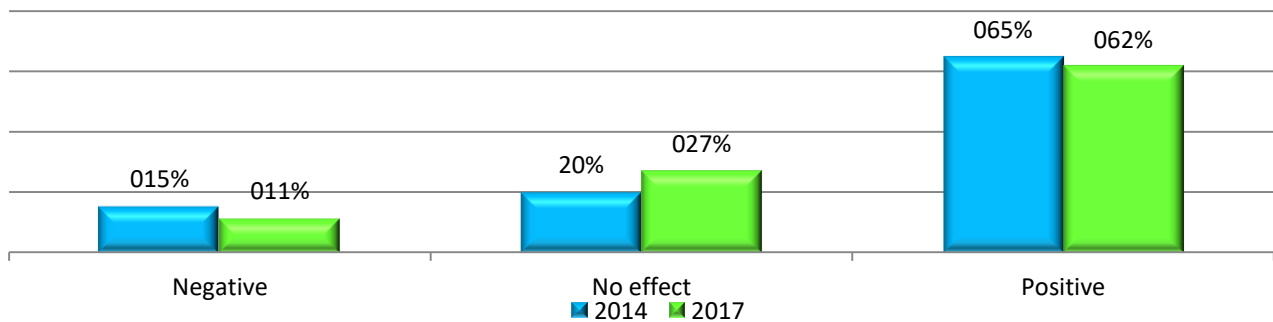


Fig. 2. Evaluation of the contribution of regional authorities to the improvement of the business climate in the region in 2014 – 2017, %

The assessment of the availability of a single business climate in the regions of Russia, presented in Fig. 3, shows that in 2017, 79.3 % of the organizations answered negatively to this question. Four years ago, the share of the "no, does not exist"

option reached 84.5 %, and it gradually decreased throughout the entire study period. Respondents began to choose the answer "rather exists" more often, and in 2014 its share had been 14.3 %, whereas in 2017 it was fixed at 18.6 % [12].

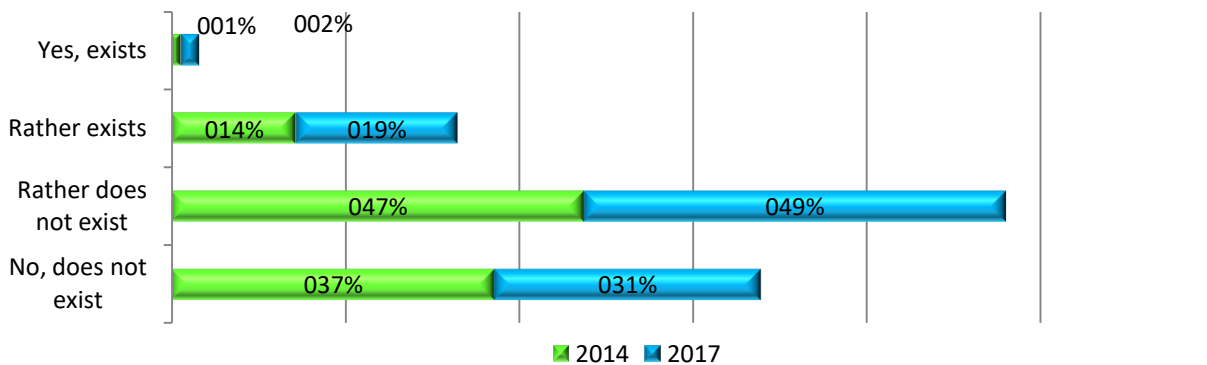


Fig. 3. Assessment of the presence of a single business climate in the regions of the Russian Federation, %

At the present stage of the economy development, many factors can harm the activity of the economic entity in the region. The most dangerous external threats to the Russia's economic safety include the following:

- the negative effects of the world economy globalization on the national economy;
- growing dependence on technology and consumer goods imports;
- migration of highly qualified professionals abroad; and
- the use of mechanisms for the illegal export of capital abroad.

Internal threats to economic safety are conditioned upon:

- reduction of innovation and investment activity of the business; low level of development of the agro-industrial complex;
- financial sector instability;
- the growth of state and regional debt; and
- a high degree of the budget revenues dependence on the oil and gas sector.

The objects of the region's economic safety include territory, population and economy, as well as productive assets, infrastructure, natural resources, etc. The group of values and indicators that characterize the economic safety of the region corresponds to the composition of the negative impacts and consequences of the influence thereof. They include the following:

- the indicators characterizing the funds of the region, aimed at ensuring the region's economic safety;
- the indicators to meet the reference needs of the region's population; and
- the indicators of damage to the region's socio-economic system from the impact of negative impacts on economic safety.

The task of identifying the sectoral priorities of the regions' economic development is important for our country. However, in the strategic initiatives of the Federal Center, the regional peculiarities are not clearly shown due to the incomplete awareness of the central authorities on the situation in the field. At the regional level, the social and

economic development strategy is formed without consideration of global economic and technological trends, which leads to poor quality of development and maintenance of regional strategies, inefficient use of budget funds, and incorrect signals to businesses for investment activities.

Improving the economic safety of the regions is associated with the development of a new generation of regional industrial policy which strengthens the role of the regions in the expansion of noncommodity exports and international cooperation as a whole, and increases the importance of nonprice competition between regions for investors. This will minimize duplication and fragmentation of federal funding, contribute to the creation of an optimal investment climate of each constituent entity of the Russian Federation, and strengthen the economic safety thereof.

Using the experience of the European Union for regional development based on the principles of the smart specialization concept may be one of the solutions to this problem. Its essence is that each region must find their unique path of economically sound development. The uniqueness is achieved through a combination of internal knowledge (obtained from local communities) with external one (global trends, strategies for other regions, priorities and programs at the national and international level).

The hallmark of smart specialization is to synchronize the efforts of the public and private sectors, as well as multilevel governance with effective communication and a clear division of functions between different levels of power [13].

At the national level, the general conditions for strategies developing and implementing, as well as verifying of priorities are set, the uniform databases are formed for analytical comparisons; at the regional level, the development priorities are directly selected, the strategies are developed and implemented, and appropriate coordination structures are created. Smart specialization increases interest in supporting innovation among relatively weak regions.

The results of the research of the innovation development strategy of the constituent entities of the Russian Federation have shown the compliance by individual components of the basic criteria of smart specialization. The objects of the evaluation were innovation development strategies, which as of 2014 were adopted in seven regions of the Russian Federation. According to the researchers [5], [14]–[16], the weak points of the considered strategies from the standpoint of meeting the smart specialization criteria were the following:

- lack of consideration in the strategies of strengths and specialization of other regions of Russia;
- lack of a structure responsible for developing and coordinating the implementation of strategies; the strategy development without taking into account the views of the regional community;
- using the model of linear innovation development without taking into account various forms of innovation activity;
- lack of roadmaps and mechanisms for updating the strategy; and
- lack of detailed priority directions of the strategy.

The peculiarity of the smart specialization approach lies in the complexity thereof, i.e., the need to simultaneously apply all the tools, each of which was "invented" before the concept emerged.

Reasonable conclusiveness by the use of the cluster approach is an important condition in determining sectoral priorities in the framework of smart specialization. Both in Russia and abroad, cluster initiatives often serve as priorities for regional development. Cluster initiatives serve as platforms where specialized intersectoral strategies are created and new territory competitive advantages are

developed in response to the current challenges of the economic safety of the regions [6].

The new-generation industrial policy, which would ensure the economic safety, should be built on the principles of a differentiated approach to the constituent entities of the Russian Federation, differing in multi-industry specialization, and the territories with a limited set of specialization branches. Thus, it is necessary to form a set of tools for continuous adjustment and optimization of risk distribution (for example, through increasing the share of private and regional co-financing of projects) with the support from the federal budget for the sectors, which are not characterized by a high level of development in the area and have no connection with the competences accumulated there. The full priorities of regional development should include the sectors of intellectual, creative, and cultural services, which act as the leitmotif of smart specialization in economically developed countries [17]; [18].

B. Logic and Probabilistic Approach to Determining the Risk-Sustainable Strategy of the Region

Various destabilization factors can influence the emergence and development of crises that threaten economic safety. The stable and most efficient functioning of the region at present and ensuring its high potential for development in the future is the key strategic goal of ensuring economic safety. Sustainable development combines two approaches – social and economic ones. Consequently, there is a need to use an appropriate classification of threats and risks [19], [20].

The threats and risks of economic safety were classified, their impact on the state of economic safety was analyzed in various works [21]–[23]. The results are reflected in Fig. 4. In this case, any threats and risks are of the intrasystem origin or can be generated by the external environment.

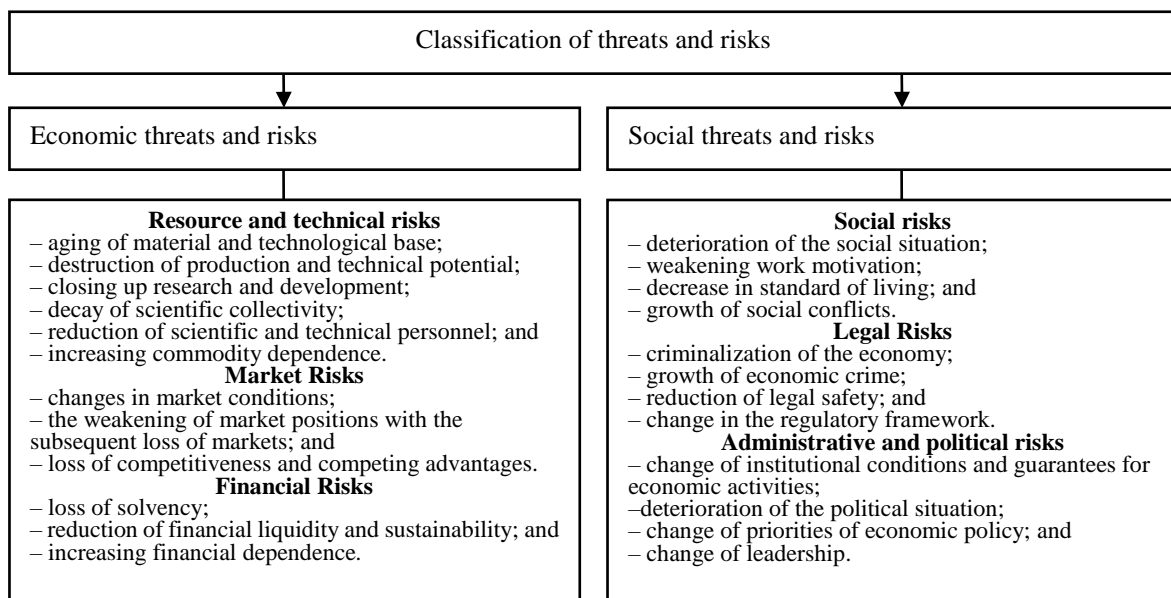


Fig. 4. Risk and threat classification

Let us consider the system of economic safety as a system of a certain structure (Fig. 5).

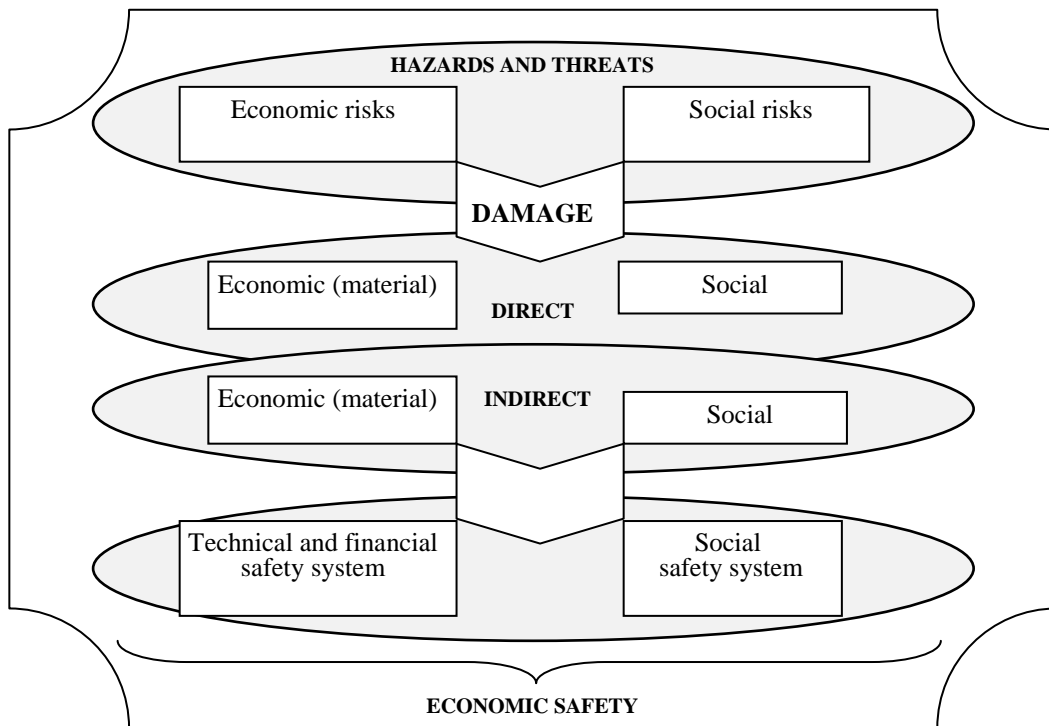


Fig. 5. The structure of the economic safety system

The onset of risky events of a different nature entails two types of damage – direct social and economic damage, including indirect damage, which may be a more significant one.

Direct damage determines the total losses and losses in all structures of the regional economy that are affected by adverse events.

Indirect damage, which is structurally not distinctive from the direct one, takes into account the losses that are incurred outside the scope of the direct impact of the risk event. The indirect economic damage includes the following:

- the change of production efficiency criteria;
- the damage that occurs when changing the production structure and volume;
- the damage associated with the need for restructuring management systems; and
- the premature depreciation of production fixed assets and capacities, etc.

When taking into account the qualification of the damage caused, ensuring economic safety is referred to the fundamental principles of safety of the socio-economic system of any structure. Economic safety, which is a politico-economic category, must take into account all the risk events and threats that are directed against a country, region, industry, etc., and it is natural to provide an adequate response to them. However, it can generate new problems.

Quantitative risk assessment is used to be able to compare the degree of danger of various management objects, to ensure adequate decision-making, to implement a system of measures that form the reputation of an economically safe region [24]. The existing methods for assessing and diagnosing economic risks are based on a detailed analysis of

the external and internal environment of the system. Their key goal is to form the objective and most complete data on the economic potential risks and factors generating them, including identification thereof.

In scientific research, the following approaches are used in priority for the diagnosis and quantitative risk assessment [25]; [21]:

- logic and probabilistic methods of reliability, safety, and risk analysis;
- probabilistic statistical risk assessment methods.

The probabilistic statistical methods for assessing, analyzing and diagnosing risks are most often used. This is due to the fact that this assessment of the level of economic risks depends, firstly, on the likelihood of an event that is associated with each previously identified individual risk, and, secondly, on the magnitude of the maximum financial losses, including direct losses, lost profits, potential claims from partners, etc.

The lack of a unified management mechanism, which is caused by threats of a systemic nature, which are aimed at the economy as a whole, led to an aggravation of the situation in the priority sectors (infrastructure industries, education, health care, law enforcement). This is a destructor of the base for development and ensuring the national safety of the regions and the state as a whole, including contributing to a fall in the living standards and quality of life of citizens. The methods of managing safety and risk require the use of an analysis that covers all types of possible threats (economic, engineering, social factors, etc.) and not only the existing ones, but also long-term consequences of the taken decisions must be taken into account.



As an attempt to develop a unified mechanism, it is possible to consider the concept of I³ technologies in the economy, which was advanced by E.D. Solozhentsev [14], [26]. This technology, which relies on knowledge bases and logic and probabilistic risk models, according to E.D. Solozhentsev, is:

- intellectual, as it uses knowledge bases in the form of a system of logical equations, which makes it possible to obtain new knowledge for management by the effectiveness and risk criteria;
- informational, as it uses databases, and automatic data processing is implemented; and
- innovative, as it uses new logic and probabilistic models and methods.

Consequently, I³ risk analysis technologies are oriented, and rely definitely on logic and probabilistic calculus.

The logic and probabilistic method is a method of substantiating the degree of reliability of economic systems of various levels, in the implementation of which the structure of the system is described by the methods of mathematical logic, and a quantitative assessment of its risk stability is implemented using the basic principles of probability. The founder of logic and probabilistic modelling methods for safety and reliability is I.A. Ryabinin [27]. But there are other methodological approaches to the implementation of risk assessment [28].

In the course of applying the logic and probabilistic method, the analysis of the risk-stability of the economic system begins with a study of its composition, the relationships between the elements and the characteristics of functioning. The entire set of system states can be divided into two categories – stable and unstable to risks.

The conditions under which the closing events occur are reduced to a logical scheme – a logical tree. A logical tree is a graph in which “arcs” are types of possible systemic risks, and vertices are logical operations that connect initial factors.

In the probability theory, two random events are called independent if the onset of one of them does not change the probability of the onset of the other. Concerning this approach of designing a comprehensive risk assessment, each risky event can occur on its own, without affecting any other event, that is, without changing the probability of its occurrence. Provided that the economic system is exposed to attacks of *n* consecutive risk events, then, with a probability *p_i(t)* of their occurrences, there is probability of vulnerability.

$$p(t) = p_1 \times p_2(t) \dots \times p_n(t) = \prod_{i=1}^n p_i(t), \quad (1)$$

If risk events occur in parallel, then the probability of avoiding risk is equal to:

$$q_i(t) = 1 - p_i(t), \quad (2)$$

and the probability of the system reliability is:

$$q(t) = q_1(t) \times q_2(t) \times \dots \times q_n(t) = (t), \quad (3)$$

$$p(t) = 1 - \prod_{i=1}^n [1 - p_i(t)], \quad (4)$$

The risk response strategy is selected based on the obtained results of a comprehensive risk assessment, additional analysis of the region's economic and technological potential, predicted environmental performance, the current legislative base of business (inflation, taxes, increase in the number of competitors), and marketing and other research. The organization of a risk management system based on their comprehensive assessment allows tracking and signaling negative events in business activities on time.

V. CONCLUSION

The state of economic safety of a country directly depends on the level of development of its constituent elements, that is, individual regions. Therefore, the more developed and economically successful the regions are, the higher economic level of development and economic safety the country will have. In the modern uneven development of individual regions of Russia, the question arises about the safety and improvement of the region's economic safety.

The new-generation industrial policy, ensuring the economic safety, should be built on the principles of a differentiated approach to the constituent entities of the Russian Federation, differing in multi-industry specialization, and the territories with a limited set of specialization branches. Thus, it is necessary to form a set of tools for continuous adjustment and optimization of risk distribution (for example, through increasing the share of private and regional co-financing of projects) with the support from the federal budget for the sectors, which are not characterized by a high level of development in the area and have no connection with the competences accumulated there. The full priorities of regional development should include the sectors of intellectual, creative, and cultural services, which act as the leitmotif of smart specialization in economically developed countries.

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