Improvement of economic security management system of municipalities with account of transportation system development: methods of assessment

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Abstract. The article highlights the necessity of a complex approach to assess economic security of municipalities, which would consider municipal management specifics. The approach allows comparing the economic security level of municipalities, but it does not describe parameter differences between compared municipalities. Therefore, there is a second method suggested: parameter rank order method. Applying these methods allowed to figure out the leaders and outsiders of the economic security among municipalities and rank all economic security parameters according to the significance level. Complex assessment of the economic security of municipalities, based on the combination of the two approaches, allowed to assess the security level more accurate. In order to assure economic security and equalize its threshold values, one should pay special attention to transportation system development in municipalities. Strategic aims of projects in the area of transportation infrastructure development in municipalities include the following issues: contribution into creating and elaborating transportation logistics and manufacture transport complexes, development of transportation infrastructure with account of internal and external functions of the region, public transport development, improvement of transport security and reducing its negative influence on the environment.

1. Introduction
There is a need to legislate the powers of local government bodies in terms of economic security and specify the pattern operation: functions, methods, principles, assessment tools, etc. - since the management system is not formed at the municipal level, particularly, comparing to federal one in the context of insufficient economic security management.

Therefore, it is not enough to elaborate a system of parameters for economic security assessment. There is required an integrated approach to its assessment, which would take in account specifics of the economic security management at the municipal level.

The goal of the study is to formulate the principles of the integrated assessment of the economic security of municipalities [1].
2. Methods
The database of the Federal State Statistics Service for municipal entities of the Leningrad Region for 2015 (the database for 2016 is not complete) is used as information source for the research. The integrated assessment of the economic security of municipalities is determined on the basis of the combination of two approaches:

- The methodology for calculating the integrated assessment for the state of economic security, which is based on the integral index of economic security. The maximum value of the assessment indicates the best state of economic security. The integrated assessment of the economic security of a municipality is defined as the sum of products of the weight coefficient of the corresponding indicator by its value. The sum of the weighting factors should be equal to 1. Weights are determined expertly.

This method allows comparing the level of economic security of municipalities, but does not describe the differences in each parameter comparing to the parameters of other municipalities. Therefore, in addition, the second method is suggested:

- The rank order method assesses certain parameters of the economic security. It helps to adjust the parameters in ascending or descending order. The best value is assigned a value of 1. Parameters, that have the most ones, characterize the level of sustainable and safe development of the municipality.

3. Results
The integrated assessment of the economic security of municipalities is carried out, the result of which is presented in the table 1.

Table 1. Integrated assessment of the economic security of municipalities in the Leningrad Region

| Municipality     | Integrated assessment | Value place |
|------------------|-----------------------|-------------|
| Sosnovy Bor      | 1.593                 | 1           |
| Tikhvin          | 1.511                 | 2           |
| Kingisepp        | 1.487                 | 3           |
| Lomonosov        | 1.380                 | 4           |
| Boksitogorsk     | 1.356                 | 5           |
| Tosno            | 1.303                 | 6           |
| Gatchina         | 1.297                 | 7           |
| Vyborg           | 1.292                 | 8           |
| Volhov           | 1.291                 | 9           |
| Luga             | 1.286                 | 10          |
| Priozersk        | 1.249                 | 11          |
| Volosovo         | 1.217                 | 12          |
| Kirishi          | 1.211                 | 13          |
| Vsevolozhsk      | 1.188                 | 14          |
| Podporozhe       | 1.185                 | 15          |
| Lodeineoe        | 1.137                 | 16          |
| Slantsy          | 1.132                 | 17          |
| Kirovsky         | 1.051                 | 18          |

Source: made by authors

According to the table, it is clear that the Sosnovy Bor, Tikhvin and Kingisepp municipal districts are in the top three. The best economic security condition is typical for the Sosnovy Bor Municipal District, mainly due to the growth of the total living area, which has grown 7 times. This is the highest index in the region. Also, there is an increase in turnover (107.4%), paid services (118.8%), number of employees in the field of economy (101.8%), wages (105.4%). But at the same time, the rate of
investment in fixed assets and labor efficiency has nosedived. The dynamics of the volume of investments in recent years is mainly determined by the volume of work on the construction of new power units of Leningrad Nuclear Power Plant. The decline in labor productivity is due to the fact that the growth rate of the population outstrips the growth in output. All parameters are within the threshold values. The ranking of parameters of the economic security of the region is presented in Table 2.

Table 2. Ranking of parameters of the economic security of municipal districts in the Leningrad Region

| Municipality       | Turnover of an organization | Investment in fixed assets | Retail turnover | Volume of the paid services | Total (usable) living space introduced | Retail turnover | Volume of the paid services | Total (usable) living space introduced |
|--------------------|-----------------------------|---------------------------|----------------|-----------------------------|---------------------------------------|----------------|-----------------------------|---------------------------------------|
| Boksitogorsk       | 5                           | 3                         | 15             | 18                          | 17                                    | 12             | 1                          | 5                                     |
| Voloso             | 7                           | 11                        | 9              | 16                          | 4                                     | 16             | 7                          | -------------------------------------|
| Volhov             | 8                           | 6                         | 10             | 17                          | 9                                     | 16             | 15                         | 6                                     |
| Vsevolozhsk        | 12                          | 13                        | 18             | 13                          | 3                                     | 8              | 13                         | 10                                    |
| Vyborg             | 7                           | 5                         | 17             | 4                           | 10                                    | 9              | 6                          | -------------------------------------|
| Gatchina           | 9                           | 7                         | 6              | 12                          | 4                                     | 15             | 14                         | 8                                     |
| Kingssepp          | 1                           | 14                        | 7              | 10                          | 6                                     | 13             | 5                          | 1                                     |
| Kirishi            | 13                          | 10                        | 16             | 3                           | 8                                     | 5              | 17                         | 12                                    |
| Kirovsky           | 11                          | 17                        | 14             | 16                          | 15                                    | 8              | 10                         | 9                                     |
| Lodeinoe           | 6                           | 16                        | 4              | 2                           | 13                                    | 2              | 11                         | 8                                     |
| Lomonosov          | 3                           | 8                         | 8              | 14                          | 7                                     | 9              | 3                          | 3                                     |
| Luga               | 17                          | 4                         | 13             | 1                           | 5                                     | 11             | 2                          | 15                                    |
| Podporozhje        | 4                           | 18                        | 1              | 15                          | 2                                     | 14             | 4                          | 4                                     |
| Priozersk          | 10                          | 9                         | 2              | 6                           | 11                                    | 3              | 7                          | 11                                    |
| Slantsy            | 16                          | 12                        | 12             | 8                           | 14                                    | 6              | 7                          | 16                                    |
| Tikhvin            | 2                           | 1                         | 5              | 9                           | 18                                    | 9              | 6                          | 2                                     |
| Tosno              | 14                          | 2                         | 11             | 11                          | 12                                    | 1              | 8                          | 14                                    |
| Urban districts    | 15                          | 15                        | 3              | 5                           | 1                                     | 7              | 12                         | 13                                    |
| Sosnovy Bor        |                             |                           |                |                             |                                       |                |                             |                                       |

Source: the parameters are used from the data of the statistical guidance “Economy of the municipalities and urban districts of the Leningrad region” for 2014 and 2015 [3].

The Kingssepp municipal district is distinguished by a significant growth in the turnover of organizations (165.3%) and labor efficiency growth (167%). These parameters are the best in the region. In the ranking table, these indicators are assigned - 1. But for investments in fixed assets, a decrease of 21.2% is observed. All values are within the limits of the threshold parameters.

For the Tikhvin municipal district, a stable level of economic security is common, which confirms the ranking of parameters (in terms of turnover of organizations - 2nd place, 134.3%, investment in fixed assets -1 place, 153.3%). The index of the introduced living space slightly spoils the picture, which is the lowest in the region (the critical level of the threshold parameter). The district is one of the best in the region in terms of the growth of the investment volume.

The Lodeinoe, Slantsy and Kirovsky municipalities are the bottom 3 districts, that fall behind. The absolute outsider is Kirovsky municipality, where the decrease in investments in fixed assets is observed by 44.5% (17th place), retail trade turnover by 6.7% (13th), introduction of the total
residential area by 35.8% (15th place). Ranking of other parameters is the following: turnover of organizations - 11th place, volume of paid services - 16th place, labor efficiency - 13th place.

The Slantsy municipal district has the most significant parameters decrease in terms of the economic security: the turnover of organizations - 94.4% (16th place), investments in fixed assets - 89.4% (12th place), labor efficiency - 91.5% (16th place). The growth rate of wages (107.2%) is much faster than the growth rate of labor efficiency (91.5%) and the growth rate of turnover of organizations. The Lodeinoe municipality fell into the group of laggards because of the decrease in the volume of investment in fixed assets - 57% (16th), introduction of total living space - 78.7% (13th place), the rest indicators are growing, but not that significant compared to other districts.

It is important to mention the Podporozhje municipal district, where the total living space is introduced by 66.4% (2nd place), labor productivity increased by 24% (4th place) and retail trading turnover by 13.9% (1st place). The growth rate of labor efficiency outpaces the growth rate of wages. There is an opposite situation in the remaining areas, except for Kingisepp - the growth rate of wages outstrips the growth rate of labor efficiency. However, there is the region lowest growth of investments in fixed assets - 41.1% (18th place). The Tosno municipality has seen a significant increase in investment in fixed assets: it is 40.4% (2nd place). At the same time, there is an outstanding growth in the number and wages of workers over the growth rate of organizations' turnover and a decrease in labor efficiency - 96% (15th).

The Lomonosov municipal district is distinguished by the growth of the main parameters of the economic security, it is the 4th among the municipalities, so the rate of growth in the turnover of organizations is 131.9% (3rd place), labor efficiency 130% (3rd place), wages - 109.7% (3 a place). The principle of outstrip of the growth rates of labor efficiency over the growth rate of wages is observed. In order to assure economic security and equalize its threshold values, one should pay special attention to transportation system development in municipalities. One of the main directions of Leningrad Region development up to 2030 is “Modern transportation system” program. Each of municipalities should proficiently develop transportation system and provide its residents with several means of transport giving them an opportunity to get to any destination point fast and comfortably.

Transport traditionally is one of the basic and dynamically developing economic sectors of Leningrad Region municipalities. As of 2015, the proportion of transportation in gross regional product of Leningrad Region was 17%, and total volume of services of transportation agencies overreached 136 billion rubles. There are approximately 2400 transportation enterprises and agencies involving more than 50 thousand employees, which equates 7% of economically active population of the region. Transportation logistic complex of Leningrad Region is represented by the following items:

- railway transport (2.5 thousand km of railroads of general use, the volume of transportation is 26.8 million tons of cargo and 26.4 million passengers in 2015);
- motor transport (18.7 thousand km of public roads, transportation volume is 6.9 million tons of cargo and 65 million passengers in 2015);
- Seaports of Ust-Luga, Primorsk, Vysotsk, Vyborg (total volume of cargo handling is 166.5 million tons in 2015);
- major pipeline transport (the volume of pumping is 98.7 million tons in 2014);
- Inland water transport (1.84 thousand km of inland waterways, transport volume is 6 million tons of cargo and 0.2 million passengers in 2014).

Strategic aims of projects in the area of transportation infrastructure development in municipalities include the following issues: contribution into creating and elaborating transportation logistics and manufacture transport complexes, development of transportation infrastructure with account of internal and external functions of the region, public transport development, improvement of transport security and reducing its negative influence on the environment.

4. Conclusions
Generally, the economic security parameters of municipalities are within the threshold values, but it is necessary to pay attention to numbers that are equal to the lower threshold parameter, for example,
parameters of "Total area introduced" (Tikhvin municipal district), "Investments in fixed assets", "Labor efficiency (Vsevolozhsk municipal district), etc. The principle of outstrip of the growth rates for labor efficiency over the growth rates of wages is not observed in eight municipalities. In four districts, the growth rate of wages outstrips the growth rates of organizations' turnover and labor efficiency. All of this factors reduce the level of safe development of municipalities. The integrated assessment of the economic security of municipalities on the basis of the combination of the two approaches made it possible to assess the security level more accurate. We hope the suggested tool will be useful to form a mechanism for the economic security management of municipalities. In order to implement the strategic project initiative in transportation infrastructure development, the authors propose certain changes of the management system aimed at improving the efficiency of the adoption and implementation of management decisions in the transport sector.

These changes are: to increase coherence transportation authorities in the development of the transportation complex at the levels of the Russian Federation, St. Petersburg, with local governments; to introduce the mechanisms of public-private partnership; to expanse involving business community and non-profit organizations in management; promote the transfer of motor vehicles to gas engine fuel.

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