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## **The Methodical Approach to the Evaluation of the Competitiveness of the Border Territories**

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Elena Borisovna Kmet<sup>1</sup> and Nadezhda Aleksandrovna Mayzner<sup>1</sup>

**Abstract:**

*With the globalization along with increasing crisis in the global economy, it becomes obvious that the improvement in the competitiveness of the territory is a crucial factor in formation of the international competitive advantages of the region. The border territories have certain characteristics, which largely determine the features of assessment of its competitiveness.*

*The proposed methodological approach includes a system of factors of competitiveness, based on which the integral indicator of the competitiveness of the border territory under estimation regarding the rival territory is calculated. The approbation of the proposed methodological approach is based on the assessment of the competitiveness of the Primorsky Territory of the Russian Federation regarding the Heilongjiang Province of China.*

**Key Words:** *border territory, competitiveness of the territory, regional competitiveness, factors of competitiveness, integral indicator of competitiveness.*

**JEL Classification:** *O10, O18, O33*

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<sup>1</sup> *Far Eastern Federal University, 690950 Russia, Vladivostok, Sukhanova St., 8*

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## **Introduction**

The competitiveness of the territories is a relevant theme of modern regional economic research. The improvement of the competitiveness of the region lies in the purposeful creation and development of its sustainable and long-term competitive advantages in all fields of activity, and takes place in the increasingly growing competitive struggle among the regions to attract the investments based on creation of a favorable business environment and enhancement of the quality of life.

The assessment of the competitiveness of the border territory of the country is specific, because on the one hand, the region competes with other subjects-regions of one and the same country, on the other hand, it competes with the border territory of the neighboring country. The border region is the territory of the state, adjacent to the state border, performing the special border functions and, therefore, having the specific features. The main factors contributing to the specificity of the borderland are its geographical location and type. For example, van der Velde (Velde, 1997) identifies four types of border regions, each of which is defined by the functional dualism of the boundary, which combines the functions of the barrier and the contact: alienated, adjacent, interdependent and integrated border territories.

All types of the cross-border inter-regional cooperation are market-driven, are closely interlinked with each other and have a strong mutual influence. In the Russian Federation 48 subjects, five of which (the Primorsky and Khabarovsk Territories, the Amur Region, the Jewish Autonomous Region and the Chita Territory) are bordering China, of 85 top-level territories can be attributed to the to the border territories, and 26 checkpoints are established. The competitiveness of the object inherently is a relative category; accordingly, it is possible to perform its quantitative assessment only based on the comparison with a certain base, such as the condition of the object at different moments of time, the state of comparable objects-competitors or the average, the best, and other countrywise values.

## **The theoretical basis of the study**

The study of the interpretations given by Russian and Chinese scientists to such concepts as the competitiveness of the regions and the border territory, the analysis of the factors of competitiveness of the regions and the review of methods of assessment being considered by them, allow the authors to offer their own system of factors of competitiveness and the methodical approach to the assessment of the competitiveness of the border territory on the basis of the integral indicator of competitiveness of the assessed border territory with respect to the rival one.

A significant contribution to the theory of competitiveness of the countries and regions was made by the studies of Porter (Porter, 1990), the founder of the American school of competitiveness. Fatkhutdinov (Fatkhutdinov, 2005) and

Pankrukhin (Pankrukhin, 2010; Pankrukhin, 2013) are rightfully considered the founders of the Russian school of territorial marketing.

Having studied the numerous interpretations of the concept of competitiveness of the territory, the following common features can be identified:

- the competitiveness of the territory is directly related to the competition and the rivalry between the territories on goods and services markets, and is defined not only by the existing competitive advantages, but also by the level of use of these advantages (Skulches, 2016; Bragin, 2012; Chainikova, 2008; Neretina *et al.*, 2016; Ryzhkova *et al.*, 2015; Akopova and Przhedetskaya, 2016).
- the competitiveness of the region is its ability to provide a high level of living standards and the possibilities to fulfill the economic potential available in the region (financial, industrial, labor, investment, resource) (Shekhovtseva, 2001; Wu, 2013; Rubtzov *et al.*, 2015; Kalinina *et al.*, 2015).
- the competitiveness of the territory is studied at the level of the state, as a capacity for the effective and sustainable development of the region and the ability to design a management system allowing to adapt quickly to the rapidly changing external conditions, to adapt with maximum efficiency and to use the experience of others to solve the own problems (Wang and Han, 2004; Yang and Luo, 2011; Xu, 2012).
- the competitiveness of the territory is a relative category, implying a comparison with a certain base, in capacity of which the average values per country, the values for other regions (territories), the integrated average criterion etc. can be considered (Bragin, 2012; Shekhovtseva, 2001; Wu, 2013).

To make the region competitive, it is required to create favorable conditions for the individual subjects included into it. Accordingly, the competitiveness serves as a synonym for appeal, whether it pertains to the attractiveness for the investors or population.

A number of authors (Sabatino, 2016; Christopherson *et al.*, 2010) propose to consider one of the factors of competitiveness of the region as the sustainability of the region as the ability of the region to adapt its strategies in response to the changes in the economic situation, appearing from time to time, and to focus on a group of city- and region- forming companies in the process of assessment of the sustainability of the territory.

The border region is the physical, political and economic space on both sides of the national borders. In a narrow sense they are the territories, immediately adjacent to the state border, experiencing the greatest impact of the border regime, as well as the social-economic order and the political system of the neighboring countries and having a special potential for the development of the international cooperation (Baklanov, 2008; Van Gorp, 2009; Stroeva *et al.*, 2015).

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Therefore, the competitiveness of the border territories is the relative characteristic of a subject of the federation, which determines the ability of the region to compete with other regions to attract various resources, as well as its ability to be attractive for the population and for the business, which can be achieved through the identification, use and subsequent creation of the competitive advantages. In the course of development of the system of factors of competitiveness of the border territories the author relied on the achievements of Russian (Ushvitskii and Parakhina, 2005; Starovoitov, 2004; Yurpalov, 2003) and Chinese scientists (Wu, 2013; Li and Zhang, 2004).

According to Ushvitskii and Parakhina, the system of possible indicators of competitiveness can include three groups of factors (Ushvitskii, & Parakhina, 2005): the indicators of availability and efficiency of use of the resources of the region; the standard of living of the population of the region; the indicators of investment attractiveness and activity of the region.

According to Yurpalov (2003) and Starovoitov (2004), the factors of competitiveness of the border territories, depending on the amount of effort, can be divided into the basic (e.g., natural resources, availability of efforts, geographical location, etc.) and advanced (highly qualified human resources, research organizations, etc.), and can be divided into general (road network, qualified staff, etc.) and specialized (staff with a narrow qualification, specific infrastructure, and other factors used in a limited number of sectors), by the degree of specialization. Chinese scientists Li Xinbao and Zhang Shulian (Li and Zhang, 2004) define the following general factors of competitiveness of the border territories: the level of economic development; the regional distribution of natural resources and the differences in natural conditions; the availability of the transport in the region; the level of education of the population; macro environment, the state economic system and the investment policy.

According to Wu Yun (Wu, 2012), there are four categories of factors of competitiveness of the border territories, containing the objective factors (the level of economic power of the region, the industrial competitiveness) and subjective factors (the level of economic the power of some of the key companies in the region, the efficiency of public administration), the factors-elements (the level of scientific and technological innovation, the financial strength and the levels of openness for the outside world), the environmental factors (the level of infrastructure development and environmental protection of the region).

It should be summarized that the considered methodological approaches to the assessment of the competitiveness of the border territories, differ sufficiently, almost every group of scientists has its own point of view. But the common points of view can be identified in the aggregate of the considered factors. Having analyzed all the factors, the authors propose their own system of factors. The absence of unanimity

in the methodology for the assessment of the competitiveness of the territories should be noted. It is important to distinguish such concepts as the approach, the method and the model of assessment (Caiazza *et al.*, 2015). The approach determines the general principles for the assessment and unites the aggregate of methods. There are many different models, reflecting the mathematical calculation model (the relationship between the variables used for assessment) within each method.

Depending on the principles of collection of the information on the factors (indicators) of competitiveness of the region, three key methodical approaches can be defined:

1. The assessment based on statistics (macro-economic and social) indicators of the activity of the region.
2. The assessment based on statistic indicators and expert estimates, where the latter are subjective to a certain extent.
3. The assessment based on the aggregate of the quantitative and qualitative indicators of the socio-economic development of the region.

The following groups can be determined from the methods of assessment of the regions (countries):

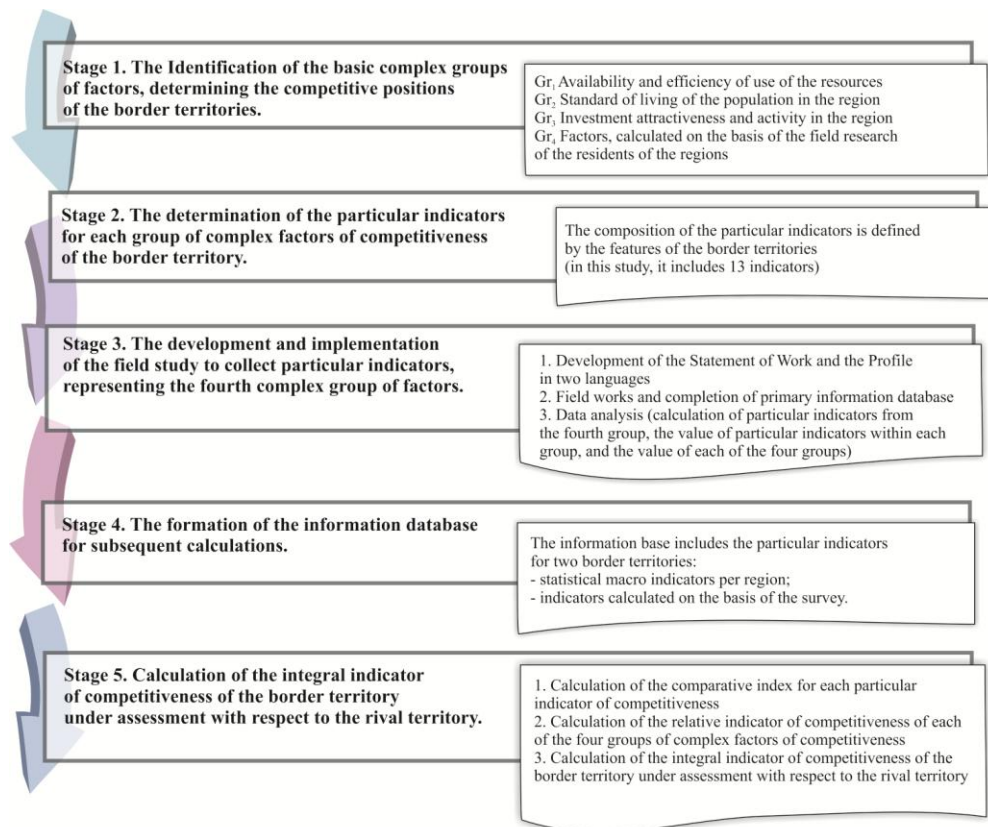
- the group of methods involving the ranking of the regions based on calculation of the ranks, rating factors, regional indices of competitiveness (Charles and Zegarra, 2014). For example, the IRPEX ranking of the investment attractiveness of the regions of the Russian Federation, performed by the Agency for Strategic Initiatives, the ranking of the Institute for Regional Policy, the PPP ranking of the region development, the ranking of the socio-economic state of the subjects, the ranking of the Russian regions by the quality of life. The methods of this group are to some extent guided by the GCI index (The Global Competitiveness Index), created by the World Economic Forum (WEF, the World Economic Forum), and the ranking of the countries performed by the Swiss Institute for Management Development IMD (International Institute for Management Development). For example, the GCI index is calculated on the basis of 111 variables, divided into 12 blocks of characteristics, some of which are divided into sub-blocks (Jovan and Bradic-Martinovic, 2013), and to calculate the IMD ranking, 331 indicators are used in four main directions: the state of the economy, the efficiency of the government, the state of the business environment and infrastructure.
- the group methods, involving the assessment of the competitiveness of the region, based on the calculation of the integral (aggregate) indicator of the competitiveness relative to the base, which can be represented by the states of the object at different moments of time, the state of the comparable objects-competitors or the average, the best and other values of the indicators per country.

## Methods

The proposed methodical approach includes the basic provisions (assumptions), the algorithm for assessment of the competitiveness of the border territory, the conceptual approach, the method and the specific mathematical model.

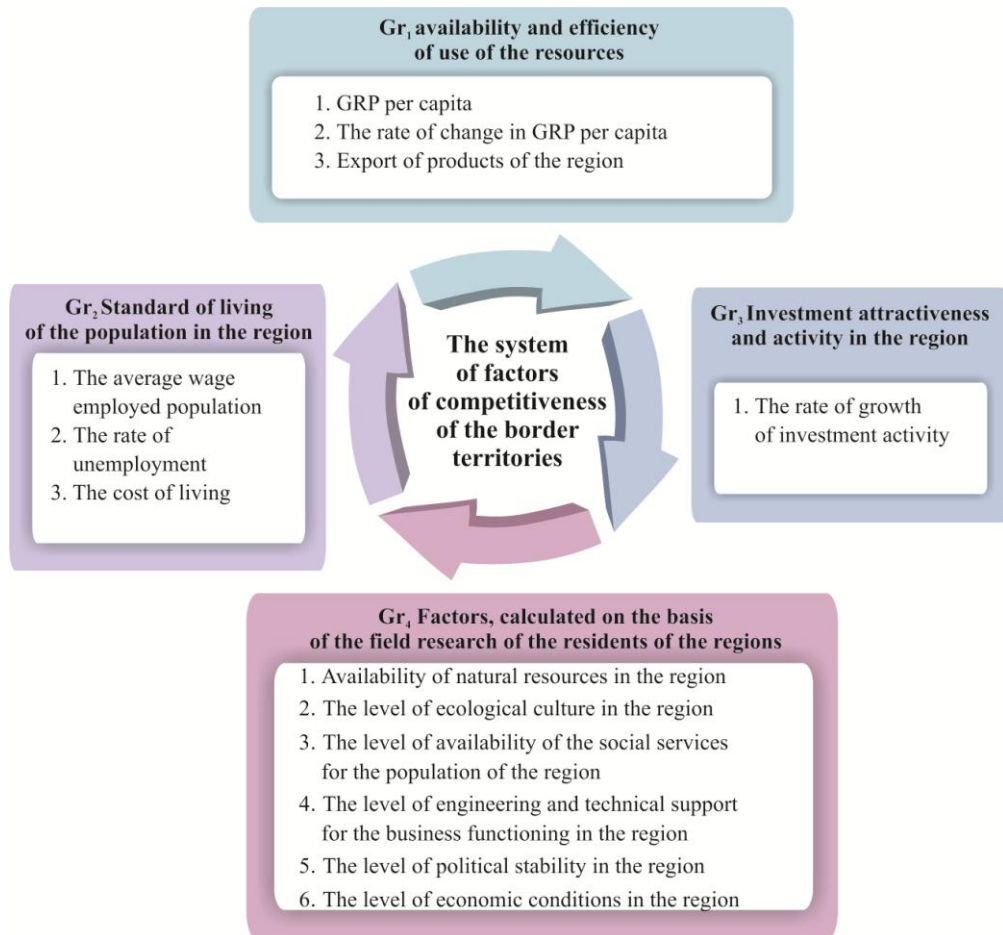
Let us consider the basic assumptions. It is imperative condition that the territory under assessment and the rival territory must be located on both sides of the national borders, thus they have to be the border regions of the two neighboring countries. The integral indicator of competitiveness of Primorsky Territory, Russia concerning Heilongjiang Province, China, is calculated as the example. According to Kmet (Kmet, 2013), the assessment can be deemed comprehensive only in the case of use of the model based on a system of indicators, allowing to assess different trends and sub-levels of any activity. The algorithm for assessment of the competitiveness of the border territory is shown in Figure 1.

**Figure 1.** The algorithm for assessment of the competitiveness of the border territories



The basis of the methodical approach is the system of factors of competitiveness of the border territories, developed by the author, including four groups of complex factors, including the particular indicators (Figure 2). The first three groups of complex factors are assessed on the basis of statistical information, and the fourth group is assessed based on the field research in the form of survey of the residents of the region. Given this, it is required to take into account the cross-cultural characteristics of the respondents of different countries in the process of analysis of the results of the survey, because Russian scientists Romanova and Noskova (Romanova and Noskova, 2014) proved on the basis of empirical studies that the cultural values, the elements of the physical and social environment significantly affect the characteristics of behavior of the consumers. The congruent grouping of the factors and the approach to their assessment allow considering not only the actual statistics on the development of the region, but the views of the residents.

**Figure 2.** *Factors of competitiveness of the border region*



Consequently, all the private indicators are divided into two types: the indicators, representing the actual statistical macroeconomic and social indicators per region and the indicators calculated on the basis of the field survey of the residents of the regions.

To assess the competitiveness of the territory under study the relative indicator  $C_{II}$  – the integral indicator of competitiveness of the territory under assessment with respect to the rival territory, able to take on the values greater than or less than unity. At the beginning of the fifth stage of the algorithm (Figure 1) the comparative indicator for each particular indicator of the competitiveness of the Russian border territory under assessment relative to the base (1), is calculated. The border territory of China serves as the base.

$$I_i = \frac{F_{iI}}{F_{iX}}, \quad (1)$$

where  $I_i$  is the comparative indicator for the  $i$ -th particular indicator of competitiveness of the border territory under assessment relative to the rival territory of another country;

$F_{iI}$  is the  $i$ -th particular indicator of competitiveness of the border territory under assessment;

$F_{iX}$  is the  $i$ -th particular indicator of competitiveness of the rival border territory of another country.

Each particular indicator has not only the intensity but also the direction of the impact on the competitiveness of the region (positive or negative). In the case of negative effect, the ratio is inverted (the numerator changes place with the denominator). Then, the relative indicator of competitiveness of each of the four groups of factors of competitiveness is calculated according to the formula (2).

$$GR_i = \sum_i^N K \times I_i, \quad (2)$$

where  $I_i$  is the comparative indicator for the  $i$ -th particular indicator of competitiveness of the border territory under assessment relative to the rival territory of another country;

$n$  is the number of indicators in each group of factors of competitiveness of the region;

$K$  is the value of each particular indicator within the group of factors of competitiveness (in the sum the values should be equal to 1).

At the end, the integral indicator of competitiveness is calculated according to the formula (3).

$$C_{II} = \sum_i^n k \times GR_i, \quad (3)$$



where  $C_{II}$  is the integral indicator of competitiveness of the border territory under assessment relative to the border territory of another country;

$GR_i$  is the relative indicators of competitiveness of the group (there are 4 groups of factors of competitiveness, i.e.,  $n = 4$ )

$k$  is the value of each of the four groups of complex factors of competitiveness (in the sum the values should be equal to 1).

The study of the criteria (standards) of the value of the integral indicator of competitiveness of the border territory under assessment with respect to the rival border territory of the other country is as follows, if:

$C_{II} < 1$ , then the competitiveness of the border territory under assessment is inferior to the competitiveness of the rival border territory of another country;

$C_{II} > 1$ , then the competitiveness of the border territory under assessment is superior to the competitiveness of the rival border territory of another country;

$C_{II} = 1$ , then the competitiveness of the border territory under assessment is equal to the competitiveness of the rival border territory of another country;

## **Results**

The approbation of the proposed methodological approach is based on the assessment of the competitiveness of the Primorsky Territory of the Russian Federation regarding the Heilongjiang Province of China.

The values of particular factors of the first three complex groups of factors ( $GR_1$ ,  $GR_2$  and  $GR_3$ ) were collected as a result of the desk research of the statistic indicators for two regions.

The field research according to CAWI (Computer Assisted Web Interviewing) method was carried on in January-April 2016 to assess the particular indicators of the fourth group. The interviewing of Russian (382 people) and Chinese respondents (390 people) was conducted on the basis of the internet surveys systems <http://www.ianketa.ru/surveys/> and <http://www.wenjuan.com/> where the body of the Profile was published in Russian and Chinese respectively. The main objective of the pilot field survey was the calculation of the indicators, describing the competitive advantages of the Primorsky Territory and Heilongjiang Province, and the identification of the methods of improvement of the competitiveness of the territories. A special Profile consisting of 17 questions was developed for the field survey. Seven questions were intended to calculate the particular indicators:

1. Please, assess the availability of the natural resources – land, minerals, water, forests, recreational resources – in the region.
2. Please, assess the level of environmental culture in your region (attitude of the society to the nature and ecological problems).

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3. Please, assess the level of availability of the social services for the population of the region (housing, transport, healthcare, education, culture and art).
  4. Please, assess the level of engineering and technical support, created in the region, for the functioning of your business or the enterprise you work for (roads and utilities, transportation, communication, storage, repair facilities, container resources, service).
  5. Please, assess the level of political stability in the region.
  6. Please, assess the level of economic situation in region.
  7. Please, assess the level of development of the infrastructure of the border checkpoints in the Primorsky Territory, bordering the Heilongjiang Province of China (on the territory of Heilongjiang Province, bordering the Primorsky Territory of the Russian Federation)

Two questions of the Profile suggested the respondents to make proposals on improvement of the competitiveness:

1. Name three companies, playing the key role, in your opinion, in the development of the region.
2. Name the trends which are in your opinion worth developing for the purposes of improvement of the competitiveness of the region.

One question of the Profile was intended for the calculation of the value of the particular indicators within each complex group of factors (K) and the value of the complex groups of factors (k):

1. What factors do you consider most important to improve the competitiveness of the region?

The factor analysis of the results of the respondents' answers to this question allowed both to calculate the values, and to confirm the original hypothesis on the structuring of the system of factors of competitiveness of the border territories. The factor analysis allowed enlarging a large number of initial indicators (the particular indicators herein) to several groups of factors. To evaluate the acceptability of the factor analysis, the KMO value (the equivalence must be greater than 0.7) should be considered, the acceptable result of Barlett sphericity criterion is  $p < 0.05$ . A prerequisite for the factor analysis is the same encoding of the responses. Herein the Kaiser-Meyer-Olkin sample adequacy measure (KMO) amounted to 0.83, and the statistical significance of Barlett sphericity criterion is 0. Therefore, the data are quite acceptable for analysis. Other questions were intended to describe the profile of the respondents.

Let us consider the interim results of the calculation. Table 1 shows the values of the particular indicators of the competitiveness of the border regions, and the Chinese

currency (CNY) are translated into Russian rubles at the current rate as of the end of the analysed year.

**Table 1.** *Values of particular factors of competitiveness of the Primorsky Territory and Heilongjiang Province, 2013-2014*

Groups of complex factors	Particular indicators	Primorsky Territory		Heilongjiang Province	
		2013	2014	2013	2014
GR1 availability and efficiency of use of the resources	GRP per capita, rub.	297,224	332,383	382,601	404,027
	The rate of change in GRP per capita, %	3.9	11.8	4.0	5.6
	Export of products of the region, mln rub.	286,707	356,099	1,089,142	1,163,163
GR2 Standard of living of the population in the region	The average wage employed population, rub.	24,343	28,339	42,121	51,874
	The rate of unemployment, %	7.1	6.9	4.53	4.47
	The cost of living, rub.	9,395	10,321	15,720.89	16,970.28
GR3 Investment attractiveness and activity in the region	The rate of growth of investment activity compared to the corresponding period of the previous year, %	60.57	109.42	119.6	101.5
GR4 Factors, calculated on the basis of the field research of the residents of the regions	Availability of natural resources in the region, five-point scale	3.53		3.74	
	The level of ecological culture in the region, five-point scale	2.68		3.46	
	The level of availability of the social services for the population of the region, five-point scale	3.15		3.25	
	The level of engineering and technical support for the business functioning in the region, five-point scale	3.02		3.24	
	The level of political stability in the region, five-point scale	3.41		3.60	
	The level of economic conditions in the region, five-point scale	2.91		3.08	

Source: [<http://primstat.gks.ru>; <http://www.hlj.gov.cn>]

Table 2 shows the comparative figures for all particular indicators of competitiveness of Primorsky Territory regarding Heilongjiang Province. It should be noted that the increase in the unemployment in the region indicates the decline in its competitiveness; therefore, the formula (1) is inverted (the numerator and denominator are reversed) for the calculation of the comparative index.

**Table 2.** Comparative figures for all particular indicators of competitiveness of Primorsky Territory regarding Heilongjiang Province, 2013-2014

Groups of complex factors	Particular indicators	K Value of the indicator within the group	Ii	
			2013	2014
GR1 availability and efficiency of use of the resources	GRP per capita	0.4	0.78	0.82
	The rate of change in GRP per capita	0.2	0.98	2.11
	Export of products of the region	0.4	0.26	0.31
GR2 Standard of living of the population in the region	The average wage employed population rub	0.4	0.58	0.55
	The rate of unemployment	0.2	0.64	0.65
	The cost of living	0.4	0.598	0.608
GR3 Investment attractiveness and activity in the region	The rate of growth of investment activity compared to the corresponding period of the previous year	1	0.506	1.078
GR4 Factors, calculated on the basis of the field research of the residents of the regions	Availability of natural resources in the region	0.2	0.67	
	The level of ecological culture in the region	0.1	0.79	
	The level of availability of the social services for the population of the region	0.2	0.97	
	The level of engineering and technical support for the business functioning in the region	0.1	0.93	
	The level of political stability in the region	0.2	0.95	
	The level of economic conditions in the region	0.2	0.93	

The interim results of the calculation of the integral indicator of competitiveness of the Primorsky Territory regarding Heilongjiang Province in the context of groups of factors are presented in Table 3.

**Table 3.** *The results of the calculation of the integral indicator of competitiveness of Primorsky Territory regarding Heilongjiang Province in the context of groups of factors, 2013-2014*

Groups of complex factors	k value of the group	GR <sub>i</sub>	
		2013	2014
GR1 availability and efficiency of use of the resources	0.3	0.611	0.872
GR2 Standard of living of the population in the region	0.2	0.599	0.593
GR3 Investment attractiveness and activity in the region	0.3	0.506	1.078
GR4 Factors, calculated on the basis of the field research of the residents of the region	0.2	0.932	
<i>C<sub>II</sub></i>		0.64	0.89

For example, the calculation of the integral indicator of competitiveness of the Primorsky Territory regarding Heilongjiang province in 2014 is carried on according to the formula (3).

$$C_{II} = \sum_i^n k \times GR_i = 0.872 \times 0.3 + 0.593 \times 0.2 + 1.078 \times 0.3 + 0.932 \times 0.2 = 0.89$$

The study of the criteria of the value of the integral indicator of competitiveness of Primorsky Territory regarding Heilongjiang Province allows coming to the following conclusions.

- the integral indicator of competitiveness of the Primorsky Territory with respect to Heilongjiang Province as of 2013 was 0.64, which means that the competitiveness of the Primorsky Territory is significantly inferior to the competitiveness of Heilongjiang Province;
- the integral indicator of competitiveness of the Primorsky Territory regarding Heilongjiang Province improved in 2014 and amounted to 0.89.

## **Discussion**

Let us prove the validity of the results. The improvement of the competitiveness of the Primorsky Territory as a border territory is due to the growth of the investment attractiveness because of the active development of the territories of priority social and economic development (hereinafter, TPSED) and the territories of priority

development (hereinafter, TPD), the creation of the investment infrastructure of the territory and the appropriate steps in the field of legal regulation.

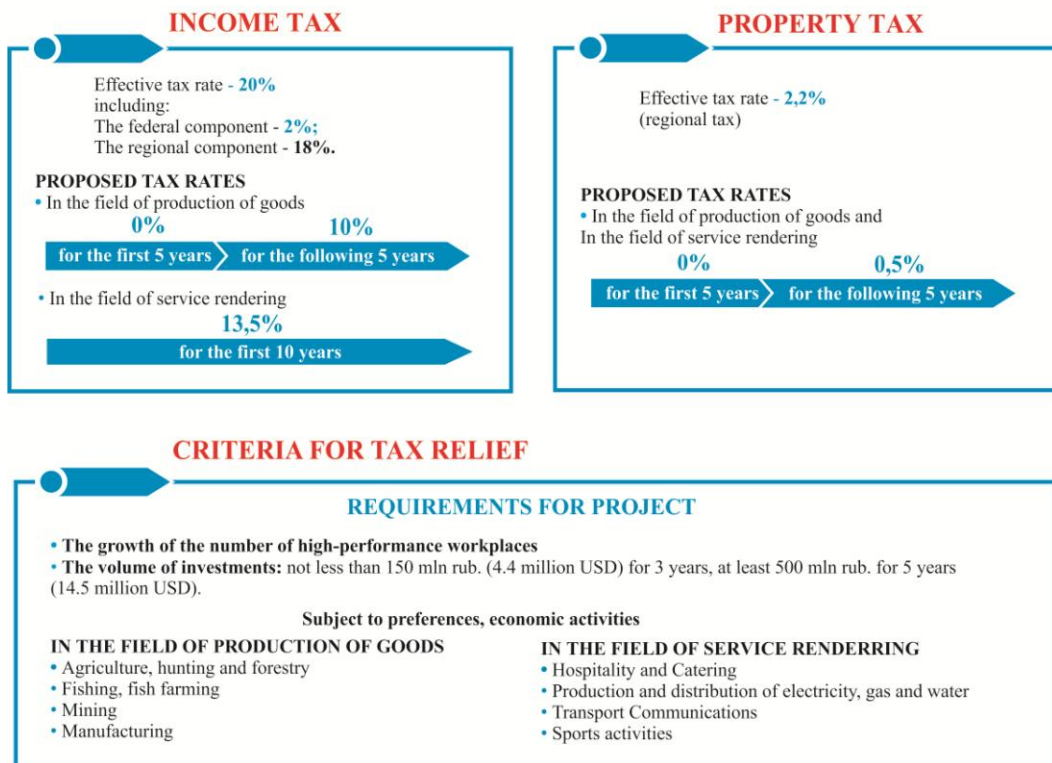
It is worth noting that the that TPSEDs and the special economic zones are formed not only in order to develop the sectors of the economy and to attract the investments, but also to create comfortable conditions of living for the population. The main purpose of the Economic Development Zones is the solution of the strategic tasks of development of the country as a whole or of the particular territory: foreign trade, economic, social, regional scientific and technical problems. The new model of the Primorsky Territory for 2016 includes three territories of priority social and economic development (Mikhailovsky, Nadezhdinskaya, Russian island), the special economic zone of industrial-production type, located in Vladivostok city district and three comprehensive projects (Petrochemical, Sukhodol, Zarubino).

The legally enshrined tax relief for the investors has increased significantly the investment attractiveness of the Primorsky Territory (Figure 3).

**Figure 3. Tax relief in Primorsky Territory, 2013**

PT Law on benefits for income tax of 19.12.2013 No. 330-K3

PT Law on benefits for property tax of 19.12.2013 No.9329-K3



The investment infrastructure created in the Primorsky Territory, is represented in Table 4.

**Table 4.** *The investment infrastructure created in the Primorsky Territory*

Item	Regional and federal development institutions	Functions
1	Representative Office of the Agency for Strategic Initiatives in the Far Eastern Federal District	Cooperation on: - implementation of the Investment Standard - implementation of national and regional entrepreneurial initiatives
2	Investment agency of Primorsky Territory	- Road show - "One window" for investors
3	Development Corporation of Primorsky Territory	Creation of industrial sites in Primorsky Territory
4	Federal Development Institutions	Representative Office of the Russian Direct Investment Fund, Vnesheconombank, Development Fund of the Far East

The methodical approach to the assessment of the competitiveness of the border territories, proposed by the author, has a number of advantages and limitations. The following advantages can be named as the undoubted advantages:

- the flexibility of the methodical approach is determined by a system of four complex factors. Being the components of them, the particular factors can be reviewed and refined by taking into account the features of the territory under study;
- the use of the integral indicator of the competitiveness allows to implement the principle of relativity, and also to neutralize the different size of particular factors, significantly expanding the list of competitive advantages of the region to be included in the assessment;
- the fourth complex group of factors, calculated on the basis of field studies of the residents of the region, allows to take into account the views of the residents.

However, there is a time gap between the results of the first three groups of complex factors that have been analyzed as of 2013-2014, and the results of the fourth group, reflecting the data of the survey of 2016. To bridge the gap, a number of correction factors or the regular assessments (once a year) of the competitiveness of the territory may be used.

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## Conclusion

Currently, in the conditions of market relations, the importance of regional economy has increased. In modern conditions the border regions play an important role in the development and intensification of the integration processes between different countries. For this reason it is not enough to use a limited set of data to obtain a reliable picture of both short-term and long-term forecasts. The proposed methodological approach to the assessment of the competitiveness of the border territories allows us to investigate the state of the border region by implementing a systematic and comprehensive approach.

The following research trends seem relevant to the authors:

- the development of the system of corrective coefficients, eliminating the time gap between the statistical data and the results of the field research (survey);
- the further approbation of the methodical approach, the analysis of the integral indicator of the dynamics for several years will allow to optimize the system of factors of competitiveness of the border territories.

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