



## FINANCIAL MODEL OF A REGIONAL SOCIAL SPHERE DEVELOPMENT

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### ABSTRACT

The article deals with peculiarities of financing in a social sphere (SS) of Russia. A special attention while making a financial model of a social sphere development (SSD) is paid to an institutional approach and to the temporal and spatial dynamics of the model. The authors made a model in order to evaluate how financing investment processes influences the results of a in the context of dominant concepts. It is shown that closeness of the connections between the researched variables can be demonstrated in the offered model, which can be used by representatives of state governing institutions or regional authorities while managing the social investments financing and the SSD. The financial model is demonstrated within the regions of the Central Federal District of Russia. Distinctive specific tendencies for the SSD are determined. It lets speak about possibilities of successful management of social investments in the fast-moving society.

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## 1. INTRODUCTION

Nowadays, various issues connected with financing of social investments are considered to be especially relevant to problems of the social sphere development (SSD). This phenomenon performs 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, an interest in social investments has started increasing relatively recently all over the world in comparison with other social and economic categories.

The direction of the causal relationship between the methods of financing social investments and the development of the social sphere (SS) is still unclear for financial science. On the one hand, the level of development of the SS has a significant impact on appropriate methods of financing social investment processes. On the other hand, certain financing methods are not accidentally used in the

current economic situation. They should lead to the achievement of the planned results of the SSD.

## 2. LITERATURE REVIEW

In [1], the definition of SS is given “an area of activity where the actors are able to unite in sharing understandings, rules, and principles, regarding the activity. These understandings influence the way in which individuals engage in such activities. The second methodological principle in the study of law in society examined in this chapter focuses on how legal rules are to be construed and managed by officials and citizens.”

In [2], the SS financing in Russia has been studied in regards of problems and prospects. The work discussed main trends, growth in funding, priority increase of pension provision, centralized sources management, and evening-out the inter-regional inequalities. The work forecasted the social systems funding up to 2020.

A conceptual model has been proposed in [3] for the regional’s human capital development to explain the development dynamic process through investment at state, regional and municipal resources, as well as individuals and private enterprises. These would affect the quality of life and socio-economic development of the regions.

The work [4] discussed the change in economic situation in Tatarstan (Russian Federation region) causing differentiation among people due to different income level. The social survey study is analyzed using statistical indicators.

A significant amount of research has been done on the issue of financing social investments. However, the generally accepted concept of financing social investments has not been created because a large number of various factors influence the formation of a financial model for the development of the SS. Firstly, the peculiarities of financing investments in the SS also depend on the level of administrative territorial division because the objects of financing themselves vary greatly in composition depending on this feature. Secondly, from the point of view of financing investment processes in the SS, the financial conditions for the development of the sphere of social relations are fundamentally different from the financial support for the development of social infrastructure. Thirdly, there are various models of financing the development of the SS, depending on the level of state intervention. This situation requires analysis, systematization and generalization of approaches to create a financial model for the development of the SS in the region, for the detection of the level of impact of various financing mechanisms of investment processes on the development of the SS.

## 3. MATERIAL AND METHODS

Creating a financial model of the SSD of the region includes several stages.

### 3.1 INSTITUTIONAL ANALYSIS

The initial stage of the research includes analysis of the condition of the institutional environment of the development of the SS, which has been created in a certain region. Much attention is paid to the formation of the institutional environment of the innovative development of the SS in Concept of the long-term social and economic development of the Russian Federation for the period up to 2020 [5]. The directions of the formation of the institutional environment of

financing investment processes in the SS are given in Figure 1.



**Figure 1:** Directions of the development of the institutional environment of the social investments financing.

### 3.2 DOMINANT CONCEPTS OF FINANCING SOCIAL SPHERE

It is necessary to say that there are still certain gaps in institutional maintenance of financing social investments in particular. In the context of the social investments, NPV indicator (Net present value) can not record the results of financing investment processes in the SS quantitatively because social investments are non-profit. This problem can be solved, for example, by using integral indices, received according to V. Pliuta model [16], which is given in Formula 1.

The analysis of the main instruments of financing the SS is done in the framework of the two dominant concepts – regulatory and target financing and public-private partnership (PPP).

$$SSDI = 1 - \frac{dio}{Co},$$

$$wheredio = \left[ \sum_{j=1}^n (X_{ij} - X_{oj})^2 \right]^{1/2}, Co = \bar{X} + 2Sd$$

$$\bar{X} = \frac{1}{t} \sum_{i=1}^t dio \tag{1}$$

$$Sd = \left[ \frac{1}{t} \sum_{i=1}^t (dio - \bar{X})^2 \right]^{1/2}$$

### 3.3 TEMPORAL AND SPATIAL DYNAMICS BY GIOVANNI ARRIGHI

The next stage includes evaluation of the impact of the principles of Giovanni Arrighi's Theory [9] of temporal and spatial dynamics on a financial model of the SS development. We use the 3D representation of graphic information to demonstrate the results.

The main sources of information for the analysis of SS financing are budget reporting data which are publicly posted on official websites of Ministry of Finance of the Russian Federation, The Federal Treasury, Federal State Statistic Service, Public-Private Partnership Development Centre. Data on the financing of the SS from the consolidated budget of the Russian Federation for the period from 2016 to 2018 using the methods of system and structural analysis, statistical and graphical analysis of

the dynamics of time series are analyzed in the article. The synthesis method was used to form a comprehensive view of the existing mechanism for financing the SS.

### 3.4 CORRELATION AND REGRESSION MODELLING

Then a correlation and regression analysis of indicators of the volume of financing of the SS, the final integral indicator of the rating of the region of the Russian Federation by the level of development of the PPP and the integral indicator of the development of the SS in 2018 is conducted. The result of the regression analysis is demonstrated within the simple mathematical model,

$$y = a_0 + a_1 * x_1 + a_2 * x_2 + \dots + a_n * x_n \quad (2).$$

While assessing the level of influence of factor variables and model quality, the coefficients of determination ( $R^2$ ) and pair correlation ( $r$ ) are used. The correlation and regression analysis is conducted using functions of the tools “Regression” and “Correlation” in the Microsoft Office data analysis package.

## 4. STUDY DETAILS

The main goal of financing social investment activity at the state level is to achieve the most rational form of interaction between investors, the state and consumers in the process of improving the quality and standards of living of a person [6]. Thus, when implementing the social function of the state, it is necessary to move from a consumer approach to an investment one.

### 4.1 ANALYSIS OF THE INSTITUTIONAL ENVIRONMENT OF THE SS FINANCING

Let us consider in a more detailed way the directions of formation of the institutional environment for financing the SS, which are given in Figure 1.

Institutions in the field of political and legal relations are dominant in the implementation of legislation and ensuring the political and civil rights of the population of the state (independence of the court, inviolability of property and personality, the effectiveness of law enforcement). Institutions for the development of human capital come into the picture in the transition to a knowledge economy. In this context, the priorities are “education”, “health care”, “pension system”, “housing conditions”. Economical institutions are connected with legislation regulating sustainable (and sometimes even breakthrough) economic development. Development institutions should be focused on eliminating the existing imbalances which affect economic growth (for example, investment promotion agencies, technology parks). The institutional support of the strategic management system must ensure a balanced and coordinated development of the enumerated institutions. The relevance of the study of the institutional aspects of financing social investments was confirmed in 2009, when economists who were engaged in the study of the institutional aspects of the innovative development of the economy received Nobel Prizes.

The regional specificity and significance of the formation and development of the enumerated institutions in the context of financing investment processes in the SS is clear if we pay attention to the fact that one of the goals of Russia's social and economic development is “ensuring balanced social and economic development of the regions”. The main direction of a regional policy in this case is “coordination of state infrastructure investments and business investment strategies in the regions, taking into account the priority of spatial development and resource limitations, including

demographic ones” [5]. It is necessary to note that almost all infrastructure investment projects are socially oriented (education, transport, housing, health care, communications).

The special role of investment infrastructure projects in the SS is also emphasized in the Decree of the President of the Russian Federation “On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024” dated May 7, 2018. According to the Decree, implementing national projects can help to achieve socially oriented goals, such as increasing the population of the country, raising the standards of living of the citizens, creating comfortable conditions for their living, as well as the conditions and opportunities for self-realization and revealing the talents of each person [7].

At the moment, the institutional environment for financing investment processes in the SS has been formed at the federal level, ensuring the balance of interests of all the regions. According to the Russian legislation, “investments are cash resources, securities, other kinds of property, including property rights, other rights which have a monetary value, which are contributed to objects of entrepreneurial and other activities for profit or another beneficial effect” [8]. It is the “another beneficial effect” that is the basis for characterizing the result of investment processes in the SS because profit is not always the goal for social investments.

The most important categories of financing investment processes in the SS are “state program” and “public-private partnership”. The institution of “state programs” was introduced by article 179 of the Budget Code [8]. As for the PPP, this subject area is reflected in a number of laws, because of the variety of forms of relations which should be regulated between the public and private sectors. We can find it in such laws as Federal Law № 115 “On Concession Agreements”, Federal Law № 224 “On PPP, municipal-private partnership ...”, Federal Law № 44 “On the contract system in the field of procurement of goods, works, services ...”, Civil Code of the Russian Federation, Federal Law №135 “On protection to competition” (state property lease agreement with tenant investment obligations), Federal Law № 223 “On procurement of goods, works, services by certain types of legal entities” (long-term contract for the supply of goods, works, services with investment obligations of the contractor).

## 4.2 DOMINANT CONCEPTS OF SS FINANCING

The formation of the institutional environment for financing investment processes in the SS of a region has a number of conceptual features.

The concepts of PPP and regulatory-targeted financing are dominant while financing investments in the SS of the region. Russia had a large number of regional laws on PPP, the sense of which was lost after the adoption of the Federal Law № 224 “On PPP, municipal-private partnership ...” in 2015. This Federal Law governs the entire cycle of public-private and municipal-private partnerships. It is necessary to pay attention to the fact that the regions of the Russian Federation are not obliged to adopt regional laws on PPP (this is their right). Legal relations in this area should be regulated exclusively at the sub-legislative level. In this situation, regulatory documents which ensure effective budget participation in joint investment projects, including concession projects, come into the picture. These regulatory acts are such documents as rules for making decisions on making public-private and concession agreements for a period exceeding the term of the approved limits of



budgetary obligations; procedure for granting subsidies from the regional budget to municipalities to fulfill their spending obligations under the agreements. In this context, the concept of regulatory and targeted financing remains a priority, and regional budget legislation is the basis for the formation of an appropriate institutional environment.

It is necessary to say that in the near future, with the institutional provision of financing of investment processes in the SS, federal and regional legislation will have to respond to the challenges of the digital economy. The introduction of digital platforms often does not give the desired effect due to the backwardness of the regulatory framework. The new legislation can influence the speed of creation of integrating platforms. At the same time, many regions of Russia are not very active in creating a country's digital ecosystem. They believe that all platform solutions will be determined and implemented by the federal government and they will join the ready-made solutions after orders of the government. However, it is impossible to develop the digital economy without the direct participation of the regions of the Russian Federation and without using and replicating the best regional legislative practices in the digital economy, including the financing of social investments.

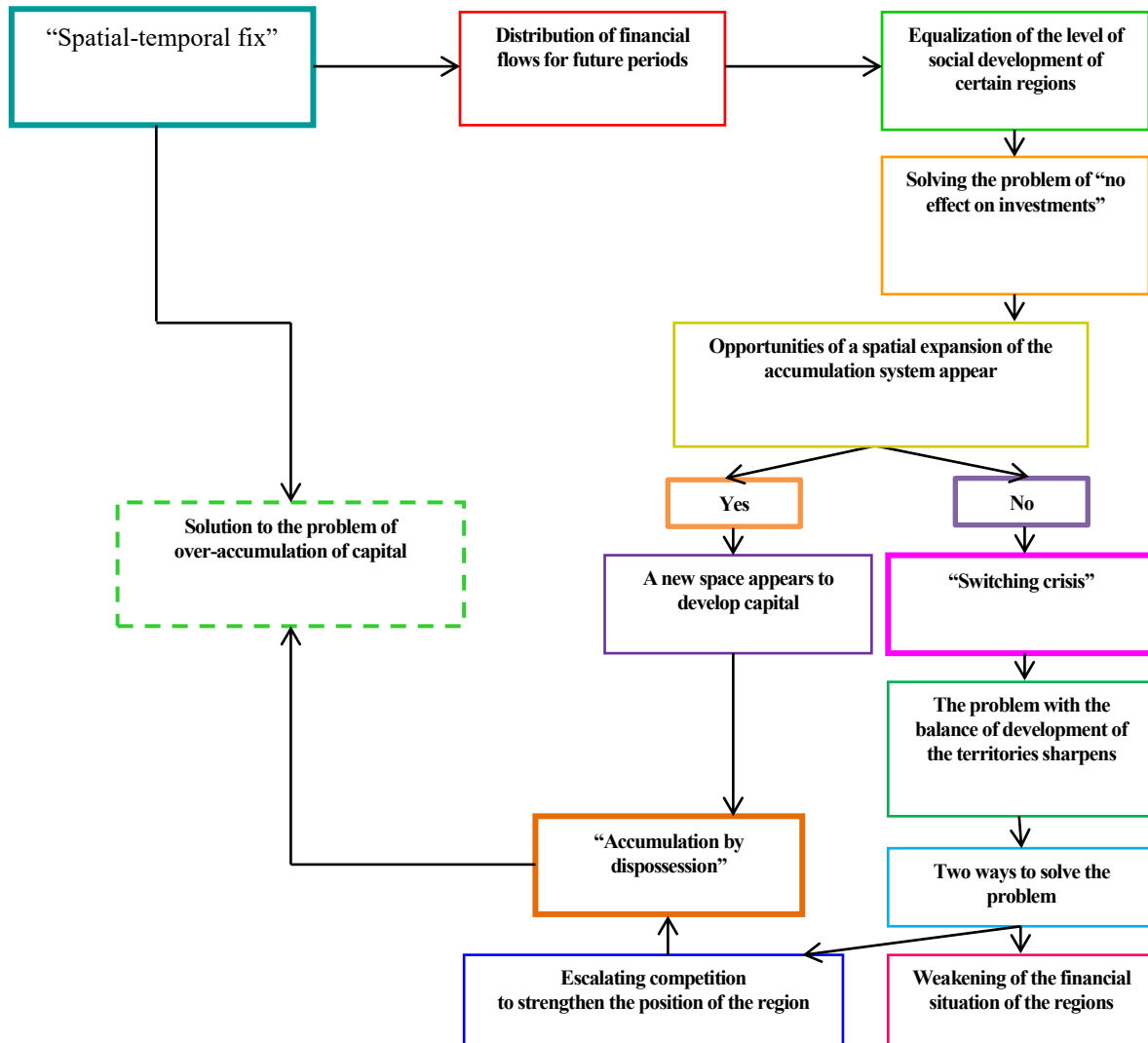
#### **4.3 EVALUATION ON TEMPORAL AND SPATIAL ASPECTS OF CREATING A FINANCIAL MODEL OF THE SSD IN THE CONTEXT OF DOMINANT CONCEPTS**

Creating a financial model, the next important is the expediency of taking into account the influence of temporal and spatial aspects on the dynamics of the SSD. Temporal and spatial trends in the impact of financing both budget investments and investments in the framework of PPP on the development of the SS receive a new meaning in the context of the principles from Giovanni Arrighi's research [9], connected with the conceptualization of the globalization processes of historical capitalism. What is more, the three main categories of the examined processes – “spatial-temporal fix”, “switching crisis” and “accumulation by dispossession” – fit quite well into a financial model of the SSD [9].

“Spatial-temporal fix” of the capital means overcoming of crisis phenomena through the distribution of financial flows for future periods (time) and transformation of their geographical orientation (space). From the standpoint of the evolution of the SS, this strategy allows to make the so-called equalization of the level of social development of certain regions. This equalization can help to get rid of the imbalances connected with the fact that financial capital in a certain area can not bring the same increase in social effect, as it brings in less developed regions. In the current situation, the unequal distribution of capital provokes a search for more effective ways of financing social investments in an alternative geographic space.

Thus, we have a spatial expansion of the accumulation system. Besides, if there is no new space to develop financial capital, the capital is devalued. It leads to another problem: capital circulation sometimes has negative consequences and even can be the reason of the “switching crisis”. In this situation, we can have a local counteraction towards the circulation of capitals, which can arise both from the centre and from newly established territories which do not want to lose benefits from the social investments. In any case, “switching crisis” sharpens the problem of the power balance that is connected with reducing the pace of social development in more developed territories and dynamic development of new regions. Two ways to solve the problem can appear in this situation: to weaken the financial situation of certain territories or to use rigid political tools to reverse the competitive

situation in their favour. A combination of these ways is “accumulation by dispossession”. The world practice shows that it includes the transfer of rights of property (even the state one) into private rights, the appropriation of assets and natural resources, the exclusion of alternative use of various resources (including human capital). It means that “accumulation by dispossession” and “spatial-temporal fix” are equivalent to solving the problem of overaccumulation of capital. The summarized mechanism of the interaction of the described categories is shown below.

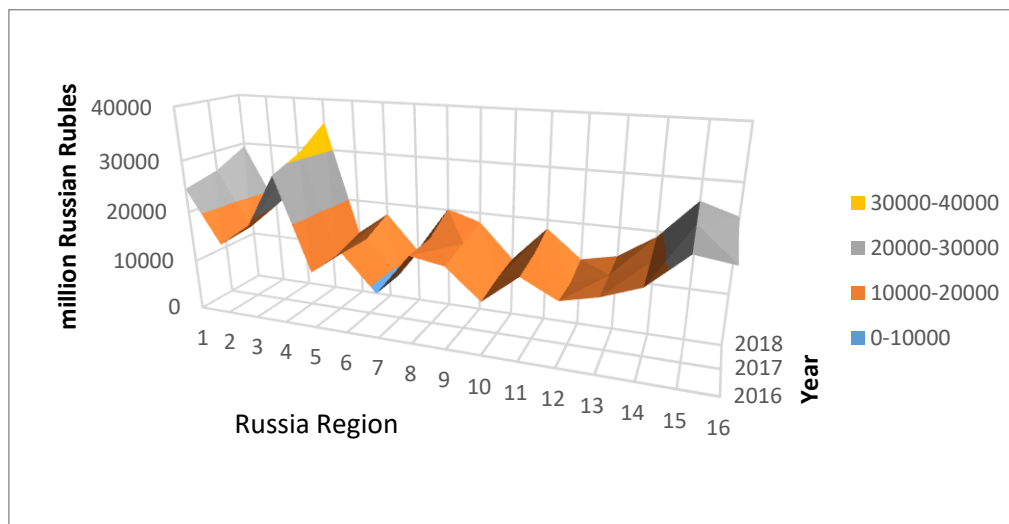


**Figure 2:** Interaction mechanism of the main categories of temporal and spatial trends of financing investments

Temporal and spatial characteristics of financing social investments let detect the formed trends. It helps to detect preconditions and factors, which influence the development of the SS of the region directly. To describe the current situation in the area of financing of the main elements of the SS giving different regions of the Central Federal District of Russia as examples, the data is shown in Table 1. The use of 3D depiction of graphic information makes it easier. As an example, we can introduce a temporal and spatial characteristic of the process of financing education in the regions of the Central Federal District of Russia over the period from 2016 to 2018 that is shown in Figure 3. The regions have sequence numbers (they are given in brackets after the names of the regions in Table 1).

**Table 1:** Expenses for the SS of the consolidated budgets of the regions in the Central Federal District of Russia from 2016 to 2018, million Russian Rubles.

Russia Region	Housing and Communal Services (x1)			Education (x2)			Health Care (x3)			Social Policy (x4)		
	2016	2017	2018	2016	2017	2018	2016	2017	2018	2016	2017	2018
Belgorod (1)	2739	3294	3908	24586	26215	29380	10155	19976	24858	10025	15724	16546
Bryansk (2)	1777	2230	2281	14202	14972	17175	2300	13837	17259	15236	14813	15178
Vladimir (3)	3713	4050	4022	18291	20043	22526	8454	17828	21928	10875	15436	16616
Voronezh (4)	4242	4359	5416	28814	31259	35443	16461	28731	35825	16105	24769	25810
Ivanovo (5)	2573	3294	3266	11138	11358	13156	1679	10569	13806	11138	11418	11851
Kaluga (6)	5660	6714	7515	15665	15379	17790	4328	14208	17978	12578	12611	13061
Kostroma (7)	2161	1911	2163	8847	8889	10735	4006	7811	9434	4716	7001	7413
Kursk (8)	1812	2043	1915	16875	17053	20185	6549	13518	16756	9731	14759	15087
Lipetsk (9)	3272	3518	3548	15785	16896	18164	4350	14420	17320	13584	13595	14678
Oryol (10)	1008	976	1075	10236	11155	11505	5311	9510	11507	6639	10003	10043
Ryazan (11)	2552	1857	2505	15662	16495	18382	6834	13147	17607	8343	12680	13585
Smolensk (12)	2856	2428	2417	12369	11880	13116	6434	11360	13620	7842	11506	12099
Tambov (13)	2776	2946	3233	14036	14333	14576	6393	11684	13738	8145	11471	12150
Tver (14)	3220	3924	3087	16640	17560	19013	9919	16638	20024	10134	15242	15857
Tula (15)	6243	7245	5491	22858	24854	26199	12204	20917	23671	15106	22042	22719
Yaroslavl (16)	5030	4943	4580	21965	22463	24071	8994	17451	20960	12678	17053	18208



**Figure 3:** Temporal and spatial characteristic of the process of financing education in the regions of the Central Federal District of Russia over the period from 2016 to 2018, million Russian Rubles

Voronezh and Tula were the leading regions in the amounts of financing of the SS in 2018. The lowest levels of the social expenses were demonstrated in Kostroma Region and Oryol Region. Besides, there is a general tendency towards predominance of expenses for education in the financing structure and a lag in financing of housing and communal services. Differentiation of the budget expenses for 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 SS (population size, level of economic development, regional social policy).

Nowadays, the search for methods of financing investment processes in the SS receives new impetus in the framework of PPP approaches that keeps penetrating deep into the concept of public finance management. It is necessary to consider the condition of financial support for the development of infrastructure projects at the state level before examining the role and the meaning of private investments in financing the SS at the regional level.

Infrastructure investments are one of the main and effective instruments for financing the



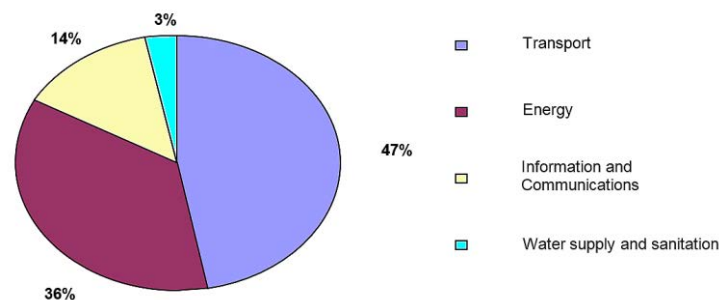
development of the SS. Global demand for them exceeds annual investments more and more often. Government expenses are not able to supply an increasing need in infrastructure investments. It is estimated that Russia's uncovered demand for infrastructure investments will be 4.8 trillion Rubles or 4.7% of GDP in 2019. The greatest investments need will be observed in the field of transport (950 billion Rubles), communal and housing service (300 billion Rubles) and health care (100 billion Rubles), see Table 2. Use of funds of private investments will reduce these gaps. For example, it is possible to cover the expenses for culture and tourism by 75%, IT infrastructure expenses by 70%, expenses for education and sport by 50% [11, 12].

**Table 2:** Evaluation of uncovered demand in different branches.

Branch	Uncovered Demand in 2019, billion Russian Rubles	Cover Potential with PPP, billion Russian Rubles	Cover Percentage with the funds of PPP, %
Health Care	100	30	30
Sport	40	20	50
Education	40	20	50
Culture and Tourism	20	15	75
Communal and Energy Infrastructure	300	120	40
Transport Infrastructure	950	220	23
IT Infrastructure	50	35	70
Agricultural Infrastructure	50	10	20
Other Branches	50	12.5	25

Thus, private investments are very important for the development of the national economy. According to research, 452 projects in the SS, 124 projects in the transport sphere and more than 2730 projects in the communal and energy sphere are carried out in Russia in 2019 with the help of the private investments. Overall financing volume is more than 2 trillion Russian Rubles. The private investments volume in 2018 was 2182.1 billion Russian Rubles. However, it is necessary to say that Russia ranks seventh in the world for the volume of the private investments per capita with 444 \$ following China. Mexico, Argentina, Turkey and Brazil are also ahead. The United Kingdom of Great Britain and Northern Ireland ranks first in the world for the volume of the private investments per capita with 1864 \$.

The structure of the infrastructure investments in Russia is similar to the structure in China if we pay attention to the disposition of funds for different branches. The investments are mostly used for the development of the transport sphere and of the energy (47% and 36% respectively).



**Figure 4:** Structure of infrastructure investments in Russia.

Figure 4, about 3% of the investment resources are used for water supply and sanitation. It is necessary to say that China spends more money on the infrastructure than North America and

Western Europe in general (about USD 829 billion).

The number of the social projects which are carried out with the help of private investments keeps increasing. The most popular forms of private investments in the SS are a concession agreement, a lease agreement with investment obligations, a private partnership agreement at the state level or at the municipal level, a life cycle contract or a long-term state or municipal contract with an investment component, an offset purchase and other forms.

Payment facilities used to return private investments are divided into three groups: “Availability payment”, a mixed model of return on investments and direct takings from consumers or other commercial activities. The facility “Availability payment” includes recovery of expenses for carrying out an investment project and assurance of its profitability and reimbursement of debt financing. A mixed model of return on investments is based on return on investment resources with the help of the budget and commercial activities. Direct takings from consumers mean return on investments only with the help of commercial activities of the investor.

Most of private investment projects to develop spheres of heat supply, water supply and sanitation are based on return on investments by providing services for consumers according to controlled costs or tariffs. Other projects are carried out with the help of different payment facilities.

According to the modern conditions, financing the development of the social infrastructure is connected with various trends, influencing the structure and volumes of investments in the future. First, the social infrastructure can face some risks of technological development. It can change directions of making investments. Second, global decarbonising will also help to switch to new sustainable infrastructure technologies. Third, a growing digitization of the social processes will influence the quality of the managerial decisions and increase in the yield of the investment decisions. Fourth, cybersecurity of the social infrastructure will help to develop the infrastructure itself. It is really important because there is an increase in danger of cybercrime.

**Table 3:** The final integral indicator of the rating of regions of the Russian Federation by PPP level.

Region	2016	2017	2018
Belgorod Region	34.0	39.6	51.5
Bryansk Region	19.9	16.9	17.8
Vladimir Region	63.6	73.0	77.3
Voronezh Region	55.0	54.7	52.7
Ivanovo Region	35.6	41.9	37.1
Kaluga Region	44.8	57.6	72.8
Kostroma Region	24.8	24.4	27.8
Kursk Region	25.9	27.9	31.9
Lipetsk Region	43.4	45.7	50.1
Moscow Region	82.7	90	90
Oryol Region	16.8	20.9	18.3
Ryazan Region	28.5	32.1	38
Smolensk Region	44.7	49	49.2
Tambov Region	62.3	79	84.1
Tver Region	7.8	18	18.4
Tula Region	52.5	62.9	66.7
Yaroslavl Region	22.8	28.5	39.0
Moscow	90.1	90.0	90.0

Differentiation of the PPP and SSD level in the regions of the Central Federal District of Russia is rather great. It can be explained by different conditions, which influence financing the social

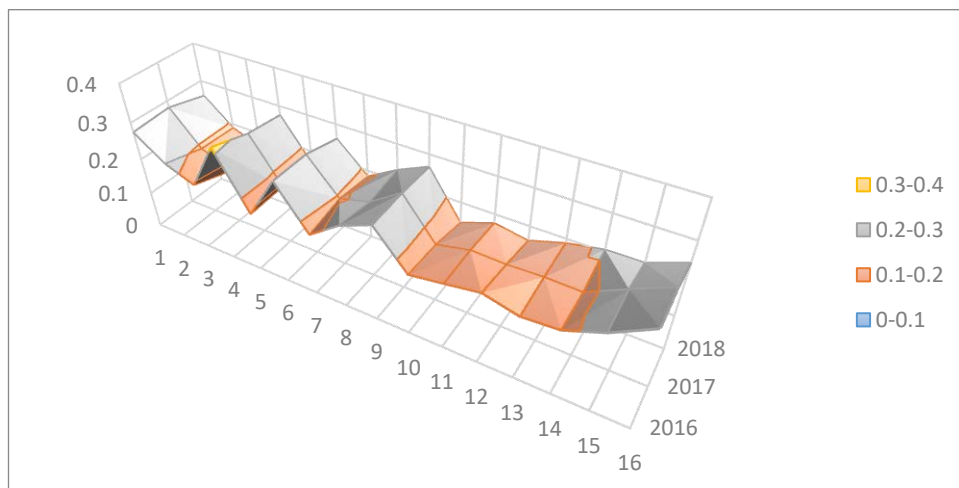
investments (population size, level of economic development, regional social policy).

The rating of the development of the PPP in the regions of the Central Federal District of Russia over the period from 2016 to 2018 is shown in Table 3. Such factors as the development of the institutional environment in the PPP, regulatory support of the PPP and experience of carrying out PPP projects are used to calculate the indicator of the rating of the region in the Russian Federation.

We can highlight two main trends in the development of the PPP level. Firstly, several regions have reached maximum indices of the development of the institutional environment and of the regulatory support of the PPP by now. Secondly, the share of the indices of the described factors has decreased significantly in the general integral index.

**Table 4:** Values of SSDI in the regions arranged by years (and their ranks).

Russia Regions	2016		2017		2018		Total Rank
	Value (y)	Rank	Value (y)	Rank	Value (y)	Rank	
Belgorod Region (1)	0,275	8	0,282	7	0,258	8	7
Bryansk Region (2)	0,215	12	0,191	13	0,189	13	12
Vladimir Region (3)	0,184	15	0,153	20	0,156	19	18
Voronezh Region (4)	0,314	5	0,286	5	0,275	5	6
Ivanovo Region (5)	0,164	20	0,167	18	0,162	17	19
Kaluga Region (6)	0,284	6	0,284	6	0,261	7	5
Kostroma Region (7)	0,172	18	0,193	12	0,183	15	17
Kursk Region (8)	0,231	10	0,215	11	0,230	10	10
Lipetsk Region (9)	0,266	9	0,270	9	0,267	6	9
Oryol Region (10)	0,170	19	0,164	19	0,143	20	20
Ryazan Region (11)	0,184	16	0,184	15	0,175	16	15
Smolensk Region (12)	0,199	13	0,181	17	0,160	18	14
Tambov Region (13)	0,177	17	0,185	14	0,188	14	16
Tver Region (14)	0,184	14	0,183	16	0,206	12	14
Tula Region (15)	0,222	11	0,231	10	0,207	11	11
Yaroslavl Region (16)	0,277	7	0,276	8	0,244	9	9



**Figure 5:** Temporal and spatial characteristic of the level of the SSD the regions of the Central Federal District of Russia over the period from 2016 to 2018.

## 5. DISCUSSION

While modelling how different ways of financing of investment processes influence the results of the SSD, it is reasonable to use the chosen criteria of effectiveness [13]. In this very situation, we

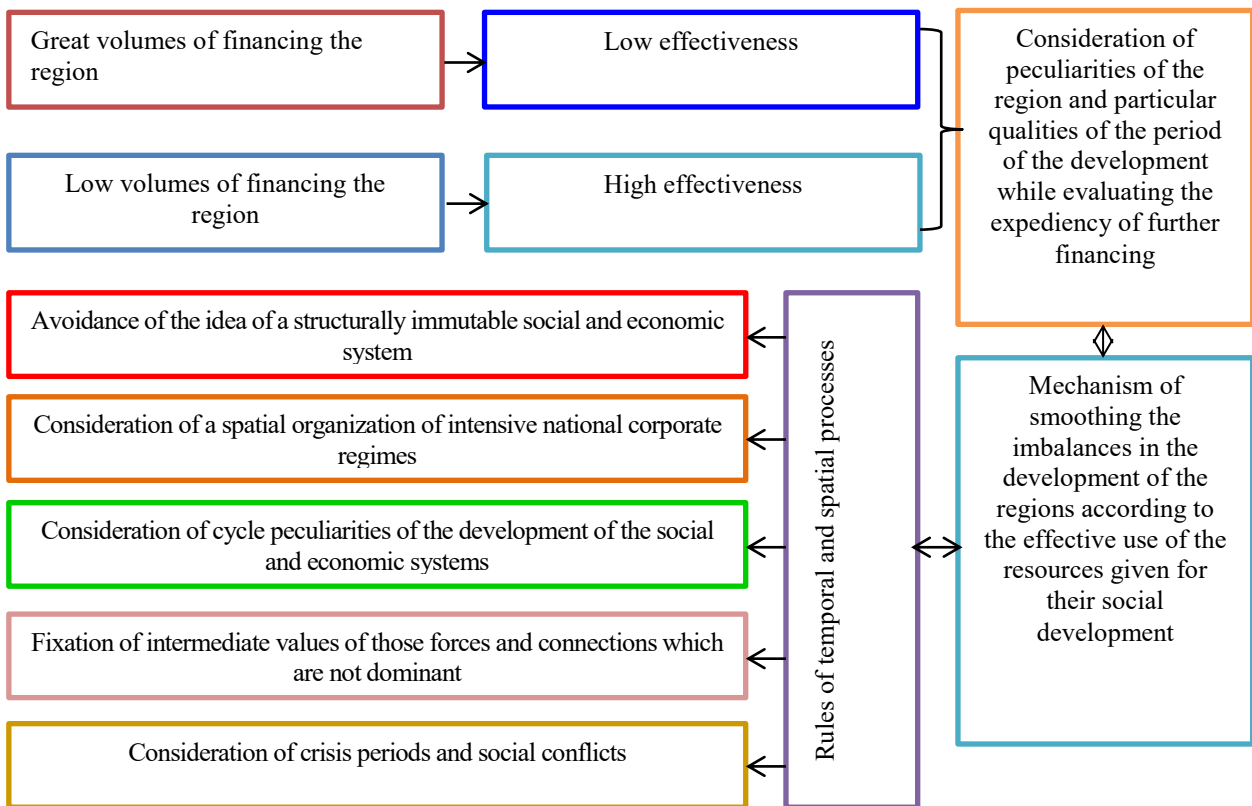
can use an integral detector “SSD Index” (SSDI), based on V. Pliuta’s model [16] (Formula 1).

The first stage of creating an integral index requires paying attention only to those particular variables, which are characterized by the greatest changeability. We analyzed a set of initial particular indices 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 [14, 15].

Table 4 and Figure 5 show Calculated values of SSDI in the regions in Central Federal District of Russia from 2016 to 2018. Kaluga Region, Voronezh Region and Belgorod Region use the financial resources of the social investments more effectively than the other regions do. The lowest effectiveness level of the social investments is demonstrated in Ivanovo Region and Oryol Region.

We are going to do a correlation and regression analysis of indices of financing levels of the SS and an analysis of an integral index of the SSD in 2018 at the next stage. The initial data for the analysis are given in Tables 1 and 4. The correlation factors demonstrate a very close (almost equal) connection between the variables. 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 (3), which characterizes how budget financing of the investment processes can influence the results of the development of the SS:

$$Y = 17.3 + 0.15x_1 + 0.78x_2 - 0.57x_3 - 0.17x_4 \quad (R^2=0.92) \quad (3)$$



**Figure 6:** Principles of implementing the policy of the social investing based on equalizing the social and economic development of the regions by redistributing the financial flows.

The offered methods can be expanded by creating “SS Financing Index” (SSFI) according to similar principles. Then a correlation and regression analysis of SSFI and SSDI will let characterize more accurately temporal and spatial dynamics of the way how mechanisms of financing the SS

influence its development.

While evaluating the level of influence of financing the investment processes within the partnership of the state and of private business on the results of the SS development, we are going to do a correlation analysis of the “Final integral index of the rating of the Russian region according to the level of the development of the PPP” and SSDI from 2016 to 2018. The initial data for the analysis are given in Table 3 and Table 4.

The correlation factor ( $r$ ) is calculated with the help of the function of the tool “Correlation” in the Microsoft Office Excel data analysis package. The range of the factor during the analysis is from 0.6 to 0.7. The instruments of financing the social investments within the concept of the PPP keep developing in Russia. Therefore, we can say that there is a close connection between the variables.

The mathematical function that characterizes the influence of financing the investment processes within the PPP on the results of the SSD in 2018 is given below:

$$y = 0.08 + 0.003x_1 \quad (R^2 = 0.6) \quad (4)$$

## 6. DISCUSSION

State governing institutions 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 the financial model of the social development of the regions in dynamics.

Besides, it is necessary to pay attention to five important rules offered by Arrighi [9]. The rules are connected with temporal and spatial processes of the globalization and they will help to take into account the aspects of the influence of financing the social investments on the SS development more attentively. Firstly, it is relevant to abandon the idea of a structurally immutable social and economic system. On the contrary, globalization trends include fundamental transformations in the structure of spatial connections, in which the accumulation system is embedded. Secondly, the dominance in the analysis should be outside of the systems, which make the basis of the organization of the main directions in financing the social investments and strategic initiatives of the governing institutions. A spatial organization of intensive national corporate regimes is the most favourable one for forming and using financial resources to reach the main socially oriented aims. Thirdly, the crucial moments of switching from the material stage of the expansion to its financial stage are basic for the choice of methods of financing the social investments. Comparison of a sequence of phenomena in these crucial moments lets detect structure transformations connected with cycle peculiarities of the development of the social and economic systems. Fourthly, description of any regime of accumulation at the upper stages of its evolution means both the dominance of the spatial component and the fixation of the intermediate direction of the forces and connections, which will help to solve the problem of redistribution of financial flows to equalize the level of the development of the SS of the regions. Besides, it is relevant to fix an intermediate value of those forces and connections which are not dominant but introduce decent alternatives. Fifthly, it is necessary constantly to pay attention to social conflicts during periods of accumulation using “accumulation by dispossession” because social conflicts become independent variables during crisis periods.

In general, it is relevant to implement the mechanism of smoothing the imbalances in the development of the regions according to the effective use of the resources given for their social development. According to the calculations described above, it has been detected that there are territories which have great volumes of the given resources for financing the investments in the SS, which, in the end do not give the proper level of the effect and make their rank worse while comparing the indices of the development of the SS of the regions. It is offered to implement the mechanism of equalizing the development of the regions according to the main rules of the temporal and spatial processes described in the article before (Figure 6).

## 7. CONCLUSION

Taking into consideration the fact that use of new instruments of financing at different levels of power becomes extremely important in the modern conditions of limited budgets at all the levels, we can say that the mechanisms of the PPP are the key construction for the attraction of private investments to develop various kinds of the social infrastructure and develop different territories. 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 SS development in the context of social investments can be used in carrying out the financial control of the investment processes in the SS.

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## 9. AVAILABILITY OF DATA AND MATERIAL

The data used in this study is included in this article. No data is generated from this study.

## 10. REFERENCES

- [1] D. J. GALLIGAN. *Law in Modern Society*. Chapter: Social Spheres. 2006. DOI:10.1093/acprof:oso/9780199291830.003.0007
- [2] Styrov MM. Problems and prospects of social sphere financing in Russia. *Ekonomicheskie i Sotsialnye Peremeny*. 2013. 1(29):151.
- [3] Mazelis LS, Lavrenyuk KI, Krasko AA, Zagudaeva ON. A Conceptual Model of the Regional Human Capital Development. *International Transaction Journal of Engineering Management & Applied Sciences & Technologies*. 2018; 9(5): 477-94.
- [4] Zainullina MR, Makhiyanova AV, Khuzieva EF, Nagimov RM. Methodology of Construction and Trend Shaping For Economic Profile of Poverty. *International Transaction Journal of Engineering Management & Applied Sciences & Technologies*. 2019, 10(1):27-35.
- [5] Decree of the Government of the Russian Federation of November 17, 2008 N 1662-p (edition of September 28, 2018) “*On the Concept of the long-term social and economic development of the Russian Federation for the period up to 2020*”.



- [6] Lapin N.I. Formation of a social state as a way of successful evolution of society. *Sociological Research*. 2018. № 8. Pp. 3-11. DOI: 10.31857/S013216250000758-6.
- [7] Decree of the President of the Russian Federation of May 7, 2018 “*On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024*”.
- [8] Federal Law N 39 of February 25, 1999 “*On the investment activity in the Russian Federation, implemented in the form of capital spending*” (the latest edition).
- [9] Budget Code of the Russian Federation.
- [10] Arrighi G. Spatial and Other of Historical Capitalism. *Journal of World-Systems Research*, Vol. X, N 2, Summer 2004. P. 527–539.
- [11] Project of a national report about attraction of private investments in developing the infrastructure and use of mechanisms of the public-private partnership in Russian Federation, Moscow, 2018. 78p.
- [12] Infrastructural support. The official website of Platform of support for infrastructural projects. 2019. [www.pppi.ru/region-rating](http://www.pppi.ru/region-rating)
- [13] R.S. Kaplan, D.P. Norton. Using the Balanced Scorecard as a Strategic Management System // Harvard Business Review, 1996, January/February, p.76.
- [14] Russia Statistic Service. The official website of Federal State Statistic Service. 2019. [www.gks.ru](http://www.gks.ru).
- [15] Federal Treasury of Russia. The official website of The Federal Treasury of Russia. [www.roskazna.ru](http://www.roskazna.ru). 2019.
- [16] V. Pliuta The comparative multidimensional analysis in economic researches: Methods of taxonomy and factor analysis. The Translation from Polish by V.V. Ivanov. M.: Statistics, 1980. 151 pages.



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