

# The Use of Trigger Components in the Assessment of the Economic Security of Meso-Economic System

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**Abstract**—The article includes analytical material, reflecting the author's interpretation of the trigger approach for revealing potential threats to the economic security of meso-economic systems. The term “trigger of economic security” is defined, the attempt is made to single out the main factors that form the trigger vulnerability in the economic systems of the meso-level of the border type. In the work there are results of the assessment of the aspects of the economic security on the example of meso-economics of the border territories with the Republic of Kazakhstan: the results of the comparative analysis of the economic efficiency, the level of the innovation activity, the effective use of the labor resources on the border and remote territories of the Russian Federation are presented. The conclusions of the conducted analytical work have made it possible to form a tactical set of trigger components for the preventive analysis of the threats to the economic security. The method of the analysis, used by the author, is suitable for assessing the perspectives and consequences of the cooperation, for forecasting problematic phenomena while developing the projects of the interaction of the economic entities of neighboring states.

**Keywords**—trigger, system of indicators, economic security, meso-economic system.

## I. INTRODUCTION

The specific character of economic security problems do not always center around the economic criteria of the economic system activity, quite often the events in the external environment of political, legal, social and other aspects at different levels and in different sectors of the economics can serve as crucial for the effective forms of economic processes. Such events will directly affect the traditional indicators of the economic security but with a certain time lag. Among the tasks of the economic security, the most important is the task of the preventive identification of potential threats for the further use of this information in management procedures and the improvement of the indicative assessment tools used for this purpose.

The task becomes especially important if the economic system is included in the integrated processes in the organization of interregional and international cooperation forms.

The stability of the development of meso-economics and the economic security of its entities for the border territory of Russia and Kazakhstan is particularly important. The basis of the existence of numerous forms of cooperation in the economic sphere in the historical aspect was laid by the creation of the Commonwealth of Independent States and the Shanghai Cooperation Organization and it was

significantly strengthened by the emergence of the Eurasian Economic Union in 2015. The need to assess the prospects and consequences of the cooperation, the forecast of the problematic phenomena in the development of interaction projects, have served as the basis for choosing the object of the study, the meso-economic systems of the territories, bordering with the Republic of Kazakhstan, and determined its objective, the improvement of the components of assessing the economic security of meso-economic systems.

## II. LITERATURE REVIEW

The Based on the logic of the informal use in management procedures, rather strict requirements are specified for the indicative systems of assessing the level of the economic security. The main ones are considered to be the ability to reflect threats to the economic security adequately and the high degree of sensitivity and variability, and, therefore, the signaling ability of the preventive warning of possible dangers and threats [1].

The existing indicative systems for assessing various components of the economic security of meso-economic systems are differentiated, as a rule, according to the following classification criteria: a set of assessment criteria, types of threshold values, the scale of the analyzed object, the reflection of regional and industry differences in the system of indicators, the reflection of the economic life cycle phase.

The basis of the methodology for assessing and constructing the indicative systems of the economic security at the meso- and macro-economic levels in the Russian Federation in general is formed by the standardized set, defined by the “Economic security strategy of the Russian Federation until 2030” (approved by Decree No. 208 of the President of the Russian Federation dated May 13, 2017) [2].

The systems of indicators of the economic security consist of classical analytical indicators suitable for identifying the degree of the influence of some events, that have already happened, on the standard characteristics of one or another aspect of the business process, but they do not allow predicting future negative processes [3]. This observation is valid for almost all indicative systems that are currently used for assessing the integrated and aspect forms of the economic security of meso-economic systems.

The result of the assessment procedure is the conclusion about the safety status of the facility by assessing the deviations of the received calculated values of the indicators from the threshold values recommended by the author. The fact, that the actual value of the indicator falls into one or another quantitative interval, implies the statement of the fact

of the relative degree of dangers in this or that activity field, without the reference to the reasons and the more so to the prospects for safety [4]. The use of the results of indicative evaluations, obtained by analysts, is often not sufficient for making managerial decisions.

The authors, studying the problem of preventive assessment in the processes and procedures of managing economic security, use the approaches of the theory of weak signals effectively. The existing systems of the economic monitoring are developed on the principles of this theory [5]. The authors develop the practice of using the trigger components of economic processes, defining the trigger as a formal logical means of maintaining a stable equilibrium state of economic processes (phenomena), of functioning of the business entity, of the region, of the country and of the world economy as a whole [6].

### III. METHODS

The following approach has been used to identify the main trigger components of the preventive assessment of the threats to the economic security. Economic security triggers have been defined as separate events or trends in the business processes of an economic entity that trigger destructive development mechanisms that can undermine the economic security of the entity.

Based on the standard set of indicators of economic security, for dynamic analysis using the threshold values [7]:

- the tension ratio in the labor market;
- the share of innovative goods, works, services in the total volume of goods, works, services sold;
- the share of high-tech and knowledge-intensive products in gross domestic product;
- the share of organizations, carrying out technological innovations;
- the proportion of the working-age population in the total population;
- the share of innovative goods, works, services in the total volume of the exports of goods, works, services of industrial enterprises,

related to the characteristic of the result of managerial decisions at the regional level, to carry out preventive analytical procedures, the set of economic indicators has been defined. They characterize similar processes, but in the form of specific indicators assigned to the population size or to the volume of GRP.

To make conclusions, the tool of the comparative analysis of statistical specific indicators and their deviations from structural average values has been used.

The administrative territorial units have been selected as the objects under study. They are regions included in various federal districts, based on the principle of having a territorial border with a neighboring state (group A: the Kurgan region, the Chelyabinsk region, the Orenburg region, the Omsk region) and on the principle of a territorial border absence (group B: the Tyumen region (without autonomous region), the Sverdlovsk region). The calculations of the analytical indicators, given in the tables, have been made by the author based on the data of the Federal State Statistics Service.

### IV. RESEARCH RESULTS

The territorial distribution of production capacities by regions and federal districts, existing in the form of a historical legacy, and modern economic development are characterized by a tendency toward the centralization; the meso-economic characteristics of the development of the border territories with neighboring countries are significantly different from remote ones.

TABLE I. GROUPING OF MESOECONOMIC SYSTEMS AND THEIR CHARACTERISTIC IN TERMS OF POPULATION AND GROSS REGIONAL PRODUCT

Region	Gross regional product, trillion rub.	Average annual population	
		<i>In total, people</i>	<i>Including working-age people, people</i>
<i>Group A</i>			
Kurgan region	0.20	840119	429547
Chelyabinsk region	1.35	3484395	1902401
Orenburg region	0.82	1970364	1070770
Omsk region	0.65	1952138	1075600
<i>Group B</i>			
Tyumen region (without autonomous region)	6.99	1508737	850817
Sverdlovsk region	2.41	4320477	2352430

Source: Rosstat, 2017 [8].

With a comparable population size, the gross regional product of meso-economic systems in groups A and B differs by 35 times, the Kurgan region especially stands out with its traditionally low industrialization and underdeveloped infrastructure. The difference is significant even if there is a well-known phenomenon of a difficult clear definition of production boundaries and the amount of value added, produced on the territory of the region.

TABLE II. SPECIFIC INDICATORS OF ECONOMIC EFFICIENCY IN GROUPS OF MESOECONOMIC SYSTEMS

Region	Specific GRP per capita, thousand rub.	Specific GRP per capita of working-age, thousand rub.
<b>Group A</b>		
Kurgan region	236.4	462.3
Chelyabinsk region	385.6	706.2
Orenburg region	414.9	763.5
Omsk region	331.1	600.9
<b>Group B</b>		
Tyumen region (without autonomous region)	680.9	1207.4
Sverdlovsk region	495.1	909.3
For reference: Moscow city	1 269.8	-

Source: calculated by the author on the basis of the data of Rosstat, 2017 [8].

The main factors, forming the trend, are the processes of the centralization and construction of corporate structures on the principles of vertical or horizontal integration, which reduces the cost estimate of value added in the regions where the head structures of integrated corporations are based. The transfer of business residency to another region serves as the main process that provokes the decrease in the level of the economic security for meso-economic systems, carries the threat of lowering the tax base, the lack of motivation to form a personnel managerial reserve; and forms the prerequisites for the use of extensive development options for economic entities, acting on the territory of the meso-system.

**TABLE III. CHARACTERISTICS OF INNOVATIVE ACTIVITIES IN GROUPS OF MESOECONOMIC SYSTEMS**

Region	Costs of technological and logical (product, process) innovations in % of GRP	Costs of technological (product, process) innovations, mln. rub.		Share of value added in high-tech and knowledge-intensive industries in GRP, in %
		<i>In total</i>	<i>including purchasing software</i>	
Group A				
Kurgan region	0.408	820.8	0.8	26.0
Chelyabinsk region	2.098	28327.0	407.8	21.6
Orenburg region	2.082	17131.2	230.3	11.1
Omsk region	7.881	51311.3	272.2	19.6
Group B				
Tyumen region (without autonomous region)	0.131	9174.1	219.8	7.2
Sverdlovsk region	1.858	39781.2	566.0	21.9

Source: calculated by the author on the basis of the data of Rosstat, 2017 [8].

But the centralization emphasis reveals even more greatly while using specific per capita indicators for assessing the threats to the economic security of meso-systems in the analysis procedures, which serve as a tool for determining the trigger analytical component.

The regional participants of economics, for objective and subjective reasons, are less willing to invest money into innovative activities, and into the purchase of software, the costs for these purposes are no more than 2% of the GRP. At the same time, they provide a share of value added in high-tech and knowledge-intensive industries in GRP at the level of 20%.

The identified imbalance is another trigger component of the economic security of regional economic systems that characterizes the potential threats of a slowdown in the use of modern technological processes in production, including the digital type.

In general, the situation with the digitalization of business processes in the regions does not differ from the all-Russian trends, against the background of a low level of employment in the ICT sector (according to the Federal State Statistics Service [Rosstat, 2018]), in the conditions of the development of the digital economy, the share of the population of the Russian Federation employed in the ICT sector was only 1.6% in 2018.

**TABLE IV. CHARACTERISTIC OF EFFICIENCY OF USE OF LABOR RESOURCES IN GROUPS OF MESOECONOMIC SYSTEMS**

Region	Number of high-performance jobs per 1000 people of working-age population of the region, units	Unemployment level, %
<b>Group A</b>		
Kurgan region	173.7	8.0
Chelyabinsk region	198.0	5.6
Orenburg region	200.7	4.4
Omsk region	158.6	4.9
<b>Group B</b>		
Tyumen region (without autonomous region)	237.1	3.2
Sverdlovsk region	251.2	4.8

Source: Rosstat, 2018 [8].

The share of the legal entities that pay attention to the information security of their business and that use the means of protecting information, transmitted over the global networks, comprised 89.3% in the total number of the examined (including using encryption tools - 45.8%, electronic digital signatures - 78.9%) in the same year of 2018. However, more than 21% of the legal entities in the Russian Federation, according to statistics, are registered in Moscow, which substantially adjusts the analytical findings.

The number of high-productivity jobs in a specific ratio to the working-age population in the border regions is also significantly lower; the difference reaches 150%, which, together with high unemployment and an aging population, forms migration processes that are of a trigger character in terms of economic security.

**TABLE V. DYNAMICS OF MIGRATION PROCESS**

Region	Migration: number of people leaving the region			Migration growth (+), outflow (-) of the population of the region, people	
	2017		2018 people	2017	2018
	people	the ratio of those who left the region to the total population, %			
Group A					
Kurgan region	16763	2.0	17555	-4299	-2656
Chelyabinsk region	66016	1.89	68296	-4380	-8077
Orenburg region	27678	1.4	26732	-4645	-4200
Omsk region	33888	1.7	35295	-6264	-7435
Group B					
Tyumen region (without autonomous region)	25446	1.7	28182	+12756	+9958
Sverdlovsk region	89086	2.0	89953	+1832	+2888

Source: Rosstat, 2018 [8].

The negative migration balance of group A meso-economic systems is based on the outflow of the population, usually of working age and reproductive age, ranging from 18 to 40 years old. This category of the population is the most susceptible to innovations in economic development. The

negative balance determines the potential threats of the decrease of the potential of qualified personnel, the reduction of the population density of the border territories, the aging of the population and etc.

TABLE VI. STRUCTURAL COMPONENTS OF THE POPULATION SIZE

Region	Average population age	Proportion of working-age population	Proportion of population over 65
<b>Group A</b>			
Kurgan region	41.29	51.1	17.1
Chelyabinsk region	39.77	54.6	15.3
Orenburg region	39.51	54.3	14.3
Omsk region	39.65	55.1	14.1
<b>Group B</b>			
Tyumen region (without autonomous region)	37.34	56.4	12.0
Sverdlovsk region	39.75	54.4	15.3

Source: Rosstat, 2017, 2018 [8].

The positive balance is formed only in the two analyzed meso-economic entities of group B, border regions (group A) form a steady outflow of the population.

The results of the study have allowed trying to form the analytical scheme for the preventive determination of the threats to the economic security of the meso-economic system.

## V. CONCLUSION

Thus, the preventive function of the threat assessment, which is characteristic of systems of indicators of the economic security of economic systems, will be preserved when specific trigger components are used in analytical procedures. The trigger component, characterizing destructive development processes, can be determined by the comparative analysis of specific meso-economic indicators.

The most tactically informative, forming the main threats to the low efficiency of business processes, including cross-border cooperation projects, will be the following set of characteristics.

TABLE VII. RECOMMENDED INDICATORS FOR DETERMINING THE TACTICAL KIT OF TRIGGER COMPONENTS IN ACCORDANCE WITH ECONOMIC SAFETY INDICATORS

Indicators of economic security [7]	Recommended indicators
tension ratio in labor market	number of high-performance jobs per 1000 people of working-age population of the region specific GRP per capita of working-age, thousand rub.
share of innovative goods, works, services in the total volume of goods, works, services sold; proportion of organizations, carrying out technological innovations	costs of technological (product, process) innovations in % of GRP
share of high-tech and knowledge-intensive products in the gross domestic product	share of value added in high-tech and knowledge-intensive industries in GRP, in%
share of the working age-population in the total population size	ratio of those who left the region to the total average population, % migration growth (+), outflow (-) of the region's population, people

The trigger vulnerability in the economic systems of a meso-level of the cross-border type is determined by the presence of a long-term depressive development dynamics, migration outflow of the population, by the formation of the "mental vulnerability" of economic entities in the conditions of high rates of development of the digital economy, by the lack of sufficient competence and professional training of regional labor resources.

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