

Conceptual model of performance evaluation of the social insurance system of Russia

Modelo conceptual para evaluar la eficacia del sistema de seguro social de Rusia

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ABSTRACT:

The social and economic development rate of the society is expressed with quality and quantity indices of the social policy performed by the state. It is also expressed with providing the whole society or its particular categories with social safety nets. The main purpose of a socially oriented state is a formation of an effective social insurance system, which lets perform obligations owed to those who need social protection on time and completely. Therefore, performance evaluation of the social insurance system is really important nowadays. The authors of the article made a model, which lets evaluate efficiency of the social insurance system of the whole country or of a particular region. The social protection characteristics of some regions in the Central Federal District of Russia are given. The regions which have the highest and the lowest level of the social protection are highlighted.

Keywords: social policy; social protection; social insurance system; social index

RESUMEN:

La Magnitud del desarrollo social y económico de la sociedad se traduce en indicadores cualitativos y cuantitativos de las políticas sociales del Estado, así como mediante la concesión de garantías sociales, tanto a todos los miembros de la sociedad como a determinadas categorías de ciudadanos. El objetivo principal de un estado orientado socialmente es establecer un sistema eficaz de seguro social que permita cumplir todas las obligaciones que incumben a las personas que necesitan protección social dentro del plazo establecido y en su totalidad. A este respecto, la cuestión de la evaluación de la eficacia del sistema de seguro social es particularmente importante. El artículo presenta el modelo para evaluar la eficacia del sistema de seguro social en todo el país, área o región. Se da una característica de la protección social de ciertas áreas del distrito Federal central de Rusia. Se han identificado áreas con el menor y el más alto nivel de protección social

Palabras clave: política social, protección social, sistema de seguro social, criterio

1. Introduction

Nowadays protection of population is really topical. Analysis of approaches used to explore the social insurance system shows that there is not a unique system of the

performance evaluation, despite the fact that many scientists have paid their attention to various issues connected with this topic (Varvus S.A., 2016; Vasilyeva E.G., 2017; Lyapkalo A.S., 2018; Tverdokhlebova A.E., 2012). Therefore, it is expedient to create a model, which lets evaluate the quality of the performance of the modern social insurance system overall.

2. Methodology

The offered model of performance evaluation of the social insurance system is given in Figure 1. The model is connected with three units of the social protection indices:

1. Unit of state guarantees – minimum (threshold) social and economic amounts. Their values are guaranteed by the state (Rayzberg B.A., 2017).
2. Unit of performance evaluation of social insurance of a gainfully employed population – the system of the indices which characterize amounts of cash inflows into non-budgetary state funds.
3. Unit of performance evaluation of social insurance of an inactive population – the system of the indices which characterize amounts of material compensation for loss of possibilities to continue working.

The offered model of the performance evaluation of the social insurance system lets analyze its condition and trends from all angles and determine problems of functioning due to including evaluation indices into the model.

Indicators of social efficiency were formulated while classifying particular indices, which influenced the performance of the social insurance system. The indicators let evaluate the efficiency of functioning of particular detached units of the social protection mathematically.

We analyzed the social insurance system. The analysis was based on the offered model. As a result, we calculated the social indicator for each region of the Central Federal District. We suppose that the social indicator can be calculated as a ratio of the social index to the value of the guarantee which is relevant to it (comparative base):

$$I = \frac{I_{soc.}}{CB} \quad (1)$$

where

I – social indicator;

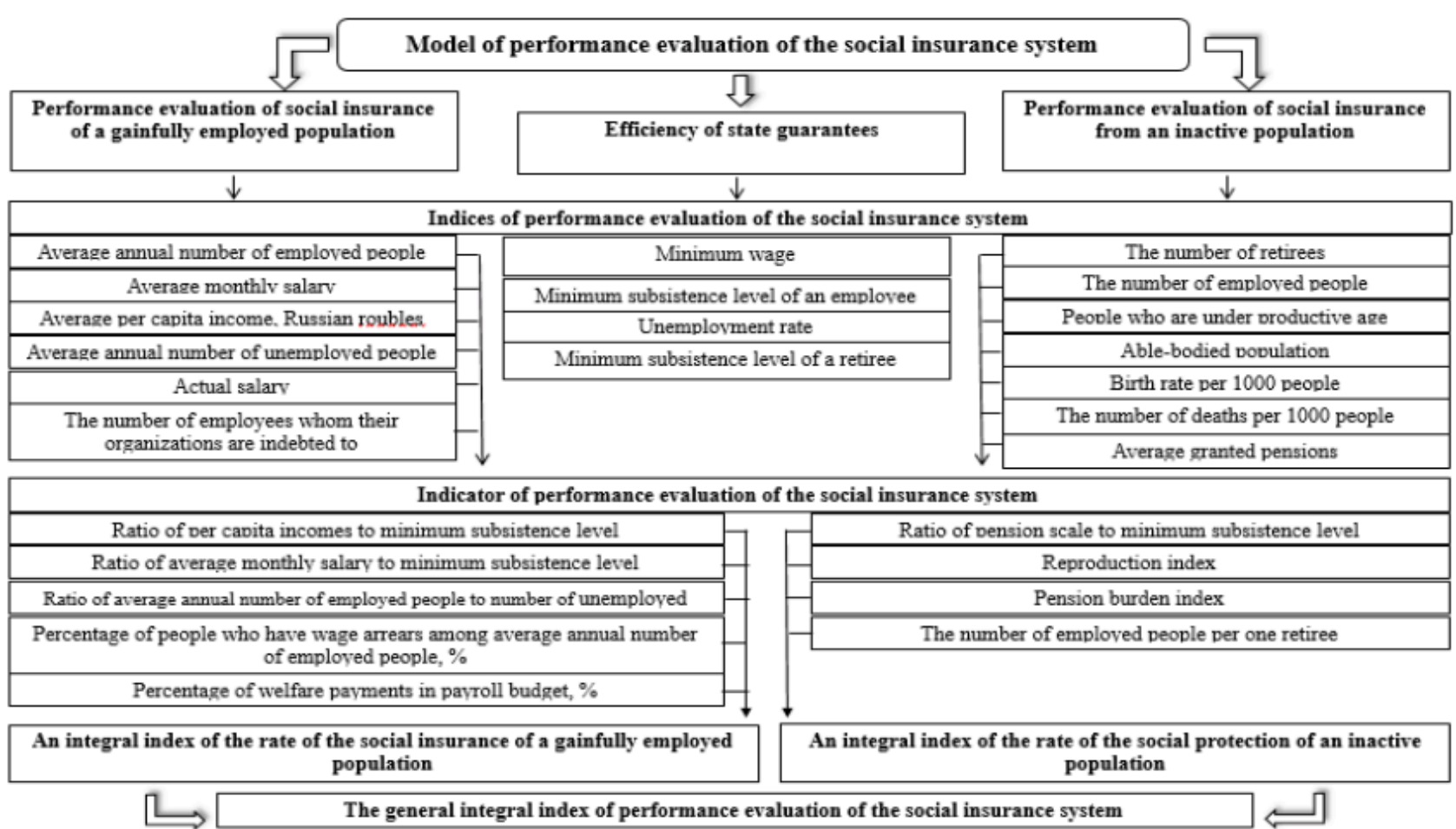
$I_{soc.}$ – social index;

CB – comparative base (state guarantee).

The offered model of the efficiency analysis of the social insurance system includes grading the social indicators. We offered some rating formulae to minimize mathematical margins. Choice of a formula to calculate the rating depends on whether the calculations are based on the indicator which increases the value (direct index) or on the indicator which decreases the value (inverted index). Direct index is a social and economic value. Its rise leads to an increase of an integral index and, as a result, of efficiency level of the social insurance.

Figure 1

Model of performance evaluation
of the social insurance system



Indicator which increases the rating value:

$$R = \frac{I - I_{min}}{I_{max} - I_{min}} \quad (2)$$

where

R – rating;

I – social indicator;

I min –social indicator minimum;

I max –social indicator maximum.

Inverted index is a social and economic value. Its rise leads to a decrease of an integral index and, as a result, of efficiency level of the social insurance.

Inverted index formula:

$$R = \frac{I - I_{max}}{-1 * (I_{max} - I_{min})} \quad (3)$$

where

R – rating;

I – social indicator;

I min –social indicator minimum;

I max –social indicator maximum.

The second group of the indicators includes indicators of performance evaluation of social insurance of an inactive population:

1. Ratio of pension scale to minimum subsistence level;
2. The number of employed people per one retiree;
3. Pension burden index;
4. Reproduction index.

The final stage of the performance evaluation of the social insurance system is making calculations based on the indicators of an integral index of efficiency of the social insurance system, which have been calculated before.

Besides indicators of evaluation of social and economic efficiency, it is expedient to use integral indices, which can evaluate the social insurance system of the whole country or its particular districts and areas substantively. The list of the integral indices includes:

1. An integral index of the rate of the social insurance of a gainfully employed population – a consolidated index which lets evaluate efficiency of a social and economic burden to payers of insurance contributions (employed people);

2. An integral index of the rate of the social insurance of an inactive population – a consolidated index which lets evaluate efficiency of social and economic aid for retirees;

The general integral index of performance evaluation of the social insurance system – a consolidated index, which is calculated according to an integral index of the rate of the social insurance of a gainfully employed population and an integral index of the rate of the social insurance of an inactive population.

3. Results

The first integral index is an integral index of the rate of the social insurance of a gainfully employed population (Integral index 1). Efficiency of the social insurance system of a gainfully employed population is the sum of the products of the rating and the relevant index weight.

It is necessary to say that the general weight of the comparative base equals 1. The general weight can be calculated according to the following formula:

$$GW = IW1 + IW2 + IW3 + IW4 + IW5 \quad (4)$$

where

GW – the general weight of the index;

IW – index weight.

We suppose it is expedient to calculate the efficiency rate of the social insurance system according to the evaluation of a gainfully employed population using the following formula:

$$II1 = R1 * IW1 + R2 * IW2 + R3 * IW3 + R4 * IW4 + R5 * IW5 \quad (5)$$

where

II – integral index;

R – rating;

IW – index weight.

The maximum value of the integral index is similar to the maximum weight of the index. It equals one. Three levels which characterize the rate of the social protection in the regions are developed according to the formula of the integral index.

Table 1
The characteristics of the values of the integral index

Nº	Range of values of integral index	Efficiency level	Characteristics of efficiency levels
1	2	3	4
2	less than 0,3	Minimum	The state has a social insurance system which is poorly funded by employees and employers. The system is similar to the social security system.
3	from 0,3 to 0,6	Medium	There is a proper level of financing the social insurance system. There is a normal ratio of average per capita incomes and of average monthly salary to minimum subsistence level.
4	more than 0,6	Maximum	High amounts of financing mostly by employers and employees. It is typical of the level to have a low ratio of the number of unemployed people to the number of employed people and a minimum percentage of the number of people who have wage arrears among all the employed people.

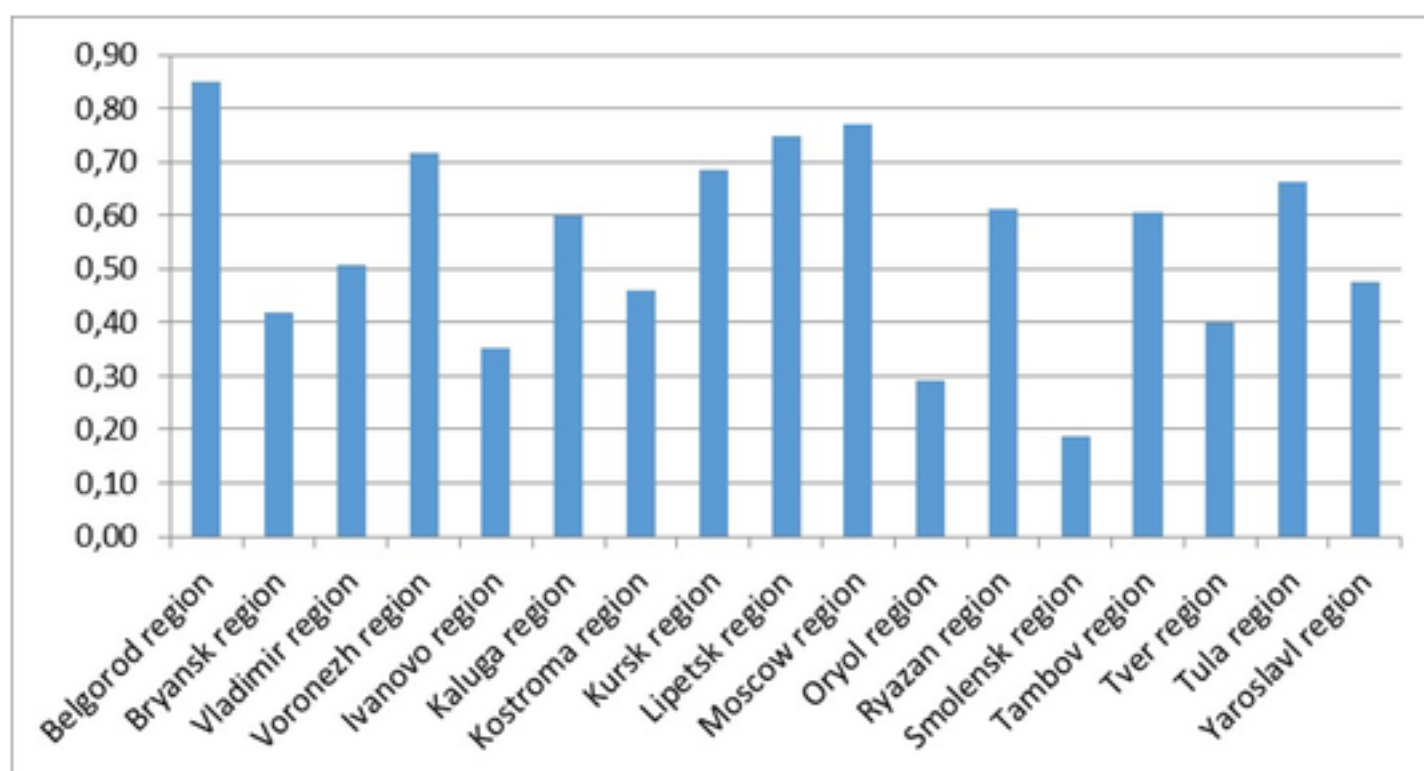
We calculated an integral index of the rate of the social insurance of a gainfully employed population according to the offered model (Integral index 1). You can see the values of the integral index of the regions in the Central Federal District of Russia in Figure 2. According to Figure 2 we can see that two regions of the Central Federal District had the minimum value of the integral index (less than 0,3) in 2016. These were Smolensk region (0,19) and Oryol region (0,29) (Russia in figures, 2013-2016).

The low value of the social efficiency integral index in Smolensk region is caused by two indicators. These are a ratio of an average monthly salary to a minimum subsistence level and a percentage of the number of people who have wage arrears among the average annual number of employed people.

Belgorod region has the maximum value of the integral index (0,85). Moscow region has the second biggest value (0,77) and Lipetsk region has the third biggest value (0,75).

All the other regions have an efficiency level of the social insurance system of the employed population from 0,3 to 0,6. It is a medium social efficiency level.

Figure 2
Efficiency level of the social insurance system
of the employed population in 2016



Source: made by the authors

The efficiency analysis of the social insurance system of the employed population showed that it was possible to see a rise of different social and economic values, which influence the social insurance system in general, from 2010 through 2016. However, the offered social indicators showed that there were low levels of correlation between different social and economic indices. It lets us suppose that some regions of the Central Federal District have a minimum efficiency level of the social insurance. This supposition was mathematically confirmed with the integral index, which had a value showing a low efficiency level of the social insurance system of the employed population in Smolensk region and Oryol region. The main factor that influenced the efficiency level of the social insurance system of the employed population negatively was a percentage of people who had wage arrears among all the employed people.

The second integral index is an integral index of the rate of the social protection of an inactive population (Integral index 2) (Formula 6).

$$II2 = R1 * IW1 + R2 * IW2 + R3 * IW3 + R4 * IW4 \quad (6)$$

where

II – integral index;

R – rating;
IW – index weight.

The maximum value of the integral index is similar to the maximum weight of the index. It equals one. A detailed description of value ranges of the integral index is given in Table 2.

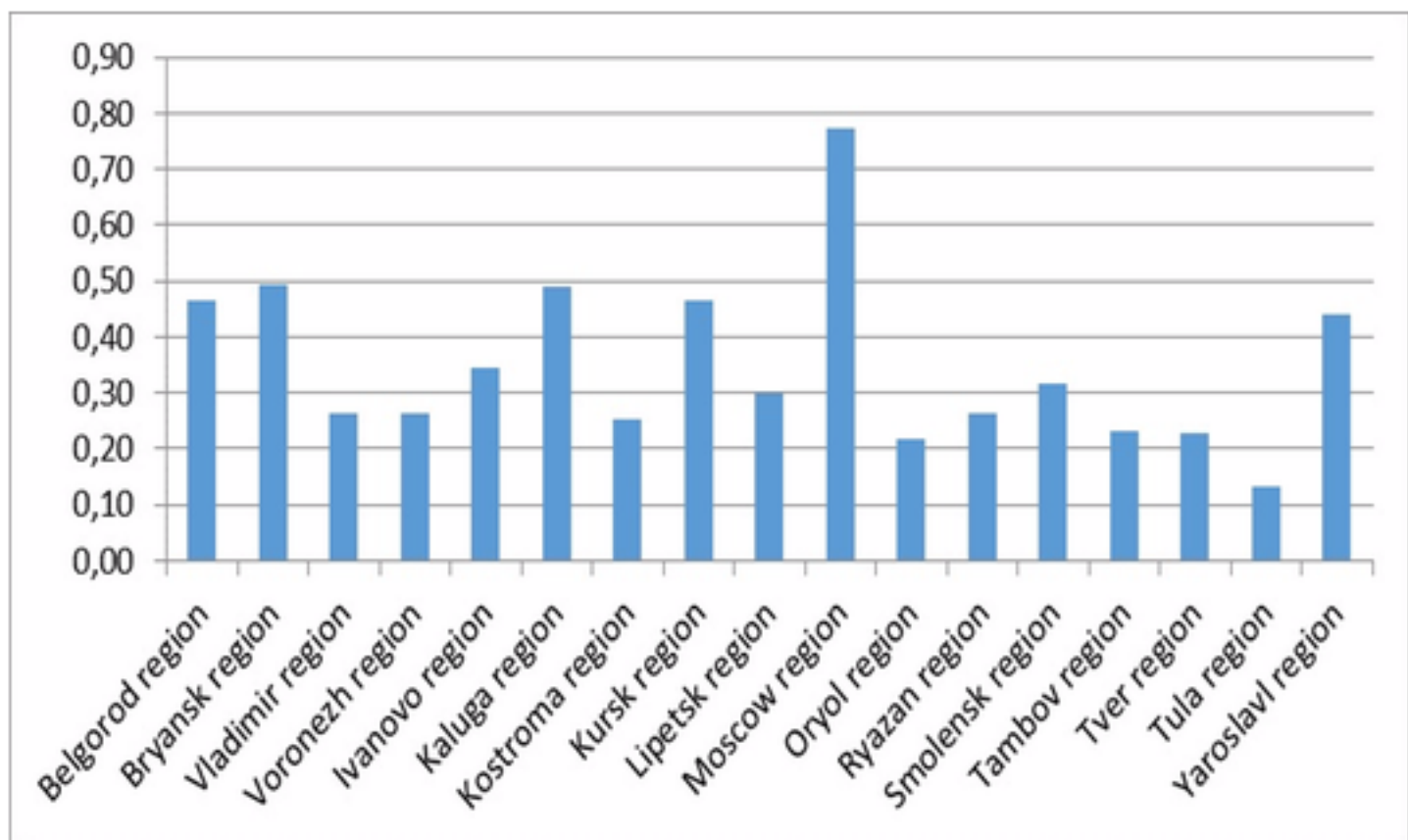
Table 2
Characteristics of values of the integral index

№	Range of values of integral index	Efficiency level	Characteristics of efficiency levels
1	2	3	4
2	less than 0,3	Minimum	Pension scales are lower than minimum subsistence level. There is a demographic crisis in the country. The birth rate is far lower than the number of deaths.
3	from 0,3 to 0,6	Medium	Pension scales are higher than minimum subsistence level for retirees. The number of employed people per one retiree is acceptable.
4	more than 0,6	Maximum	Pension scales are several times higher than minimum subsistence level for retirees. A reproduction efficiency factor has a positive value over the long term (for 3–5 years). Pension burden factor has a minimum value (less than 0,3). The number of employed people per one retiree is at least 1,75.

Source: made by the authors

We calculated an integral index of the rate of the social insurance of an inactive population according to the offered model (Integral index 2). You can see the values of the integral index of the regions in the Central Federal District of Russia in Figure 3. According to Figure 3 eight regions of the Central Federal District have a minimum level of the integral index. These are Vladimir region (0,26), Voronezh region (0,26), Kostroma region (0,25), Oryol region (0,22), Ryazan region (0,26), Tambov region (0,23), Tver region (0,23) and Tula region (0,13).

Figure 3
Efficiency level of the social insurance system of an inactive population in 2016



Source: made by the authors

Tula region has the lowest value of Integral index 2 (Integral index of the rate of the social insurance of an inactive population). It is 0,13. This value of the integral index for Tula region is caused by minimum values of the following social and economic indicators:

- Reproduction efficiency factor;
- Pension burden factor.

Moscow region has the highest value of the integral index. It is 0,77. This value of the integral index for Moscow region is caused by maximum values of the following social and economic indicators:

- The number of employed people per one retiree;
- Reproduction efficiency factor;
- Pension burden factor.

All the other regions have an efficiency level of the social insurance system of an inactive population from 0,3 to 0,6. It is a medium social efficiency level.

The final stage of an analysis of the social insurance system is calculating the general integral index (Integral index 3). It is necessary to use two consolidated indices to make calculations:

- performance evaluation of the social insurance of a gainfully employed population;
- efficiency of the social protection of a dependent population.

The general integral index is the sum of the products of the necessary integral index value (Integral index 1 or Integral index 2) and the necessary integral index weight.

$$GII=II1*IW1+ II2*IW2 \quad (7)$$

where

GII – general integral index;

II – integral index;

IW – index weight.

It is necessary to say that the integral indices calculated before – efficiency of the social insurance of a gainfully employed population (Integral index 1) and efficiency of the social insurance of an inactive population (Integral index 2) – are social indicators to calculate the general integral index.

Each social and economic indicator used for calculations of the integral index has the same weight. It is 0,5. This fact shows that the indices used for calculations are equally

weighted. The values of the social and economic indicators of the general integral index are given in Table 3.

We made calculations according to the offered formula of the general integral index. The results of the calculations are given in Figure 4.

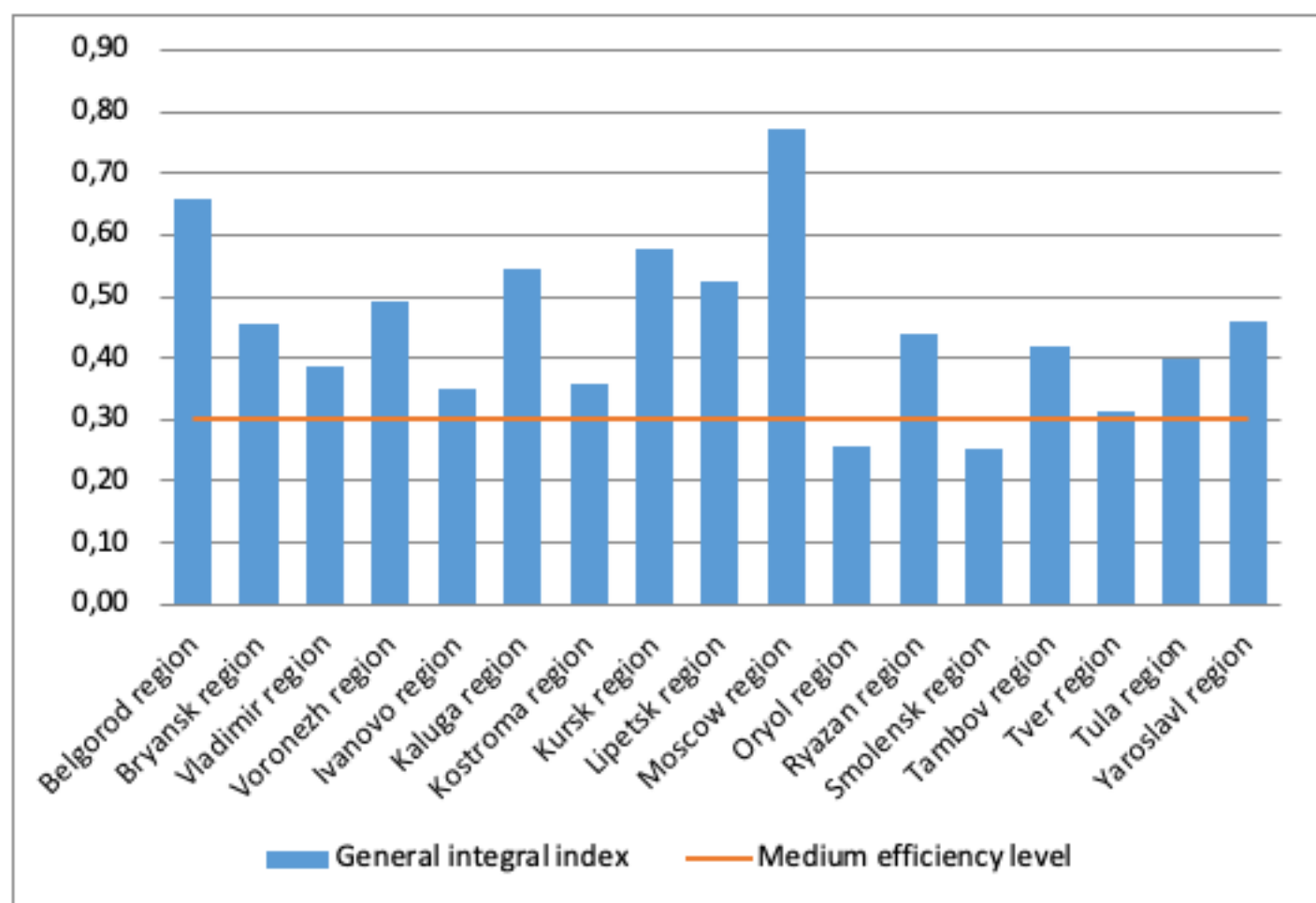
According to Figure 4 only two regions of the Central Federal District have a low level of efficiency of the social insurance system in comparison with the other regions. These are Oryol region (0,25) and Smolensk region (0,25).

Table 3
Social and economic indicators of the general integral index

№	Region of the Central Federal District	Integral Index 1	Integral Index 2
1	Belgorod region	0,85	0,47
2	Bryansk region	0,42	0,49
3	Vladimir region	0,51	0,26
4	Voronezh region	0,72	0,26
5	Ivanovo region	0,35	0,35
6	Kaluga region	0,60	0,49
7	Kostroma region	0,46	0,25
8	Kursk region	0,69	0,47
9	Lipetsk region	0,75	0,30
10	Moscow region	0,77	0,77
11	Oryol region	0,29	0,22
12	Ryazan region	0,61	0,26
13	Smolensk region	0,19	0,32
14	Tambov region	0,61	0,23
15	Tver region	0,40	0,23
16	Tula region	0,66	0,13
17	Yaroslavl region	0,48	0,44

Source: calculated by the authors

Figure 4
Efficiency level of the social insurance system
according to the general integral index in 2016



The reasons why these two regions have the lowest values of the general integral index are different. Oryol region has two low social and economic indicators: efficiency of the social insurance of a gainfully employed population (0,29) and efficiency of the social insurance of an inactive population (0,22). Whereas, the minimum value of a medium efficiency level is 0,3.

Integral index 1 (efficiency of the social insurance of a gainfully employed population) had the crucial influence for Smolensk region. Its value is 0,19. Integral index 2 (efficiency of the social insurance of an inactive population) could not compensate a low value of Integral index 1. The value of Integral index 2 is 0,32. It is a bit higher than the minimum value of a medium efficiency level.

Two regions have a maximum efficiency level:

- Belgorod region – 0,66;
- Moscow region – 0,77.

These two regions have a maximum efficiency level of the social insurance system. As for the other regions, their efficiency level of the social insurance system is medium.

4. Conclusions

The performed analysis of the social insurance system in the Russian Federation lets make the following conclusions:

1. The number of employed people is one of the main factors influencing the economic environment of the social insurance system. Therefore, an increase of this factor causes an efficiency rise of an extensive development of the social insurance system.
2. Efficiency of a substitution of lost earnings by social payments is still low. Granted pensions and child allowances do not substitute a minimum subsistence amount.
3. An extensive development of the social insurance system funded through the unified social tax, which is paid by an officially employed population, is over. Use of extensive methods for fund raising, and increasing the tariff rate in the current social and economic conditions in particular, is not expedient because it can increase social strain for those people who have medium or low wage rates.
4. An increase in financial benefits into non-budgetary funds can be reached only if the whole model of financial assurance of the social insurance system is reconsidered. We suppose that introduction of a progressive personal income tax will provide budgets and

non-budgetary funds with additional benefits. A negative factor of the offered model of a tax take formation is that people's interest in their salary rise can decrease. Therefore, this aspect should be worked through thoroughly.

The conducted research shows that levels of social protection in different regions of the Russian Federation are not equal. It is necessary to say that almost all the regions described in the research have at least a medium efficiency level of the social insurance system. Two regions have a maximum value of a consolidated efficiency index. These are Belgorod region and Moscow region.

Bibliographic references

Economytimes. Electronic resource. Access mode free: <http://economytimes.ru/kurs-rulya/prosrochennaya-zadolzhennost-po-zarplate-ostaetsya-nizkoy>.

Lyapkalo A. S. Statistical analysis of a level of employment of the population//Scientific magazine: Economy vector. Number 2. 2018 – page 15-26.

Rayzberg B.A., Lozovsky L.Sh., Starodubtsev E.B. Modern economic dictionary. — the 2nd prod.. M.: INFRA-M, 1999. 479 pages.

Regions of Russia. Socio-economic indexes. 2017: P32 Stat. сб. / Rosstat. M, 2017. 1402 pages.

Russia in figures. 2013: Short stat. c. / Rosstat - M., P76 2013 - 557 pages.

Russia in figures. 2014: Short stat. c. / Rosstat - M., P76 2014 - 557 pages.

Russia in figures. 2015: Short stat. c. / Rosstat - M., P76 2015 - 543 pages.

Russia in figures. 2016: Short stat. c. / Rosstat - M., P76 2016 - 545 pages.

Russia in figures. 2017: Short stat. c. / Rosstat - M., P76 2017 - 511 pages.

Tverdokhlebova A.E. Detsialny coefficient as a real indicator of quality of life//In the collection: The international scientific and practical conference of students, young scientists and businessmen in the sphere of economy, management and innovations in 2 volumes. Tomsk. 2012 -. 130-131

University information system RUSSIA (penal correction system RUSSIA) [Electronic resource]. – Access mode: <https://uisrussia.msu.ru/stat/Publications/Publications.htm>.

Varvus S.A. In search of optimum level of differentiation of income of the population in Russia//the World of new economy - the Russian economic magazine. - 2016. - No. 2. - Page 95-102.

Vasilyeva E.G. Labor market and employment of the population: problems and the Prospect / Online magazine NovaInfo, No. 62-1, 21.03.2017 – the access Mode: <http://novainfo.ru/article/11932>

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