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Structural Modernization of Economy and Aspects of Economic Security of Territory

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Abstract: The article discusses the aspects of interrelation between consequences of structural changes in recent economy and the state of economic security of municipal entities of various types. It has been proved that the measures, developed and implemented in the frames of economic modernization, should consider for hazards to economic security of various bodies, including municipal entities, which originate in reality in the frames of structural transformations of economy and reformation of its sectoral structure. A system of economic security index has been designed, the list of spheres of occurrence of security hazards has been determined, main indices have been outlined, which characterize economic security of municipal entity. Proprietary calculation procedure of economic security of municipal entities have been developed: economic security of 47 municipal districts of Perm Krai has been estimated based on calculation of their economic security indices, peculiar features of approaches to definition of the notion have been revealed and formulated.

Key words: Economic security of municipal entities % Structural modernization of economy % Calculation procedure of economic security

INTRODUCTION

Estimation of economic security of territories and its monitoring make it possible to implement efficient control of progress in structural changes of economy, to determine in due time possibility of occurrence of these or those negative processes and phenomena, which threaten stability of economy and prevent its steady development, to reveal and to avoid occurrence of crisis situation in economy of certain territories [1].

Municipal entities are sub-federal units, which has important economic, social and political influence. However, in the frames of issues of structural modernization of economy and economic security municipal entities, contrary to the national and regional levels, as well as the level of a single enterprise, are scantily known, which assumes their additional theoretical and empirical study.

Theoretical Background: The notion of economic security municipal entities are well elaborated in Russia and abroad at the level of countries and regions [2-6]. As for estimation of municipal entities, its development is underway [7-8]. We believe that in this regard the best definition has been made by A.I. Tatarkin and A.A. Kuklin: "Economic security of a territory of municipal level is a combination of conditions and factors, characterizing current state of economy and enterprises, which influence on standards of living in this territory." ([9], pp. 77-78). In regard to calculation procedure of level of economic security of territory, it has been shown in available publications that at present neither Western, nor Russian science and practice can offer common universal approach to diagnostics of level of economic security of territory [1].

MATERIALS AND METHODS

The study is based on proprietary calculation procedure of economic security of municipal entities [7-8]. The basis for the calculation is discriminant analysis, which assumes subdivision of the studied assembly of municipal entities of Perm Krai in terms of economic security into three basic groups: secure, pre-crisis and crisis. In the frames of these groups we applied sets of partial threshold values of economic security indices,

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stated in terms of hazard to security. The calculations were carried out for 47 municipal entities of Perm Krai, including 16 entities of rural type, 7 entities of urban type and 24 entities of combined type, where district center is a city or a town of urban type and the remaining settlements villages.

The analysis was based on estimation of regions, where characteristic indices of social-economic development of territory are in the range of secure and steady development, in the pre-crisis range, or in the crisis range.

It has been determined that the most reasonable is recognizing of two types of threshold values of economic security: pre-crisis and crisis indices. Approach of the indices to pre-crisis and crisis thresholds is an indicator, which means necessity to adopt certain solutions aimed at correction of existing situation. Approach to maximum permissible values evidences increase in hazards for social-economical stability and excess of threshold values means entry into the range of economic instability and social conflicts, that is, real erosion of economic security. According to indices of positive essence (growth rates of production and the like), achievement and even excess of threshold values evidence positive dynamics and increase in steady development of certain territory.

Development and implementation of estimation procedure of economic security of municipal entities are accompanied by certain difficulties. Firstly, within determination of ultimate threshold not one but an assembly of indices should be taken into account, since critical mathematical deviation of one or two parameters from rated value not always characterizes accurately general situation. Secondly, unique character of municipal entities leads to great caution within application of averaged threshold indices, since critical points, characteristic for one territory, can be only conventionally applied to another one. Thirdly, development of threshold values of economic security is complicated with continuous restructuring of domestic statistic, as a consequence of which the list of indices varies from year to year, thus complicating retrospective analysis. However, without development of single, sufficiently universal list of threshold values of economic security indices of territories it is impossible to develop single unified estimation procedure of its level, as well as to perform comparative analysis of economic security and to develop measures on increase in its level both for single entity and for a group of entities.

Estimation of discriminant functions and accuracy of grouping provided more in-depth estimation of economic security state of territory in terms of stage of violation of economic security: initial, developing, or transitive with possible transition into another range.

Based on the list of spheres of occurrence of hazards to security [7], we recognized the following main indices, which characterize economic security of municipal entity (Table 1).

Threshold values for indices 1, 3, 5, 6, 10 and 12, as well as methods of formation of threshold values for differentiation between crisis and pre-crisis stages for some of remaining indices are taken from publications of scientists of Institute of Economics, Ural Branch, Russian Academy of Sciences guided by A.I. Tatarkin and A.A. Kuklin ([10], pp. 91-92; [11], p. 198].

Aiming at differentiation between areas of crisis exacerbation by stages, the following equations were used:

$X_{C2} = 1{,}4\, X_{C1}$ or

$$X_{C2} = \frac{X_{C1}}{1{,}4} \tag{1}$$

$X_{C3} = 1{,}8\, X_{C1}$

$$X_{C3} = \frac{X_{C1}}{1{,}8} \tag{2}$$

where $i = 1,2,3$ is the threshold value of intermediate stage of crisis.

In order to differentiate between the areas of pre-crisis stage development by stages the following equation were used:

$$X_{PC2} = \frac{X_{C1} + 2X_{PC1}}{3} \tag{3}$$

$$X_{PC3} = \frac{2X_{C1} + 2X_{PC1}}{3} \tag{4}$$

where $i = 1,2,3$ is the threshold value of intermediate stage of pre-crisis.

Aiming at formation of training set for normal state of economic security of municipal entity any values in excess of x_{B61} can be applied. In order to preserve consistency intermediate values of security indices were introduced, which were calculated as follows:

Table 1: Indices of economic security of municipal entities

1. Economic subsystem of municipal entity							
1.	Index	Ratio of investments into economy to municipal gross product					
	Units of measurement	%					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		25	21.67	18.33	15	11	7
2.	Index	Degree of depreciation of fixed assets					
	Units of measurement	%					
	Desired value	Decrease					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		40	45	50	55	60	65
3.	Index	Fraction of predominant type of economic activity in the structure of municipal gross product					
	Units of measurement	%					
	Desired value	Decrease					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		40	46.67	53.53	60	68	76
4.	Index	Fraction of own income in total budget					
	Units of measurement	%					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		60	48.33	36.66	25	17.85	13.88
5.	Index	Ratio of expenditure budget to municipal gross product					
	Units of measurement	%					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		30	26	22	18	13.2	8.4
6.	Index	Ratio of consolidated income of enterprises and agencies to municipal gross product					
	Units of measurement	%					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		15	12.67	10.33	8	5.2	2.4
7.	Index	Ratio of accounts receivable to accounts payable of enterprises and agencies of municipal entity					
	Units of measurement	Times					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		1	0.8	0.75	0.7	0.65	0.6

Table 1: Continued

2. Social subsystem of municipal entity							
8.	Index	Natural population growth					
	Units of measurement	Humans /1000 heads of population					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		0	-0.7	-1.4	-2.1	-2.94	-3.78
9.	Index	Level of unemployment					
	Units of measurement	%					
	Desired value	Decrease					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		5	5.73	6.46	7.2	10.08	12.96
10.	Index	Ratio of average monthly earning to cost of living					
	Units of measurement	Relative units					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		4.2	3.9	3.6	3.3	2.94	2.58
3. Natural subsystem of municipal entity							
11.	Index	Ratio of charges for environmental protection to municipal gross product					
	Units of measurement	%					
	Desired value	Increase					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		1.5	1.26	1.03	0.8	0.57	0.44
12.	Index	Specific amount of harmful atmospheric emissions from stationary pollution sources					
	Units of measurement	Tons/km^2					
	Desired value	Decrease					
	Threshold values	Pre-crisis			Crisis		
		PC1	PC2	PC3	C1	C2	C3
		4	5.33	6.67	8	9.6	11.2

Table 2: Threshold values of economic security indices for municipal entities of Perm Krai in 2009

	Secure 1	Secure 2	Secure 3	Pre-crisis 1	Pre-crisis 2	Pre-crisis 3	Crisis 1	Crisis 2	Crisis 3
Index 1	55.00	45.00	35.00	25.00	21.67	18.33	15.00	11.00	7.00
Index 2	25.00	30.00	35.00	40.00	45.00	50.00	55.00	60.00	65.00
Index 3	18.18	22.22	28.57	40.00	46.67	53.53	60.00	68.00	76.00
Index 4	100.00	86.66	73.33	60.00	48.33	36.66	25.00	17.85	13.88
Index 5	66.00	54.00	42.00	30.00	26.00	22.00	18.00	13.20	8.40
Index 6	33.00	27.00	21.00	15.00	12.67	10.33	8.00	5.20	2.40
Index 7	2.20	1.80	1.40	1.00	0.80	0.75	0.70	0.65	0.60
Index 8	4.00	1.80	1.40	0.00	-0.70	-1.40	-2.10	-2.94	-3.78
Index 9	2.27	2.78	3.57	5.00	5.73	6.46	7.20	10.08	12.96
Index10	9.24	7.56	5.88	4.20	3.90	3.60	3.30	2.94	2.58
Index11	3.30	2.70	2.10	1.50	1.26	1.03	0.80	0.57	0.44
Index12	1.81	2.20	2.85	4.00	5.33	6.67	8.00	9.60	11.20

$X_{S3} = 1{,}4\ X_{PC1}$ or

$$X_{S3} = \frac{X_{PC1}}{1{,}4} \quad (5)$$

$X_{S2} = 1{,}8\ X_{PC1}$ or

$$X_{S2} = \frac{X_{PC1}}{1{,}8} \quad (6)$$

$X_{S1} = 2{,}2 X_{PC1}$ or

$$X_{S1} = \frac{X_{PC1}}{2{,}2} \quad (7)$$

General order of assignment of specific indices to certain level of economic security is illustrated below:

Secure 1 (S1) $X^t_{fact} \# X_{S1}$
Secure 2 (S2) $X_{S2} \$ X^t_{fact} > X_{S1}$
Secure 3 (S3) $X_{S3} \$ X^t_{fact} > X_{S2}$
Pre-crisis 1 (PC1) $X_{PC1} \$ X^t_{fact} > X_{S3}$
Pre-crisis 2 (PC2) $X_{PC2} \$ X^t_{fact} > X_{PC1}$
Pre-crisis 3 (PC3) $X_{PC3} \$ X^t_{fact} > X_{PC2}$
Crisis 1 (C1) $X_{C1} \$ X^t_{fact} > X_{PC3}$
Crisis 2 (C2) $X_{C2} \$ X^t_{fact} > X_{C1}$
Crisis 3 (C3) $X^t_{fact} > X_{C2}$

Calculated threshold values of economic security indices of municipal entities of Perm Krai as for the year 2009 [10] for each state are summarized in Table 2.

RESULTS AND DISCUSSION

Analysis of economic security state of municipal entities of Perm Krai by generalized groups, that is, secure, pre-crisis and crisis state, demonstrated that 34 municipal entities (72 % of total number of municipal entities of Perm Krai) are in crisis zone and 13 entities (28 %) are in pre-crisis state at Pre-crisis 3 stage, which evidences possible transition either to Crisis 1 stage and further worsening of situation, or to Pre-crisis 2 stage and further stabilization of situation. Herewith, 18 municipal entities were at Crisis 1 stage (38 %); 10 municipal entities were at Crisis 2 stage (21 %) and 6 municipal entities were at Crisis 3 stage (13 %).

Situation in rural districts is inferior to that in combined and urban districts. Thus, of 16 rural municipal entities only six entities have at least one index corresponding to security criterion (37.5 %), whereas there are 16 (67 %) such entities among combined municipal entities and all rural entities satisfy such criterion. Moreover, urban districts have at least two and more indices corresponding to secure state, contrary to rural municipal entities, for which this is upper limit.

The only economic security index with positive dynamics for all territories of Perm Krai is the index of harmful atmospheric emissions from stationary pollution sources. However, this can be readily explained, since there are no large scale industrial enterprises in these territories.

CONCLUSIONS

The measures, which are developed and implemented in the frames of projects of economic modernization, should consider for hazards to economic security of various bodies, including municipal entities, which can and do occur in the frames of structural transformations of economy and reformation of its sectoral structure.

This problem is highly important, since it has been demonstrated by researches that one of acute negative consequences of structural reforms (even well developed and reasonably implemented it terms of economic and social aspects for a single entity) is worsening of economic security of aggregated entities of higher hierarchical level. For them, even for territories with various types of economic operations, it is sufficient to consider for all interrelations, influence of all factors, especially of environmental ones, as well as all consequences, which can be absolutely different even for two adjacent territories, one of which is a rural settlement and the other is a developed industrial district. Unfortunately, this is the situation, which is observed everywhere in our country and practice of domestic structural reforms.

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