Territorial public self-government in the framework of the agro-industrial region key indicators

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Abstract. The paper substantiates the need to take into account and monitor indicators of territorial public self-government, as a new promising tool for managing the spatial development of agro-industrial territories, by identifying the relationship with key indicators of the development of agro-industrial regions based on the use of correlation and regression analysis methods and building a correlation-regression model using statistical data of subjects of Russian Federation. The results of the correlation analysis revealed the absence of correlation dependences between the key indicators of the development of the agro-industrial region and the amount of TPSG, showing a tendency for TPSG growth, due to the increase in the average annual population of the constituent entities of the Russian Federation. The results of the regression analysis confirmed the influence of certain key indicators on the number of TPSGs, in particular, a positive assessment of the regression was established for the indicator of the labor force number in the agricultural sectors of the constituent entities of the Russian Federation. A conclusion is made about the necessity and expediency of further detailed and substantive study of TPSG indicators in terms of quantitative measurement as informatively significant for inclusion in the system of indicators for regular monitoring of agro-industrial regions the state of development.

1. Introduction
Territorial public self-government (TPSG) is one of the progressive methods of management focused on solving local issues of particular importance to the population of the territory. This determines the relevance and significance of the task of determining the place of TPSG in the system of indicators for the development of agro-industrial territories.

Territorial public self-government has significant social and managerial potential [1], the involvement of which in local self-government processes, according to a number of experts from the scientific community [2-5], can lead to a significant increase in its effectiveness and increase the legitimacy of public authorities.

The emergence and development of TPSG is directly related to the spatial development of territorial communities. The analysis of scientific works [6-8] made it possible to form an idea of spatial development as an interconnected set of targeted impacts on territorial elements and connections, including a set of actions by state authorities to optimize spatial transformations in order to achieve the set development parameters as soon as possible [6-8]. The development of territorial communities is carried out within the framework of achieving goals of a higher national level, including ensuring economic growth, improving the quality of life of the population, increasing the efficiency of resource use and environmental friendliness of agro-industrial territories [9].
That is why the question of quantitative characteristics and determination of the interconnection of territorial public self-government with key indicators of the agro-industrial region becomes especially urgent in order to develop new tools for regulating the development of territories and optimal use of regional resources in the context of the strategy of spatial development of the Russian Federation.

2. Main part
Within the framework of this study, we assume that the indicators of territorial public self-government are interconnected with the key indicators of the development of agro-industrial territories (figure 1).

![Figure 1. The main spatial and sectoral indicators of the territories.](image)

In order to test this hypothesis, we will calculate the correlations between these indicators in the context of 46 subjects in which the agro-industrial sector is classified as a priority in accordance with the spatial development strategy of the Russian Federation.

So, we can observe that there is a weak positive correlation between the number of TPSG registered by local self-government bodies and the average annual population (r = 0.24, the correlation is significant at the level of 0.01 or 0.05, two-sided) (table 1).

| Indicator name | Pearson coefficient |
|----------------|---------------------|
| Average per capita monetary income of the population in the territory | 6 |
| Average monthly wages of workers in the agro-industrial sector | -0.165 |
| Average annual population in the territory | 0.232 |
| Labor force in the agro-industrial sector | 0.206 |
| Average annual number of people employed in the agro-industrial sector | 0.141 |
| The number of enterprises in the agro-industrial sector | 0.053 |
The discovered dependence should be interpreted as follows: the higher the average annual population, the higher the indicator of the number of TPSG and vice versa. In this case, the obtained value of the correlation coefficient indicates that the revealed relationship should be interpreted not as a stable dependence, but as a trend. The number of TPSG in the constituent entities of the Russian Federation does not correlate with other indicators.

To predict the dynamics of the indicator of TPSG on the basis of key indicators of the development of the agro-industrial region, an attempt was made to build a correlation-regression model. The indicators of agro-industrial development were used as predictor variables, and the number of TPSGs was used as a dependent variable. A correlation-regression model was constructed to provide a more detailed analysis of potential predictors that may be associated with the amount of TPSG.

The results of the regression analysis carried out for 7 factors made it possible to single out two factors that demonstrated a statistically reliable probability of the influence of key indicators on the number of TPSG in the constituent entities of the Russian Federation. This is the size of the labor force and the average monthly wage of employees of enterprises in the agro-industrial sector.

Based on the results of the regression analysis, 2 characteristics were selected - a predictor for predicting the number of TPSG, according to which a two-factor correlation-regression model was built:

\[ Y = 311 + 0.27x - 0.005z \]

where \( Y \) – is the number of TPSGs registered by local self-government bodies in the constituent entity;

\( X \) is the number of labor force in the agro-industrial sector;

\( z \) - is the average monthly wage of employees of enterprises in the agro-industrial sector (AMNASEO).

![Figure 2. Significance of predictors of the indicator “TPSG Amount” in the constituent entities of the Russian Federation.](image)

Figure 2 shows the significance of predictors for the number of TPSG in the constituent entities of the Russian Federation. Thus, the predictor of the size of the labor force in the agro-industrial sector has a degree of influence of 0.69, and the predictor of the average monthly wage - 0.18.

Next, we will give an estimate of the resulting regression coefficients (figure 3).
Figure 3. Estimation of the regression coefficients in terms of the number of TPSGs in the constituent entities of the Russian Federation.

Figure 3 shows the estimated regression coefficient (equal to 397.223 with a significance level of 0.069). A positive assessment is observed in terms of the number of labor force in the agro-industrial sector, a negative assessment is the average monthly wage in the agro-industrial sector.

Let us reflect the identified positive effect in figure 4.

Figure 4. Diagram of the estimated means for the effect of the regression relationship between the number of TPSG and the number of labor force in the agro-industrial sector.

Thus, the process of correlation and regression analysis showed: the absence of correlation dependences between the amount of TPSG and key indicators of agro-industrial regions; the presence of a statistically reliable probability of the influence of individual indicators on the number of TPSG;
positive assessment and significance of the regression coefficient for the indicator of the number of labor force in the agro-industrial sector of the region. That is, the resulting regression model has three effects.

3. Conclusion
Based on the obtained quantitative results, as well as taking into account the peculiarities of TPSG (the sources of TPSG resources are not limited by the territorial boundaries of the municipality and are determined by the activity of its participants, including the possibility of reaching the regional and federal levels; the breadth of the spectrum of tasks solved by TPSG determines the possibilities for the comprehensive development of the territorial space), we conclude following. Territorial-public self-government as a phenomenon fits into the contour of key indicators of the development of an agro-industrial region but requires detailed elaboration and substantive study in terms of quantitative measurement and regular monitoring.

Acknowledgments
The article was published in accordance with the Research Plan of the Institute of Economics of the Ural Branch of the Russian Academy of Sciences.

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