

Evaluation of Gross Municipal Product on the Republic of Bashkortostan as an Economic Development Indicator for Municipalities

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Abstract. In order to evaluate the economic development of municipalities in a region, it is necessary to find the resulting indicator, for example that could be gross municipal product (GMP). There are many methods of calculating GMP. To calculate the GMP of the Republic of Bashkortostan the article uses the method proposed by the Global Urban Observatory¹. Gross municipal product was calculated for 62 municipalities within the Republic of Bashkortostan in 2012-2017. It has been established that 10 municipalities in the Republic of Bashkortostan with major cities and the region's capital account for more than a half of the total municipal product. At the same time, Ufa accounts for more than one quarter of gross municipal product. The analysis formed the foundation for dividing municipalities into 4 groups by their contribution into the total gross municipal product. It has been established that the distribution of municipalities by the formed interval groups in the studied period hardly changed. Significant differences have been found among municipalities by their contribution. To evaluate the differentiation by GMP per capita, descriptive statistics methods were used and allowed to come to the conclusion that the municipalities are homogeneous in this regard. The possibility to develop a comprehensive description of municipalities development level is the advantage of this method for the purposes of further development of management decisions with a view to ensure comprehensive environment development of the Republic of Bashkortostan.

1. Introduction

Under growing foreign trade challenges and high macro-economic uncertainty, more pronounced regional differentiation by social and economic development is one of the most pertinent issues for the Russian Federation. Structural development disparity can be seen at the level of municipalities, which results in poorer life quality, brain drain among working age population from depressed municipalities. Thus, it is necessary to develop interregional policy for comprehensive interregional environment development, which calls for quantitative and qualitative processes in municipalities.

2. Theory

Gross municipal product (GMP) can be used as a basic comprehensive indicator for social and economic development of municipalities that allows to evaluate their contribution to the region's

¹ Global Urban Observatory is a UN-HABITAT programme.

economy [1]. The Gross municipal product was first used in Russia in 2003 by V.Makarov, member of the Academy, and Professor M.Glazyrin [2]. As a whole, the GMP is calculated as the cost of the goods and services produced in a municipality in a period of time minus the cost of their intermediate consumption.

Today there are no international generally accepted GMP calculation methods in scientific research. In Russia various experts calculate GMP using different approaches. Having analysed different methods, we can focus on two major approaches to the evaluation of gross municipal product [3]: top-down approach, when GMP is formed on the basis of municipality indicators [4,5,6]; bottom-up approach, when GMP is calculated as a share of the gross product on the regional or national level (there can also be breakdown by types of economic activities) [7, 8].

In our research aimed at the assessment of GMP in 62 municipalities in the Republic of Bashkortostan, we used the top-down approach on the basis urban product evaluation method, proposed by the UN-Habitat Global Urban Observatory [9]. According to this method, urban product of an urban economy industry is determined by the national product produced in an economy sector measured against the total number of the employed in this national economy sector and the ratio between average salary in urban and national economy sectors.

$$GMP_i = \frac{GRP_p}{NE_p} * NE_i * \frac{AS_p}{AS_i}, \tag{1}$$

where GMP_i is the evaluation of the gross municipal product by i-th municipality;

GRP_p - gross regional product;

NE_p - number of the employed in the region;

NE_i - number of the employed in the municipality;

AS_p - average month salary in the region;

AS_i - average month salary in the i-th municipality.

We should say that this method is quite provisional, however, it gives an opportunity to use the indicator for a comparison analysis of territory development in the region.

The analysis of GMP per capita was conducted using a number of statistics indicators to assess territorial disparities: medium, maximum and minimal values, scope, standard deviation, variation coefficient, skewness and kurtosis.

3. Practical relevance

GMP evaluation by municipalities in the Republic of Bashkortostan was conducted on the basis of official statistic data of the Federal State Statistics Service in 2012-2017 (see Table 1). It is essential to take into account that the data does not account for small businesses.

Table 1. Municipality's share in the total GMP of the RB in 2012-2017 (%).

	2012	2013	2014	2015	2016	2017
Belebeevsky	2.78	2.77	2.72	2.62	2.62	2.57
Beloretsky	3.07	3.12	3.22	3.26	3.37	3.19
Ishimbaisky	2.20	2.20	2.27	2.13	2.11	2.12
Meleusovsky	2.81	2.77	2.65	2.60	2.57	2.40
Tuymazinsky	3.21	3.21	3.14	3.09	3.02	3.12
Ufa	26.84	27.54	28.01	29.17	29.62	30.20
Neftekamsk	4.35	4.42	4.22	4.02	4.08	4.01
Oktyabrsky	2.62	2.78	2.88	3.06	3.19	3.24
Salavat	4.51	4.72	4.65	4.63	4.35	4.39
Sterlitamak	7.76	7.80	7.69	7.66	7.34	7.25
Other municipalities	39.85	38.67	38.55	37.78	37.74	37.51

Source: Compiled by the authors

In 2012-2017 the distribution of total GMP among municipalities hardly changed: 10 municipalities in the Republic of Bashkortostan account for more than 60% of the total GMP (60.2% in 2012 and 62.5% in 2017). The other 52 municipalities in the Republic of Bashkortostan in 2017 accounted for 38% GMP. The contribution of municipalities into the total municipal regional product is from 0.1 to 0.5% is made by 20 municipalities, from 0.5 to 1% by 22 municipalities, and from 1 to 2% by 10 municipalities (Figure 1).

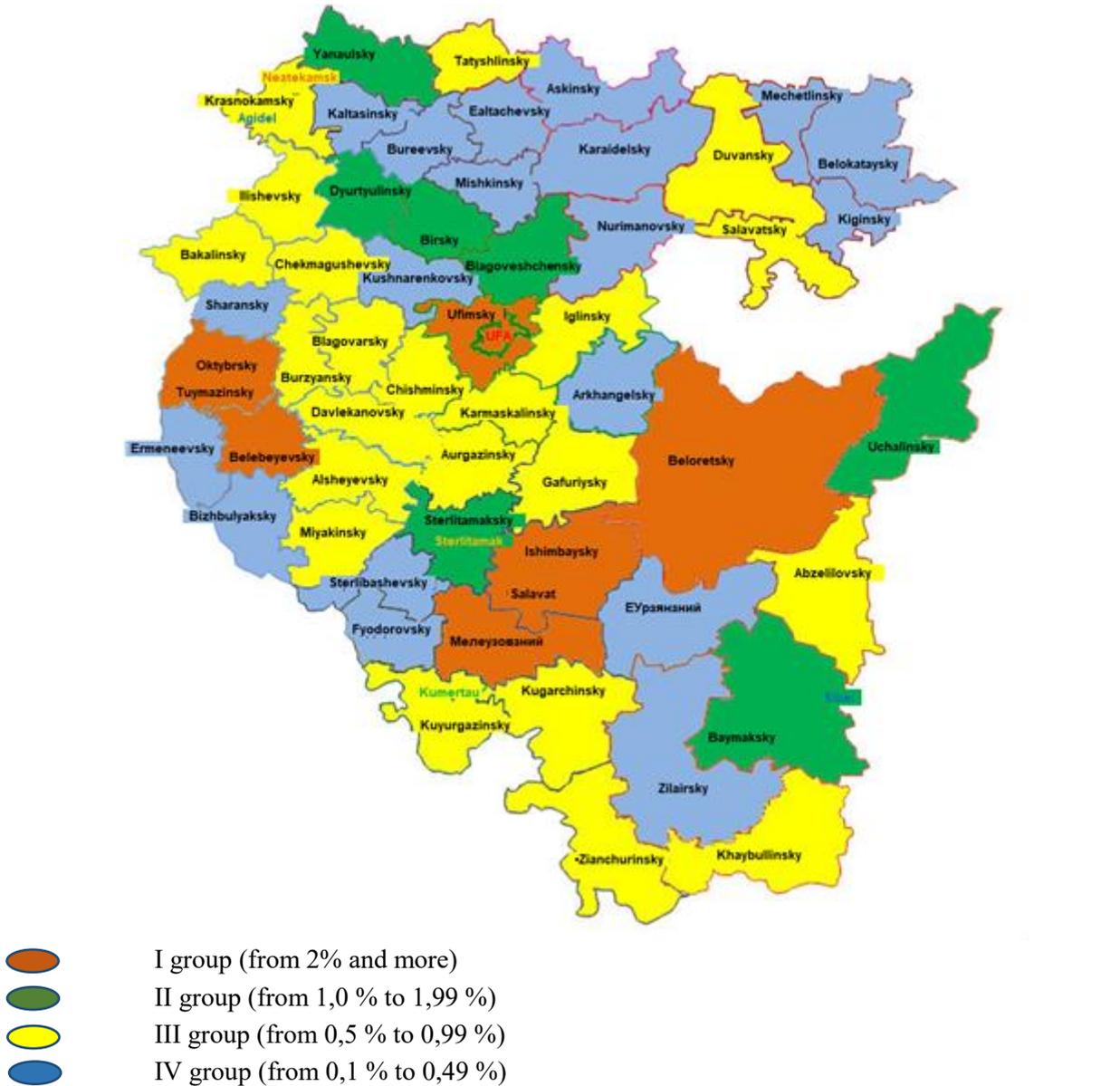


Figure 1. Municipalities by their contribution into the total municipal product in 2017 (%).

Thus, there is a considerable differentiation of municipalities by their contribution into gross municipal product.

Gross municipal product per capita is an important quantitative performance indicator.

To assess the differentiation of GMP per capita by municipalities, let us analyse on the basis of statistical indicators.

Table 2. Differentiation of municipalities in the Republic of Bashkortostan by GMP per capita, 2012-2017 (million rubles).

	Median	Median	Minimum	Maximum	Scope	Standard deviation	Variation coefficient	Skewness	Kurtosis
2012	0.19	0.18	0.11	0.29	0.18	0.04	20.98	0.44	-0.13
2013	0.18	0.18	0.10	0.26	0.16	0.04	22.02	0.28	-0.66
2014	0.20	0.20	0.11	0.29	0.19	0.04	20.78	0.19	-0.53
2015	0.20	0.20	0.10	0.29	0.19	0.04	21.25	0.15	-0.61
2016	0.21	0.20	0.10	0.30	0.20	0.04	20.93	0.11	-0.55
2017	0.21	0.20	0.10	0.29	0.19	0.04	19.94	-0.07	-0.34

We should say that the average and median value differ insignificantly over the analysed period. Minimal and maximum performance and the range from 2012 to 2017 have hardly changed. The variation coefficient in the analysed period slightly reduced with less than 33%, which demonstrates the homogeneity of municipalities by GMP per capita.

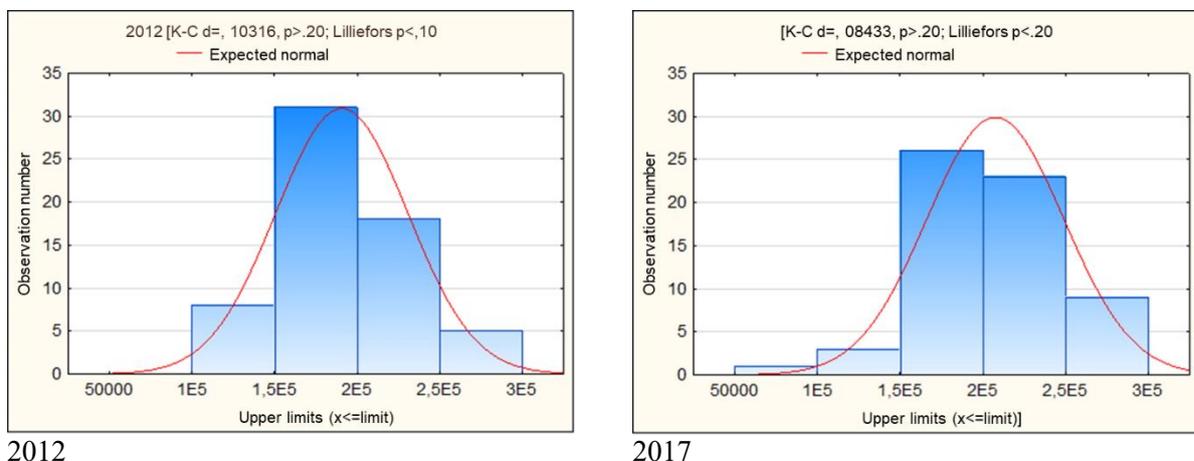


Figure 2. GMP per capita.

The skewness coefficient in 2017 demonstrated dextrality, in other words GMP per capita was less than average in the majority of municipalities. In 2017 the negative value of the indicator shows left-hand skewness.

We should say that agriculture makes an important contribution to the total municipal product in municipalities with low GMP per capita (Iglinsky, Mishkinsky, Ermekeevsky regions, etc.). Processing industry has a big share in municipalities with high GMP per capita (Ufa, Oktyabrsky, Neftekamsk, etc.) [11].

3. Conclusions

In order to create a balanced interregional environment, an adequate quantitative assessment of municipal economic development is necessary. Gross municipal product was used in the research as a comprehensive indicator of social and economic development. The calculation of GMP in the

Republic of Bashkortostan by the urban product evaluation method showed considerable disproportion by the contribution of every municipality into the total GMP of the region: 10 municipalities in the Republic of Bashkortostan produce more than 60% of the total GMP. However, the analysis of GMP per capita using the methods of descriptive statistics demonstrated that municipalities are mainly homogeneous. But we should take into account that this indicator is lower than average in the majority of municipalities.

We would like to stress that the GMP evaluation method we used has some disadvantages. For example, the municipality industrial specialization is hardly taken into account; the contribution of small businesses into gross municipal product is underestimated. These disadvantages are mainly determined by the methodology for accumulating statistics on the municipal level. Nevertheless, this indicator is an adequate regional economic development indicator that helps to assess the current development level, monitor the situation, identify trends and develop efficient management decisions that promote balanced social economic development of the region.

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