REVISTA ESPACIOS

Modelling the management system of the social sphere development in the context of financing for social investments

Modelado del Sistema de Gestión del Desarrollo Social en el contexto del financiamiento de inversiones sociales

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Contents

ABSTRACT:
The authors of the article offer a special model to evaluate how financing of the investment processes can influence the results of the social sphere development. It is shown that closeness of the connections between the researched variables can be demonstrated within the offered model, which can be used by representatives of state governing institutions or regional authorities while managing the social investments financing and the social sphere development. Specific tendencies for development, which are typical of the social sphere of the regions in the Central Federal District, are shown. It lets speak about possibilities of successful management of social investments in the fast-moving society.
Keywords: financing, social sphere, social investments, development

RESUMEN:
Los autores del artículo ofrecen un modelo para evaluar la influencia financiera de los procesos inversivos sobre los resultados del desarrollo social. Se muestra, que la relacion estrecha entre las variables estudiadas queda claramente demostrada por modelo propuesto. Los representantes de las autoridades o la administración pueden utilizar este modelo para gestionar la financiación de las inversiones sociales y el desarrollo de la esfera social. El artículo muestra que la esfera social de las regiones del Distrito Federal Central se caracteriza por tendencias de desarrollo específicas, que deja hablar sobre la posibilidad de gestionar con éxito las inversiones sociales en una sociedad que cambia dinámicamente.
Palabras clave: financiación, esfera social, inversiones sociales, desarrollo

1. Introduction

Nowadays, different issues connected with financing social investments are considered to be especially relevant in the Russian economic literature that is devoted to problems of

management of the social sphere development. This fact is clear because the social sphere performs some key functions in the modern society: it provides the national economy with labour forces and renders various forms of life-support to different communities. Besides, interest in social investments have started increasing relatively recently in comparison with other social and economic categories even all over the world. Whereas in Russia, they started to consider social investments to be a developed category only at the beginning of the twenty-first century.

In fact, the authors of all the works known to us examine the social sphere in the context of more particular categories "social infrastructure" and "social relations". These categories, in their turn, are connected with one another and influence each other. This fact cannot help but affect the development of the social sphere in general. Therefore the economic component of the social sphere should be examined within the categories "social infrastructure" and "social relations" (Ambarova P.A., 2017; Bessonova O.E., 2017; Vinokurova A. V., 2017).

In our opinion, the most pertinent interpretation of the social infrastructure is given by L.V. Bondarenko who thinks that "the social infrastructure can be defined as a territorial and sectoral complex, which gives social and spatial conditions for reproduction of labour forces, socialization and social protection of population, preserves and develops demographic, labour and spiritual potential of the society" (Bondarenko L.V., 2017).

Besides, it is important to say that E.V. Tishin thinks that the main part of the social sphere is not the social infrastructure, but "a goal-setting unit – real relations within the social space, which are, first of all, a subject of the social management, social policy in general" (Tishin E.V., 1994).

Due to these objective circumstances, social investments can be defined as "investments in objects of the social sphere in order to get profit and improve the standards of living and the quality of living of people by satisfying their material, spiritual or social needs" (Kolesov V.P., 2011). **M.S. Haraeva thinks that "the social investments are** long-term investments in the social sphere in order to improve the living standards by creating new technologies and mechanisms of distribution of the received gross domestic product among different population groups paying attention to their needs" (Harayeva M.S.,2009).

The approach towards financing of the investment processes in the social sphere has been changing for some time. G.A. Akhinov thinks that the main technology in performing state social functions used to be the technology of "social transfers, which were paid to the most vulnerable categories of population, but now the active state support must include investments in people and human capital" (Akhinov G.A., 2011). An investment approach in performing state social functions usually means that the state tries to participate minimally in financing of the social programs that include compensation payments for needy people. The governments of some countries often interfere in activities of corporate business and private companies. The main direction of the state social policy is focusing on creation and development of "middle class", which must be the main element in the development of the society. This kind of management of the state social policy has investment features but not consumer ones (Tikhonova N. E., 2015; Lapin N.I., 2018).

The main aim of financing of the social investment activity at the state level is reaching a more rational form of interaction between investors, the state and consumers in the process of improving the quality of living and the standards of living. Thus, when the state social function is performed, it is necessary pass from a consumer approach to an investment one (Birdsall N., 2014; Novokmet F., 2017; Tittenbrun J., 2017).

We would like to describe the current situation in the area of financing of the main elements of the social sphere giving different regions of the Central Federal District as examples. The data are shown in Table 1. There is a great differentiation between the regions at financing levels of the social sphere. Moscow and Moscow Region are not present in the analysis to make the data more comparable.

Voronezh Region, Yaroslavl Region, Belgorod Region and Tula Region were the leading regions in the amounts of financing of the social sphere in 2015. The lowest levels of the

social expenses were demonstrated in Kostroma Region, Oryol Region and Bryansk Region. Besides, there is a general tendency towards predominance of expenses on education in the financing structure and a lag in financing of housing and communal services. These facts were caused by a complicated situation in the budgets, growth of deficit and debt. Many regions chose the direction of their development, which was connected with optimizing expenses on housing and communal services.

The similar situation took place in 2016 and in 2017.

Table 1
Expenses on the social sphere of the consolidated budgets of the regions in
the Central Federal District from 2015 to 2017, millions of Russian roubles

	Housing and Communal Services			Education			Health Care			Social Policy		
	2015	2016	2017	2015	2016	2017	2015	2016	2017	2015	2016	2017
Belgorod Region	2944	2739	3294	23579	24586	26215	10552	10155	19976	9454	10025	15724
Bryansk Region	1627	1777	2230	13493	14202	14972	6826	2300	13837	11632	15236	14813
Vladimir Region	3511	3713	4050	17726	18291	20043	8375	8454	17828	10355	10875	15436
Voronezh Region	4810	4242	4359	28415	28814	31259	17125	16461	28731	15977	16105	24769
Ivanovo Region	3397	2573	3294	11032	11138	11358	5795	1679	10569	7259	11138	11418
Kaluga Region	5879	5660	6714	15256	15665	15379	9141	4328	14208	9057	12578	12611
Kostroma Region	1721	2161	1911	8853	8847	8889	4070	4006	7811	4252	4716	7001
Kursk Region	1730	1812	2043	15965	16875	17053	6463	6549	13518	9228	9731	14759
Lipetsk Region	2882	3272	3518	15305	15785	16896	9270	4350	14420	8611	13584	13595
Oryol Region	1254	1008	976	10274	10236	11155	4966	5311	9510	6295	6639	10003
Ryazan Region	2561	2552	1857	15261	15662	16495	6350	6834	13147	8343	8343	12680
Smolensk Region	2430	2856	2428	12287	12369	11880	8439	6434	11360	7463	7842	11506

Tambov Region	2565	2776	2946	11859	14036	14333	7662	6393	11684	7722	8145	11471
Tver Region	4416	3220	3924	17299	16640	17560	10020	9919	16638	9587	10134	15242
Tula Region	5935	6243	7245	21555	22858	24854	11009	12204	20917	15026	15106	22042
Yaroslavl Region	4911	5030	4943	22260	21965	22463	8995	8994	17451	11090	12678	17053

The summarized data on financing of the social sphere per head in the context of the regions (taking into consideration the total regional rank in the Central Federal District) are shown in Table 2.

Absolute indeces disfigure the real situation in the regions a bit because there are great differences between the regions in the state of their social and economic sphere. Therefore, it is more reasonable to use statistic data per head to do a better analysis of financing of the social sphere. Differences between the regions in the social expenses of the budgets per head for the examined period of time changed slightly. However, the situation differs from the absolute statistics. Moscow and Moscow Region are the leaders in the amounts of financing of the social sphere. Yaroslavl Region, Kaluga Region, Tula Region and Lipetsk Region follow them in the list. The lowest levels of the social expenses were shown in Ivanovo Region, Bryansk Region and Voronezh Region.

Table 2
Dynamics of the total expenses on the social sphere of the consolidated budgets in the regions of the Central Federal District and their ranks, thousands of Russian roubles per head

	2015		2016		2017		Total Rank
	Value	Rank	Value	Rank	Value	Rank	
Belgorod Region	30,0	9	30,6	11	42,1	9	11
Bryansk Region	27,4	17	27,5	17	37,9	17	17
Vladimir Region	28,6	14	29,7	14	41,6	10	13
Voronezh Region	28,4	15	28,1	16	38,2	16	16
Ivanovo Region	26,7	18	25,9	18	36,1	18	18
Kaluga Region	39,0	3	37,7	4	48,3	5	4
Kostroma Region	29,0	12	30,4	12	39,8	12	12
Kursk Region	29,8	11	31,1	7	42,5	6	7
Lipetsk Region	31,2	8	32,0	6	42,1	8	6
Moscow Region	47,2	2	48,9	2	65,5	2	2
Oryol Region	30,0	10	30,7	10	42,3	7	9

Ryazan Region	28,8	13	29,6	15	39,4	13	14
Smolensk Region	31,9	6	30,9	8	39,2	14	10
Tambov Region	28,4	16	30,1	13	39,1	15	15
Tver Region	31,7	7	30,8	9	41,6	11	9
Tula Region	35,5	5	37,6	5	50,3	3	5
Yaroslavl Region	37,2	4	38,3	3	48,9	4	3
Moscow	75,5	1	83,7	1	113,6	1	1

Differentiation of the budget expenses on the social aims in the regions of the Central Federal District is rather great. It can be explained by different conditions, which influence financing of the social sphere (population size, development level of econommy, regional social policy).

2. Methodology

While modelling how different ways of financing of investment processes influence the results of the social sphere development it is reasonable to use the chosen criteria of efficiency (Kaplan R.S., 1996; Yuzvovich L.I.,2014). In this very situation we can use an integral detector "Social Sphere Development Index" (SSDI). This index describes the final results of the social investments precisely, it demonstrates dynamics of the process and the result of the social sphere development and lets evaluate quantitative indicators of the benchmarks, which can be reached due to financing social investments.

We use the integral SSDI detector, which is based on the model offered by W. Pluta, to create a model of a management system of the social sphere development in the context of financing of the social investments for the regions in the Central Federal District (Artemov V.A., Konorev A.M., Davydova L.V., 2017).

Financing of the investment processes in the social sphere performs a stimulating function and a reproducing function. Therefore, the SSDI indicator will show both the level of the development of the social relations and the efficiency of financing of the social infrastructure.

3. Results

The first stage of creating an integral index requires paying attention only to those particular variables, which are characterized by the greatest changeability (where it is possible to see the maximum dispersion of the objects). We analyzed a set of initial particular indeces and chose the following five of them as input variables: birth rate per 1000 persons, average cash income per capita, total square of living quarters per one inhabitant, the number of hospital beds per 10000 persons, the number of registered crimes per 100000 persons. The values of the mentioned particular indeces are published in collections of statistics. The initial data used for calculations of SSDI in 2017 are shown in Table 3 as an example.

Table 3
Initial indeces used for calculations of SSDI in 2017

Regions	Birth Rate	Average Cash Income per capita	Square of Living Quarters	The Number of Hospital Beds	The Number of Registered Crimes

The Russian Federation	11,6	31591	24,9	81,6	98527
The Central Federal District	10,6	39903	26,5	76,4	98710
Belgorod Region	9,8	29747	29,9	72,7	99116
Bryansk Region	9,6	26332	28,7	74,9	98707
Vladimir Region	9,8	23928	27,8	84	98627
Voronezh Region	9,7	29974	28,8	84,1	98528
Ivanovo Region	9,8	24399	25,7	82	98597
Kaluga Region	10,9	28177	28,8	79,3	98400
Kostroma Region	10,9	23765	26,9	95,6	98649
Kursk Region	9,7	27649	29,3	85,1	98913
Lipetsk Region	10,2	29001	29,2	83	98930
Moscow Region	12	40895	33,7	74	98802
Oryol Region	9,6	23187	27,6	92,6	98770
Ryazan Region	9,9	24960	29,5	79,3	99156
Smolensk Region	9,2	24367	27,9	97,1	98569
Tambov Region	8,7	27240	27,7	80,6	98835
Tver Region	9,9	25761	30,8	93,9	98386
Tula Region	9,1	27350	27,7	85,8	99201
Yaroslavl Region	10,6	27052	26,6	92,6	98553
Moscow	10,9	59762	19,1	65,2	98593

The fact that it is rather difficult to detect any trends in the development of the social sphere in the regions of the Central Federal District (even using a relatively small amount of initial particular indeces) demonstrates the necessity of integral indeces.

The next stage of the performance audit of the social investments is an indication of the level of how initial particular indeces influence an integral SSDI detector with the help of weighting factors, which can be detected with the help of the method of paired comparison. Counted values of the weighting factors are given in Table 4.

Table 4
Values of weighting factors for calculations of SSDI

Values	Birth Rate	Average Cash Income per capita	Square of Living Quarters	The Number of Hospital Beds	The Number of Registered Crimes
Abbreviation	BR	ACI	SLQ	HB	RC
Weighting Factors	0,2513	0,3317	0,0804	0,1608	0,1759

The biggest value of each particular index of all the regions during the analyzed period is chosen as a standard. A set of standard values of particular indeces is given in Table 5.

Table 5
A set of standard values of indeces for calculations of SSDI

	X0J				
	X01	X02	X03	X04	X05
Abbreviation	**BR**	**ACI**	**SLQ**	**HB**	**RC**
Name of Index	Birth Rate	Average Cash Income per capita	Square of Living Quarters	The Number of Hospital Beds	The Number of Registered Crimes
Unit	Birth Rate per 1000 Persons	Russian Roubles	Square Metres	The Number of Hospital Beds per 10000 Persons	The Number of Registered Crimes per 100000 Persons
Region	The Russian Federation	Moscow	Moscow Region	Smolensk Region	Tula Region
Year	2014, 2015	2015	2017	2013	2017
Scaled Value	25,12	33,17	8,04	16,08	17,59

Calculated values of SSDI in the regions of the Central Federal District from 2013 to 2017 are shown in Table 6.

Table 6

Values of Social Sphere Development Index in the regions arranged by years (and their ranks)

Regions	2013		2014		2015		2016		2017		Total Rank
	Value	Rank	Value	Rank	Value	Rank	Value	Rank	Value	Rank	
The Russian Federation	0,333	4	0,331	4	0,336	4	0,331	4	0,341	4	4
The Central Federal District	0,457	2	0,455	3	0,491	2	0,488	3	0,475	3	3
Belgorod Region	0,277	6	0,267	7	0,275	8	0,282	7	0,258	8	7
Bryansk Region	0,213	11	0,204	11	0,215	12	0,191	13	0,189	13	12
Vladimir Region	0,185	16	0,173	18	0,184	15	0,153	20	0,156	19	18
Voronezh Region	0,244	9	0,272	6	0,314	5	0,286	5	0,275	5	6
Ivanovo Region	0,180	18	0,177	17	0,164	20	0,167	18	0,162	17	19
Kaluga Region	0,280	5	0,276	5	0,284	6	0,284	6	0,261	7	5
Kostroma Region	0,179	20	0,166	20	0,172	18	0,193	12	0,183	15	17
Kursk Region	0,230	10	0,234	10	0,231	10	0,215	11	0,230	10	10
Lipetsk Region	0,245	8	0,264	8	0,266	9	0,270	9	0,267	6	9
Moscow Region	0,447	3	0,459	2	0,475	3	0,525	2	0,523	2	2
Oryol Region	0,181	17	0,168	19	0,170	19	0,164	19	0,143	20	20
Ryazan Region	0,202	14	0,202	14	0,184	16	0,184	15	0,175	16	15
Smolensk Region	0,209	12	0,202	13	0,199	13	0,181	17	0,160	18	14
Tambov Region	0,179	19	0,187	15	0,177	17	0,185	14	0,188	14	16
Tver Region	0,202	15	0,186	16	0,184	14	0,183	16	0,206	12	14
Tula Region	0,206	13	0,204	12	0,222	11	0,231	10	0,207	11	11
Yaroslavl Region	0,246	7	0,255	9	0,277	7	0,276	8	0,244	9	9
Moscow	0,757	1	0,740	1	0,734	1	0,690	1	0,653	1	1

The calculated data show a great differentiation in the regions of the Central Federal District at the efficiency level of financing of the social investments. Moscow and Moscow Region are the doubtless leaders at the efficiency level of the social investments. This fact is caused by the significant superiority in the development of the social sphere of these regions. Kaluga

Region, Voronezh Region and Belgorod Region use the financial resources of the social investments rather effectively. The lowest efficiency level of the social investments is demonstrated in Ivanovo Region and Oryol Region.

We are going to do a correlation and regression analysis of indeces of financing levels of the social sphere and an analysis of an integral index of the social sphere development in 2017 at the next stage of modelling of the management system of the social sphere development in the context of financing for social investments. The initial data for the analysis are given in Table 7.

Table 7
Initial data for a correlation and regression analysis

	SSDI	Housing and Communal Services	Education	Health Care	Social Policy
	Y	X1	X2	X3	X4
Belgorod Region	0,341	3293,7	26214,9	19976	15724,4
Bryansk Region	0,475	2229,8	14971,7	13837,2	14812,5
Vladimir Region	0,258	4050,4	20042,6	17828,2	15436,3
Voronezh Region	0,189	4358,9	31258,9	28731,1	24768,6
Ivanovo Region	0,156	3294,4	11357,6	10569,1	11418
Kaluga Region	0,275	6714	15379	14208,3	12610,7
Kostroma Region	0,162	1910,8	8889,1	7811,1	7000,8
Kursk Region	0,261	2043	17053,3	13517,6	14759
Lipetsk Region	0,183	3518	16896,4	14420,2	13594,6
Moscow Region	0,230	48252,5	172924,4	154899,8	115241
Oryol Region	0,267	976,3	11155,2	9510,4	10003
Ryazan Region	0,523	1857,2	16495,4	13147	12680,2
Smolensk Region	0,143	2427,9	11880,3	11360,3	11506,4
Tambov Region	0,175	2945,9	14332,8	11684,3	11471,1
Tver Region	0,160	3924,1	17559,7	16638,2	15241,7
Tula Region	0,188	7244,8	24853,7	20916,5	22042,4
Yaroslavl Region	0,206	4943,2	22463,2	17451	17052,9

You can see correlation factors in Table 8. These factors demonstrate a very close (almost

equal) connection between the variables.

Table 8
Correlation factors (r), characterizing the
connection between the analyzed variables

	y
y	1
x1	0,901273604
x2	0,912628633
x3	0,908726501
x4	0,906097262

It is necessary to scale the variables beforehand to do a regression analysis. The results of the regression analysis let create the following mathematical function (1), which characterizes how financing of the investment processes can influence the results of the development of the social sphere:

$$y = 17,3 + 0,15x_1 + 0,78x_2 - 0,57x_3 - 0,17x_4 \quad (R^2 = 0,92) \tag{1}$$

4. Conclusions

State governing institutions or regional authorities should implement the policy of the social investments based on equalizing social and economic development of regions by redistribution of financial flows and paying attention to levels of the social development of the regions in dynamics. The program of social and economic development in low-performing regions must include an increase in the social development level and a creation of programs, which connect actual financial resources with planned social and economic results. Removal of inequality in living standards in different areas is a long process. It requires the development of the social infrastructure and productive forces in those areas where the standards of living are lower. It is reasonable to point out that the civil society must be the main participant of the social regulation. The society must direct its efforts towards a gradual growth of the social responsibility of business based on the social partnership. Whereas the offered model of the management system of the social sphere development in the context of financing for social investments can be used in carrying out the financial control of the investment processes in the social sphere.

Acknowledgments

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