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FACTS, TRENDS, FORECAST

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ECONOMIC AND SOCIAL CHANGES: FACTS, TRENDS, FORECAST

A peer-reviewed scientific journal that covers issues of analysis and forecast of changes in the economy and social spheres in various countries, regions, and local territories.

The main purpose of the journal is to provide the scientific community and practitioners with an opportunity to publish socio-economic research findings, review different viewpoints on the topical issues of economic and social development, and participate in the discussion of these issues. The remit of the journal comprises development strategies of the territories, regional and sectoral economy, social development, budget revenues, streamlining expenditures, innovative economy, and economic theory.

Federal State Budgetary Institution of Science Vologda Research Center of the Russian Academy of Sciences (VolRC RAS), which existed as Vologda Scientific Coordinating Center of Central Economic and Mathematical Institute of RAS until March 2009, is situated on the territory of the Vologda Oblast. V.A. Ilyin, Doctor of Economics, Professor, Honored Scientist of Russia, is the permanent director of the Institute. A lot of great scientists have played an important role in the formation and the development of ISEDT RAS as a scientific institution such as: academicians D.S. Lvov, V.L. Makarov, V.I. Mayevsky, A.D. Nekipelov, Y.S. Osipov. Everything that has been done before and is being done nowadays by the personnel of the Institute, it would be impossible without the constant support of the Vologda Oblast's Government and city leaders.

The formation of the scientific personnel with an active life position, a great demand for Institute's investigation, academic community's support of the new journal published by ISEDT RAS, which combined efforts of the economic institutes of RAS in the Northwestern Federal District, and furthermore development of international ties have become the main outcomes of the last years.

MAIN RESEARCH DIRECTIONS

Due to the Resolution № 96 by the Presidium of Russian Academy of Sciences dated from March 31, 2009 VolRC RAS carries out investigations in the following fields:

- problems of economic growth, scientific basis of regional policy, sustainable development of territories and municipalities, and transformations of socio-economic space;
- regional integration into global economic and political processes, problems of economic security and competitiveness of territorial socio-economic systems;
- territorial characteristics of living standards and lifestyle, behavioral strategies and world view of different groups of the Russian society;
- development of regional socio-economic systems, implementation of new forms and methods concerning territorial organization of society and economy, development of territories' recreational area;
- socio-economic problems regarding scientific and innovative transformation activities of territories;
- elaboration of society's informatization problems, development of intellectual technologies in information territorial systems, science and education.

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2007 – Cooperation agreement is signed with Institute of Sociology, of the National Academy of Sciences of Belarus , Center for Sociological and Marketing Investigations at the "International Institute of Humanities and Economics" (Belarus, 2008).

2008 – Protocol of intentions is signed with Alexander's Institute at the Helsinki University (Finland, 2008).

2009 – Cooperation agreement is signed with Center for System Analysis of Strategic Investigations of NAS (Belarus, 2009).

2010 – Cooperation agreement is signed with Institute of Economics of the National Academy of Sciences of Belarus (Minsk, 2010).

2011 – Cooperation agreements are signed with National Institute of Oriental Languages and Civilizations (Paris, 2011), Institute of Business Economy at Eszterhazy Karoly College (Hungary, 2011), Republican research and production unitary enterprise "Energy Institute of NAS" (Belarus, 2011). Protocol of intentions are signed with Jiangxi Academy of Social Sciences (China, 2011), Research and Development Center for Evaluation and Socio-Economic Development and the Science Foundation of Abruzzo region (Italy, 2011).

2012 – Cooperation agreement is signed with Center for Social Research at the Dortmund Technical University (Germany, 2012).

2013 – Cooperation agreement is signed with Jiangxi Academy of Social Sciences (China, 2013).

July 2013 – The application for research performance by international consortium involving ISEDT RAS within the 7th Framework Programme of European Community.

2014 – Cooperation agreement is signed with Jiangxi Academy of Social Sciences (China, 2014).

NEW PUBLICATIONS OF VolRC RAS

Ilyin V.A., Povarova A.I. *Public Administration Efficiency. 2000–2015. Contradictory Outcomes – an Expected Result: Monograph*.

While Analyzing the Past, to Think about the Future. Under the scientific supervision of Doctor of Economics, Professor V.A. Ilyin.

Ilyin V.A. *Public Administration Efficiency: Chief Editor's Point of View.*

Strategy and Tactics of Implementation of Socio-Economic Reforms: Regional Aspect: Proceedings of the Seventh Research-to-Practice Conference, Vologda, Russia, December 17–19, 2015.

Shabunova A.A., Guzhavina T.A., Dement'eva I.N., Kozhina T.P., Lastovkina D.A., Afanas'ev D.A. *Regional Civil Society: Development Dynamics: Monograph*.

Global Challenges and Regional Development in the Mirror of Sociological Measurement: Proceedings of the Online Research-to-Practice Conference. Vologda, March 14–18, 2016.

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The Disturbing Future of 2024

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Abstract. The article considers prospects for the implementation of Presidential Decree 204 "On national goals and strategic objectives of development of the Russian Federation for the period up to 2024" dated May 7, 2018 and for the implementation of key guidelines announced by the head of state in his Address to the Federal Assembly on March 1, 2018. We considered expert assessments, analyzed the Russian President's annual phone-in session with the nation (the "Direct Line") held on June 7, 2018, and discussed the results of international research and all-Russian sociological surveys. All this allows us to conclude that if the composition of the Cabinet remains virtually unchanged for the next six years, it will be extremely difficult to implement ambitious plans for the internal development of the country. According to many experts, if we want to achieve breakthrough development, it is necessary to change the Government radically. This is dictated by the current geopolitical situation and the expectations of the general population. Nevertheless, at the beginning of his fourth presidential term Vladimir Putin has not taken such steps; consequently, it is unlikely that he will fulfill his election promises. It rather allows us to say that "oligarchic capitalism" will continue to dominate in the system of public administration.

Key words: "May decrees", President, public administration efficiency, national security, public opinion.

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On May 7, 2018, Vladimir Putin took the oath of office as Russia's President. In his inauguration speech, he pointed out that "the country's security and defense capability are reliably assured.... But now, we must use all the opportunities available to us primarily to address the most vital domestic development objectives, to achieve an economic and technological breakthrough, and to enhance competitiveness in the spheres that determine the future. A new quality of life, wellbeing, security and health are what constitutes our main goals and the focus of our policies"[1].

The first step the President took toward the implementation of this strategic goal was his signing another May Decree "On the national goals and strategic objectives in the development of the Russian Federation for the period up to 2024", which officially confirmed the key targets he spoke of in his Address to the Federal Assembly on March 1, 2018. We should note that "a twofold poverty reduction", "Russia's joining the five major world economies", "raising life expectancy to 78 years (to 80 years by 2030)" and other tasks of the May 2018 Decree[2] were fully consistent with the President's political rhetoric, with the expectations of general population and with the forecasts of experts who were counting on the fact that after the inauguration "the topic of breakthrough which was mentioned in the Presidential Address will acquire new qualities and will be unfolded in concrete tasks"[3].

From this point of view, the May Decrees occupy a special place among all other legislative documents, because they reflect the essence of campaign promises of the national leader. The progress with which the May Decrees – the documents containing key strategic areas of work for the nearest presidential term – are executed reflects the effectiveness of the entire system of public administration. All the more so since the very formulation of the right goals is not worth much without their consistent and systematic implementation.

"The breakthrough agenda" has indeed been "unfolded in concrete tasks", however, it was done contrary to the opinion of many experts who believe that "when one wants to make reforms, one finds and brings new people. Making reforms with people who haven't made any progress in it for many years is an idea that is doomed to failure"[4]. The second step that the President made on the way toward mobilization development of Russia was to nominate Dmitry Medvedev for the position of Prime Minister. In fact, this meant that no significant changes were expected in the Cabinet of Ministers. **And this, in turn, can only mean that during the fourth presidential term the "capitalism for the few" will continue to dominate Russia's public administration system**.

> There has been some reshuffling in the composition of the Russian government, but it was not reduced essentially to getting rid of useless players and hiring new ones (although, it was done, too); rather it was all about trading places inside the cabinet of ministers. All this picturesque game of swapping places and offices in the White House looks like an illustration to Krylov's famous fable "Quartet" with its moral: "And you, my friends, no matter your positions, will never be musicians!" And yet...[5]

Some experts note that "it is quite difficult to describe the prospects of the new government, since the team under Medvedev **has not been**

[1] President Vladimir Putin's inauguration speech. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/57416

[2] Presidential Decree 204 "On the national goals and strategic objectives in the development of the Russian Federation for the period up to 2024" dated May 7, 2018. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/57425

[3] Matveichev O. Political unification. *Izvestia Newspaper,* 2018, April 23. Available at: https://iz.ru/733809/oleg-matveichev/politicheskaia-unifikatciia

[4] Some faces are familiar and some – less familiar: political scientists about the new Medvedev government. *Noviye Izvestia information portal*. Available at: https://newizv.ru/news/politics/08-05-2018/litsa-znakomye-i-ne-ochen-politologi-o-novom-pravitelstve-medvedeva (an opinion of Doc. Sci. (Polit.) Yu. Nisnevich).

[5] Nagornyi A. Putin: the fourth term in office. *Zavtra Newspaper,* 2018, May 18. Available at: http://zavtra.ru/blogs/putin_srok_chetvyortij

Expert opinions:

1. Despite the fact that the Cabinet now contains quite a few new people, a new government of Dmitry Medvedev surprisingly or, on the contrary, not surprisingly resembles the old government of Dmitry Medvedev. **What we got is a retouched, refreshed, repainted and lacquered, freed of ballast, but still the same familiar "political product"**[6].

2. No miracle happened. Dmitry Medvedev is Prime Minister again. We can already see a large lobbying group, the main beneficiaries of which are Chemezov, the Kovalchuks, the Rotenbergs, and Sobyanin. As a new May Decree is elaborated, we shall see smaller players, too[7].

3. Few people paid attention to the fact that at the inauguration a wonderful image emerged – a picture of "the empty corridors of power. Let us recall how the President was walking down the hallways, and they were empty. The same thing is with the government: the deck is shuffled, but nothing really changes... **It is obvious that the new power is absolutely empty from the point of view of new people and new ideas. Therefore, to put it mildly, it is futile to have any great expectations in this regard...**[8]

4. **If the country is preparing a radical change in economic and domestic policy in general, then it all starts with the appointment of a new prime minister.** As for now, there are no changes: everything is done to maintain a passive work aimed only at maintaining the current life of the state[9].

formed from the standpoint of some political logic and strategy, when there is a goal, for example, to create a liberal or a conservative government. The current appointments will mean another **balancing of different political groups of influence**... **In fact, each case of reshuffle should be considered on the basis of interpersonal relations.** Each of the expected deputy prime ministers is somehow related to one of the financial groups"[10].

Can we say that the appointment of Dmitry Medvedev was a logical step taken by the President in order to achieve ambitious strategic guidelines in the next six years? During his official speeches at the end of the third and beginning of the fourth presidential term, Vladimir Putin dwelled upon the work of the Government many times, and the general keynote of his assessment was: "We haven't managed to achieve everything we planned, but in general the result is positive".

Indeed, if we compare the international situation and the level of socio-economic development in modern Russia and that in the 1990s or early 2000s, the progress is obvious; and from this point of view, the nomination of Dmitry Medvedev is a quite consistent and justified step. **However, internal and external global challenges urge us to move forward and stop clinging to the past that was 10–20 years ago**. After all, we have to acknowledge that Russia desperately needs breakthrough development and not just progressive and evolutionary development. The need emerged only because Russia has reached critical limits in lagging behind developed countries. To see the point, let us just look at the latest data of the Global Competitiveness Index. Although for the period from 2012 to 2018, Russia rose from 66th to 38th position in the rating, it is still not even among the top 20, but among countries such as Indonesia, Malta, Poland and India. At the same time, according to the criterion of "innovative potential" (without which it is impossible to count on a breakthrough development in the near future), Russia has

[6] Rostovskiy M. The Government is "so-so": why there is actually no Medvedev Cabinet. *Moskovskiy Komsomolets Newspaper,* 2018, May 18. Available at: http://www.mk.ru/politics/2018/05/18/pravitelstvo-ne-akh-pochemu-kabmina-medvedeva-na-samom-dele-net.html

[7] Some faces are familiar and some – less familiar: political scientists about the new Medvedev government. *Noviye Izvestia information portal*. Available at: https://newizv.ru/news/politics/08-05-2018/litsa-znakomye-i-ne-ochen-politologi-o-novom-pravitelstve-medvedeva (an opinion of E. Minchenko, president of MINCHENKO CONSULTING Communication Group).

[8] *Ibidem* (an opinion of Doc. Sci. (Polit.) Yu. Nisnevich).

[9] Bashkatova A. The new Government becomes the Cabinet of one minister. *Nezavisimaya Gazeta,* 2018, May 11. Available at: http://www.ng.ru/economics/2018-05-11/1_7222_siluanov.html (an opinion of N. Isaev, director of the Institute for Modern Economics).

[10] Nagornyi A. Putin: the fourth term in office. *Zavtra Newspaper,* 2018, May 18. Available at: http://zavtra.ru/blogs/putin_srok_chetvyortij (an opinion of I. Grashchenkov, head of the Regional Policy Development Center).

We have done a lot to implement the 2012 May executive orders. I must say that there were several failures, but overall, despite the demanding targets of these orders, without them we would not have had the results we can see today[6].

The Government was guided in its work by the May 2012 executive orders. Yes, there were challenges in this area, and not all indicators were achieved in full. This is inevitable when you engage on a large-scale and long-term project. But the situation was constantly changing, creating new objective factors. Let me reiterate that we do see tangible results and momentum. Change is underway. We have set the strategic development vector on the right path[7].

been and remains far behind the G8 countries, behind China and India, and is on the list next to Tajikistan, Guinea, Thailand and Senegal[13] (*Insert 1*). As the President said in his Address to the Federal Assembly, "the main threat and our main enemy is the fact that we are falling behind. If we are unable to reverse this trend, we will fall even further behind".

The goals of achieving breakthrough development and catching up with major participants of geopolitical competition were announced by the President in his Address to the Federal Assembly on March 1, 2018 and were supported by the wider public, which ensured Putin's landslide victory in the presidential election. Society and government formed new provisions of the social contract focused on critical internal issues related to the dynamics of the standard of living and quality of life, performance of the means of social mobility, finding effective solutions to social problems, etc.

N. Starikov points out: "Any state always rests on a certain social contract, in each society there is a consensus on the basis of which its further development is formed. If there is no social contract, if there is no such consensus, then society becomes unstable, and the state may cease to exist"[14].

However, as historical experience shows, each new social contract is accompanied not only by new goals and objectives, but also by new ideas and mechanisms for their implementation, and therefore – by new persons in the ruling elite who implement their own vision of the future. Thus, a specific social contract existed in our country after the collapse of the Russian Empire when the Bolsheviks came to power. Another social contract that was completely different from the one mentioned above existed after the victory in the Great Patriotic War; the contract was based on patriotic sentiments and on the awareness of the need to restore the country that lay in ruins at the time.

Despite the betrayal of the national elites and undoubted involvement of Western nations, the collapse of the Soviet Union was also partly an unspoken social contract, because it would not have taken place if society had not have a need for a more free and diverse life, the bits and pieces of which came from the West. Just as the elimination of comprehensive negative consequences of the 1990s formed a basis of a tacit consensus between society and government and provided unconditional support for tough and decisive actions taken by V. Putin to restore order in the system of public administration, to recover the economy and raise the standard of living, and pursue independent foreign policy.

Thus, not all of these social agreements had positive consequences in the history of Russia, but each of them was carried out by different people in power and brought something new, first of all, to Russia's ideological development. And from

[11] Presidential Address to the Federal Assembly of the Russian Federation, March 1, 2018. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/56957

[12] Vladimir Putin's speech at a meeting with Government members on May 7, 2018. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/57415

[13] *Official website of the World Economic Forum*. Available at: http://reports.weforum.org/global-competitiveness-index-2017-2018/competitiveness-rankings/#series=EOSQ057

[14] Starikov N. From the Belovezhye consensus to the Crimea consensus. *N. Starikov's official blog*. Available at: https://nstarikov.ru/blog/80284

Insert 1

Key indicators of the Global Competitiveness Index (World Economic Forum: The Global Competitiveness Report 2011–2012; position among 142 countries)

Pillars of competitiveness	U.S.	Germany	UK	Japan	Canada	France	China	Russia	India	Italy
Institutions	41	20	24	25	14	29	46	127	72	90
Infrastructure	13	2	12	15	11	4	44	48	89	32
Macroeconomic environment	90	30	85	113	49	83	10	44	105	92
Health and primary education	42	23	14	9	6	16	32	68	101	20
Higher education and training	13	7	16	19	12	20	58	52	87	41
Goods market efficiency	24	26	19	18	12	38	45	128	70	59
Labor market efficiency	4	64	7	12	5	68	36	65	81	123
Financial market development	22	39	20	32	13	18	48	127	21	97
Technological readiness	20	14	8	25	16	13	77	68	93	42
Market size	1	5	6	4	14	7	2	8	3	9
Business sophistication	10	4	8	1	24	14	37	114	43	26
Innovation	5	7	13	4	11	17	29	71	38	43
Global Competitiveness Index	**5**	**6**	**10**	**9**	**12**	**18**	**26**	**66**	**56**	**43**

In 2012, Russia ranked 66th among 142 countries – its closest neighbors in the rating were Latvia, Vietnam, Peru, and Colombia.

Among the analyzed countries (G8 + India and China), Russia ranked last in the five of the twelve main pillars of competitiveness: "Institutions" (127th in the world), "Goods market efficiency" (128th), "Financial market development" (127th), "Business sophistication" (114th) and "Innovation" (71th).

Insert 1 (continuing)

Key indicators of the Global Competitiveness Index (World Economic Forum: The Global Competitiveness Report 2017–2018; position among 137 countries)

Pillars of competitiveness	U.S.	Germany	UK	Japan	Canada	France	China	Russia	India	Italy
Institutions	20	21	12	17	15	31	41	83	39	95
Infrastructure	9	10	11	4	16	7	46	35	66	27
Macroeconomic environment	83	12	68	93	47	63	17	53	80	96
Health and primary education	29	13	17	7	8	24	40	54	91	25
Higher education and training	3	15	20	23	13	22	47	32	75	41
Goods market efficiency	7	11	10	13	18	36	46	80	56	60
Labor market efficiency	3	14	6	22	7	56	38	60	75	116
Financial market development	2	12	13	20	7	33	48	107	42	126
Technological readiness	6	8	4	15	23	21	73	60	107	41
Market size	2	5	7	4	16	8	1	6	3	12
Business sophistication	2	5	7	3	23	16	33	71	39	25
Innovation	2	5	12	8	23	17	28	49	29	34
Global Competitiveness Index	2	5	8	9	14	22	27	38	40	43

In 2012–2018, Russia's position in the Global Competitiveness Index, as well as in the most pillars of competitiveness improved significantly. Nevertheless, Russia is still not even in the top 20 countries. In the 2018 Global Competitiveness Index, Russia ranked 38th in the world, significantly behind the key participants of geopolitical competition: the U.S. (2nd place in the world), Germany (5th), the UK (8th), Japan (9th), China (27th). Russia's closest neighbors in the rating are Indonesia, Malta, Poland and India.

Among the analyzed countries (G8 + India and China), Russia ranks last in the three out of twelve criteria: "Goods market efficiency" (80th in the world); "Business sophistication" (71st)", "Innovation" (49th). And according to the last indicator Russia is close to such countries as Tajikistan, Guinea, Thailand and Senegal.

this point of view, taking into consideration ambitious plans for the next six years, it is difficult to expect that the Government with its virtually unchanged composition will allow the country to take a new step in its development.

The dynamics of statistical indicators and the data of public opinion polls during V. Putin's third presidential term clearly show that the mechanisms that worked 15–20 years ago do not work today. Instead, we hear more and more about corruption scandals and tragic events that claim the lives of hundreds of Russians because of the negligence and irresponsibility of officials at all levels of government. In other words, if we recall the aphorism of a great Russian writer who said that Russia had always suffered from two evils: fools and bad roads, then in modern realities we can safely add two more: "absolute ineffectiveness" and "absolute lack of responsibility"[15].

Besides, quite a few facts remain "behind the scenes". In particular, we speak about the activities of major state-owned corporations that control most of the national wealth. Here we can mention the case of Aleksandr Fek, whom experts call "the best Russian oil and gas analyst in the ratings of 2015–2016"[16] and who was fired for his reports on the performance of Rosneft and Gazprom"[17].

On May 8, speaking at the plenary session of the State Duma, Vladimir Putin noted that in order to execute the May 2018 Decrees it will be necessary to allocate "at least eight trillion rubles" for these purposes. The President mentioned that "it's not just talk and words, we have calculated everything. **I don't know how the government will manage this in the course of practical implementation of what we plan to do, I hope that everything will turn out the way we plan**, but in general it should be a systematic and structured work"[18].

Regular inspections by the Russian Popular Front that monitors the achievement of the target indicators of socio-economic development, expert assessments, and the data of official statistics[19] clearly show how the Government has worked to fulfill the May 2012 Decrees. The Decrees "covered various economic sectors, ordered to ensure the growth of labor productivity, create millions of jobs, provide the ease of doing business, etc. But not all of them were eventually achieved. For example, the government reported that salaries to state employees were increased, but this was often achieved by changing the method of calculating the average salary, reducing the number of jobs and manipulating the rates. Some goals such as creating additional 25 million high-performance jobs seem to be forgotten entirely". By the end of 2017, there were more than 17 million of such jobs in Russia. This is less than in 2013, when there were 17.5 million high-performance jobs in Russia"[20].

[15] A. Makarov's speech at the SPIEF 2018. *Komsomolskaya Pravda Newspaper*, 2018, May 27. Available at: https://www.vologda.kp.ru/daily/26834.7/3874829/

[16] Collect your reports and leave. Why was a Sberbank CIB analyst fired and what will become of his career? *Kommersant Newspaper*, 2018, May 23. Available at: https://www.kommersant.ru/doc/3637070

[17] Kotova Yu., Starinskaya G. et al. The fired Sberbank CIB analyst responded to the criticism of German Gref. *Vedomosti Newspaper*, 2018, May 24. Available at: https://www.vedomosti.ru/finance/articles/2018/05/24/770650-uvolennii-analitik-cib-kritiku-grefa

[18] Transcript of the plenary session of the State Duma on May 8, 2018. *Official website of the State Duma of the Russian Federation*. Available at: http://transcript.duma.gov.ru/node/4884/

[19] Sources:

1. Brechalov A.V. Since March 2014, the Russian Popular Front recommended to withdraw only 24 orders from control. *Official website of the Russian Popular Front*. Available at: https://onf.ru/2016/05/16/brechalov-s-marta-2014-goda-onf-rekomendoval-snyat-s-kontrolya-tolko-24-porucheniya/

2. Zhulin A.B. Prospects of an administrative reform. In: Proceedings of the Plenary Session of the 17th April International Scientific Conference on Economic and Social Development. *Official website of the Higher School of Economics*. Available at: https://www.hse.ru/news/science/181135658.html

3. Ilyin V.A., Morev M.V. "...And most importantly, there will be no destitute people in Russia". "Capitalism for the few" – a key problem of national security. *Economic and Social Changes: Facts, Trends, Forecast*, 2018, vol. 11, no. 2, pp. 9-23.

[20] Disciplinary essence of the May Decrees (editorial). *Nezavisimaya Gazeta,* 2018, May 16. Available at: http://www.ng.ru/editorial/2018-05-16/2_7225_red.html

The current situation, when the prime minister is the leader of a party whose faction in the State Duma has a constitutional majority, is, in our view, a violation of the principle of the separation of powers, because it actually allows the prime minister to control one of the chambers of the Federal Assembly[21].

Even after the Kremlin Report was issued, experts and political scientists expressed the view that by expanding the list Washington **is trying to influence the Russian elite, to provoke its split, to force those who are interested in good relations with the West to oppose the Kremlin openly.** The April sanctions fit in this logic: big business, which is losing a lot of money, should think about whether it is worth moving further alongside the Kremlin policy... **The sanctions against big business affect citizens in any case.** Entrepreneurs from the American list are large taxpayers, investors and job creator[22].

The main reason why the Cabinet of Ministers has failed "to achieve all indicators of May 2012 Decrees in full"[23] is the pressure of the West (after the United Russia party headed by the Prime Minister (!), has received a constitutional majority in the State Duma, it makes no sense complaining about differences in opinions and political debates). However, even in 2018–2024, it is futile to hope that our relations with the West are going to improve. Moreover, if in 2012–2018 this pressure was concentrated mainly on political aspects (which was successfully converted into consolidation and patriotic sentiments), then in 2018 it takes a new form: on the background of information attacks (the Skripal case, an alleged chemical attack in the Syrian city of Douma) the next package of economic sanctions has been prepared, and according to many experts it is "the largest one since 2014". The new sanctions will certainly affect the general population, but they are aimed not at society, but primarily at the economic elite, that is, those people who have their own and quite specific interests and who (unlike the general population) are not "susceptible" to any patriotic rhetoric.

"The West is driving toward a total war, at any cost, without any rules, since it cannot win any regular war against Russia, as history has proven many times before... And what about us? **We see everything differently, in no hurry, within the regulatory legal space, in a completely different rhythm, in our own historical cycles...** We are preparing for V. Putin's next six-year presidency, the last in a row, because (and this is a fundamental moment in the observance of the law) **we have everything in accordance with the law, as spelled out in the Constitution, which, contrary to all logic and despite its colonial format, is firm and absolute.** But it is the very fact that the coming six-year term will be the last makes the whole situation utterly dramatic, because it will unfold in a cascade of increasing external challenges and, ultimately, total war..."[24]

Thus, as for the main factor hindering the implementation of the May 2012 Decrees, the situation has not changed and has become even worse. Moreover, the task of ensuring that the results of execution of the May Decrees are tangible for the general public (and not only for the reporting indicators of the Government) has been and remains relevant. **But the timeline has changed.** Now the effect should be seen not in six years, but in a year or two. Otherwise, the trust in the government can decline dramatically, and the trust in the President can also decrease, and it is the foundation of legitimacy of the authorities as a whole (the trust in the Government and in regional authorities is much lower than the trust in the President).

[21] From the speech of S. Mironov, head of the faction of the Just Russia party at the plenary session of the State Duma on May 8, 2018. *Official website of the State Duma*. Available at: http://transcript.duma.gov.ru/node/4884/

[22] On domestic policy during the cold war (editorial). *Nezavisimaya Gazeta,* 2018, April 12. Available at: http://www.ng.ru/editorial/2018-04-12/2_7210_red.html

[23] Vladimir Putin's speech at a meeting with Government members on May 7, 2018. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/57415

[24] Korovin V. The Golgotha of the last term in office. *Zavtra Newspaper,* 2018, May 21. Available at: http://zavtra.ru/blogs/golgofa_poslednego_sroka

If Putin could legally continue to be President after 2024, he would be a political beneficiary of socio-economic investment, and the government would only be a tool in such a case. Such was the situation concerning the May 2012 Decrees. Putin put forward the idea of increasing social spending during his presidential campaign and scored points on this. The Government, in turn, did not fully cope with the implementation of the decrees, it was criticized, and its rating was much lower than that of the President.

Now the ruling elite cannot be content with this option anymore. First, the Decree "On national goals" must be implemented. Second, the positive public effect of this work cannot be postponed; it should be manifested at least within the next electoral cycle. Third, there must be someone else, in addition to Vladimir Putin, whose political weight will increase due to the implementation of the new socio-economic policy[25].

A powerful political tier "Siluanov–Kudrin" (or Kudrin–Siluanov) has been formed and has come to the fore in the Russian "power vertical". Now their influence becomes almost dominant, because together they can "scan" any ministry and department, up to the intelligence service and the army, not to mention the lower structures. The balance of priorities of the Russian "power vertical" and, as a result, the balance of power within it, is clearly shifting toward financial transactions[27].

Expert opinions[28]:

1. **In general, we can agree that in the work of the government there is less economy and more accounting.**
2. The new government ceases to be a place to formulate strategies and implement its own policy. **It turns into a group of executors whose main task is to choose the right method for calculating statistical indicators to execute the May Decree and fulfil the expectations of the President.**
3. **Most of the tasks are performed simply by changing calculation methods.** It is easy to come up with a set of criteria to get Russia into the "top ten countries with the highest quality of general education" (even if such a rating will not be recognized by anyone except the Kremlin). "Elimination of personnel shortage in medical organizations" is achieved by significantly reducing the standard time spent on one patient and by increase the standard number of hospital beds per doctor.

In the new Government, the composition of which was supported by the State Duma and approved by the President on May 15, 2018, the majority of experts note only two quite noticeable changes: the Ministry of Education and Science was divided, and the "Siluanov–Kudrin" tier was strengthened due to the fact that the former took the post of deputy prime minister, and the latter became head of the Accounts Chamber. And while there are currently different assessments regarding the first of these changes, the opinions of experts regarding the strengthening of the Government's financial bloc are quite clear: **this will make it possible to manipulate the statistics on a greater scale, bringing the economic indicators in line with the necessary reporting, rather than serving the interests of the majority of people.**

"The post-election government will become the cabinet of one finance minister, who will also become the first deputy prime minister. **This configuration does not imply an alternative view on budget policy"**[26]. Therefore, Tatyana Golikova, who previously criticized many departments when being head of the Accounts Chamber, has been replaced by Aleksey Kudrin. "The government has not been completely formed yet, but it is already possible to speak about the strengthening of the role of the financial bloc and preservation of the current situation... **De facto, the task of such a Cabinet will not be to ensure a breakthrough, but to ensure the life of the state. The breakthrough can then be simply "designed" in the reports"**[29].

[25] About the new Operation "Successor" (editorial). *Nezavisimaya Gazeta,* 2018, May 15. Available at: http://www.ng.ru/editorial/2018-05-15/2_7224_red.html

[26] Bashkatova A. The new Government becomes the Cabinet of one minister. *Nezavisimaya Gazeta,* 2018, May 11. Available at: http://www.ng.ru/economics/2018-05-11/1_7222_siluanov.html

[27] Nagornyi A. Putin: the fourth term in office. *Zavtra Newspaper,* 2018, May 18. Available at: http://zavtra.ru/blogs/putin_srok_chetvyortij

[28] Bashkatova A. The new Government becomes the Cabinet of one minister. *Nezavisimaya Gazeta,* 2018, May 11. Available at: http://www.ng.ru/economics/2018-05-11/1_7222_siluanov.html

[29] *Ibidem*.

Russia's major "discussion" platforms that look more like "invitation-only parties" as always provide a telling example in this regard. For instance, in 2017, at the Gaidar Forum, no permission to deliver a report was given to Boris Titov, Presidential Commissioner for Entrepreneurs' Rights and a presidential candidate, who has his own view and a specific program of action for the development of the Russian economy ("Growth strategy").

Similar situation was observed in 2018 at the Saint Petersburg International Economic Forum, where "people with alternative views were not invited"[30]. Moreover, the very topics discussed at SPIEF–2018 resembled "a distraction call, and masking factor"[31]. Deoffshorization and long-term economic planning, the policy of the Central Bank, enhancement of production efficiency and other "conceptual strategic issues are simply not discussed, they are viewed as taboo"[32].

No less remarkable conclusions can be made if we analyze the "Direct Line" with the President, which took place on June 7, 2018.

First, we should mention the words which Kirill Kleymenov, one of the moderators, said at the beginning of the program: "Some of the issues come up year after year. They include healthcare, housing and, of course, wages and pensions. Frankly speaking, we do not really want this Direct Line to become a book of complaints"[33]. Meanwhile, most of the "questions" that people asked were not questions as such. Most often they were complaints and even "cries for help", ending with phrases such as "We ask for your help and assistance in this problem", "Still nothing has been built, although it was to be commissioned a year and a half ago. And we want to live. Help us", "We rely on your help very much", "Vladimir Vladimirovich, help, please, do not let the school be closed" and so on[34].

Some excerpts from the President's answers to the questions asked during the "Direct Line"[13]:

– "What is happening now is unacceptable, it is wrong…";

– "We definitely need to appoint the persons responsible…";

– "We will check it again, although we have returned to this topic many times…";

– "Yes, you are certainly right, and I also spoke about it, it is one of the very acute and sensitive problems…";

– "I'm even embarrassed to hear that there is still a problem, say, with employment. We have addressed this issue many times…";

– " All this needs to be addressed. I once again say it to the minister of internal affairs and to the heads of the migration service... I will try to make sure that in your case the problem is solved. But it is still a large-scale issue…";

– "I take your question as an opportunity to draw the attention of heads of Russian regions to this problem once again. We will discuss it at one of the next State Council sessions. And I will ask the Administration and the Government of the Russian Federation, the relevant Ministers to analyze the situation and tell me in the near future about what is happening…";

– "The problem is generally clear. This is not the only case of this kind", etc.

Second, having considered the answers of the President, we can say once again that local officials fail to execute his orders. Vladimir Putin speaks about it constantly, but if the system as a whole is not working, then we can assume that only those who managed to reach the President directly, during the phone-in session, could hope they would get actual help, i.e. 79 questions out of 2.7 million can be dealt with.

The above facts provide an explanation for the pessimistic forecasts of experts who say that the ambitious plans for a "decisive breakthrough" in Russia's domestic socio-economic development

[30] Katasonov V.Yu. "Goats wearing spectacles" milk mosquitoes. *"Novaya Rossiya" information portal*, 2018, May 28. Available at: http://russnov.ru/valentin-katasonov-och-kastye-kozly-doyat-komarov-28-05-2018/

[31] *Ibidem.*

[32] *Ibidem.*

[33] Transcript of the "Direct Line" with V. Putin. *Rossiyskaya Gazeta,* 2018, June 7. Available at: https://rg.ru/2018/06/07/stenogramma-priamaia-liniia-s-vladimirom-putinym.html

[34] *Ibidem.*

[35] *Ibidem.*

March 1, 2018, Russian President Vladimir Putin delivered his annual Address to the Federal Assembly of Russia. In your opinion, how realistic are the tasks that the President announced in his Address, and will they be fulfilled or not? (closed-ended question, one answer, percentage of those who listened to the Address or learned its content from the news)

Answer	2009	2010	2011	2012	2013	2014	2018
The President set specific, real tasks and, most likely, they will be fulfilled as soon as possible	28	31	31	36	29	49	34
The President set specific, real tasks, but they will not be fulfilled due to corruption and bureaucracy in the government	49	47	40	42	46	31	47
The President's tasks are too general, not specific, and cannot be implemented	11	12	17	16	20	8	6
It is difficult to answer	12	10	12	6	5	12	13

will never get off the ground. "**Many doubt that the goals contained in the new document are feasible**. For example, the goals to increase life expectancy are questionable. By the end of 2017, life expectancy in the country was 72 years. According to Rosstat forecasts, by 2024, life expectancy in Russia will be 76.7 years at best and 73.3 years at worst. The goal of "joining the top five world economies" looks ambitious" too... The only question is how and by what means the government is going to achieve all the goals declared"[36].

According to VTsIOM studies, Russians do not really believe that the goals set out by V. Putin in his Address to the Federal Assembly will be achieved: 47% of people (almost every second citizen of Russia) are sure that this will be impeded by corruption and bureaucracy in the government[37].

According to the data of the Federal Research Sociological Center of RAS, Russians think that the most achievable goals among those mentioned in the Address are "strengthening the country's defense" (59%) and "ensuring a breakthrough in the field of science and high technology" (38%), **but these tasks are not among the most critical ones for society** *(Insert 2)*.

According to surveys, the most urgent tasks for society are "increase in real income" (98%), "affordable and quality medical care" (98%), "repairing regional and local roads" (98%), "increase in pension payments and their indexation above the rate of inflation" (96%). All of them are among the goals set out by the President – the goals that, according to the opinion of Russians, will not be achieved (this is noted by 37–40% of people).

On March 21, at an enlarged meeting of the Public Council of the Federal project "Growth Locomotives", the United Russia party and representatives of the Russian Academy of Sciences discussed how to implement the task set by V. Putin to ensure Russia's leadership in the new technological cycle. Boris Gryzlov noted that "Russia has everything necessary to catch up with other countries in terms of technological development and settle this critical issue. There are the goals formulated by the head of state and supported by the majority of citizens. There are the resources, both natural and geographical, and other advantages such as the history of our state and creative and scientific potential of our people. There are also those advanced, unparalleled achievements, which the President spoke about in the second part of his Address"[38]... However, this

[36] Disciplinary essence of the May Decrees (editorial). *Nezavisimaya Gazeta,* 2018, May 16. Available at: http://www.ng.ru/editorial/2018-05-16/2_7225_red.html

[37] *Presidential Address to the Federal Assembly: First Impressions: VTSIOM Press Release*, 2018, no. 3602, March 13. Available at: https://wciom.ru/index.php?id=236&uid=116743

[38] "Locomotives of growth" – get going! News of the Russian Academy of Sciences. *Official website of the Russian Academy of Sciences*. 2018. March 22. Availble at: http://www.ras.ru/news/shownews.aspx?id=99a2b527-7fac-4a91-a0e8-53d19068b067

list of items mentioned by the Chairman of the Supreme Council of United Russia (we recall it is the ruling party with a constitutional majority in the State Duma), unfortunately, does not contain the quality of public administration – the major system-forming factor, without which all the competitive advantages of the country are not able to give the expected result. And this is clearly confirmed by RAS President A.M. Sergeev, who drew attention to the barriers that prevent science from "finally becoming a productive force in our economy": "resource orientation of the economy", the obsolete material base of science, "the valley of death" lying between fundamental and applied science, between science and business, etc. All this, by and large, results from inefficient administration, which (judging by the composition of the "new" Government) will continue in the next six years.

Thus, statistics data, expert assessments, public opinion research findings, and actual results of the execution of the May 2012 Decrees present quite a pessimistic picture concerning the execution of the May 2018 Decree and achievement of the goals set by the President and aimed at providing breakthrough development of Russia and bridging the gap with the developed countries on most key aspects of life and, above all, on those aspects that are most in demand by society. After all, the May Decrees are just the tip of the iceberg. In fact, when the system fails, the consequences of the failure are manifested in various aspects of social, political and economic life: from bribery to an inefficient course of economic development; from the closure of schools and hospitals in some village to the lingering gap between Russia and the most developed countries in terms of innovative development potential.

Certain "optimism" can be inspired by a sarcastic comment of A.M. Makarov, Chairman of the State Duma Committee on Budget and Taxes, as he noted, apparently, "with full knowledge of the facts" that "the main task for the implementation of the President's Decree is solved. We have placed Rosstat under the control of the Ministry of Economic Development"[39].

"Under the current Russian government, there are simply no resources to provide for the responses to the existing and external challenges. There simply could not be any meaningful answer, because it contradicts the very essence of the current superficial and lightweight government, easily squandering away what it has inherited – the inheritance it has not created, the inheritance which is semantic, ideological, and philosophical, in the first place. While playing dangerous games in the "turbulent" 1990s, living lavishly in the "fat" 2000s, and recovering from the hangover in the crisis-ridden 2010s, the current elites have left us without a future. They have simply blown it, squandered it, dissipated it, exported it to offshore territories. And if any trouble emerged, they sheltered themselves behind *Him*. **Yes, he was covering up for them, so he did not have time to do anything for the future, and he became a substitute for a meaningful response to the challenge of the time. No future. There's only the present, six more years without a next term"**[40].

> The new Government does not have new people who are able to bring forward some bright and unconventional ideas and then ensure their implementation. The potential of its members is well known. However, all this is not of great importance. By and large, little depends on the Government. It is only a technical body. The main parameters of the system are determined by the President, and he also makes key decisions[41].

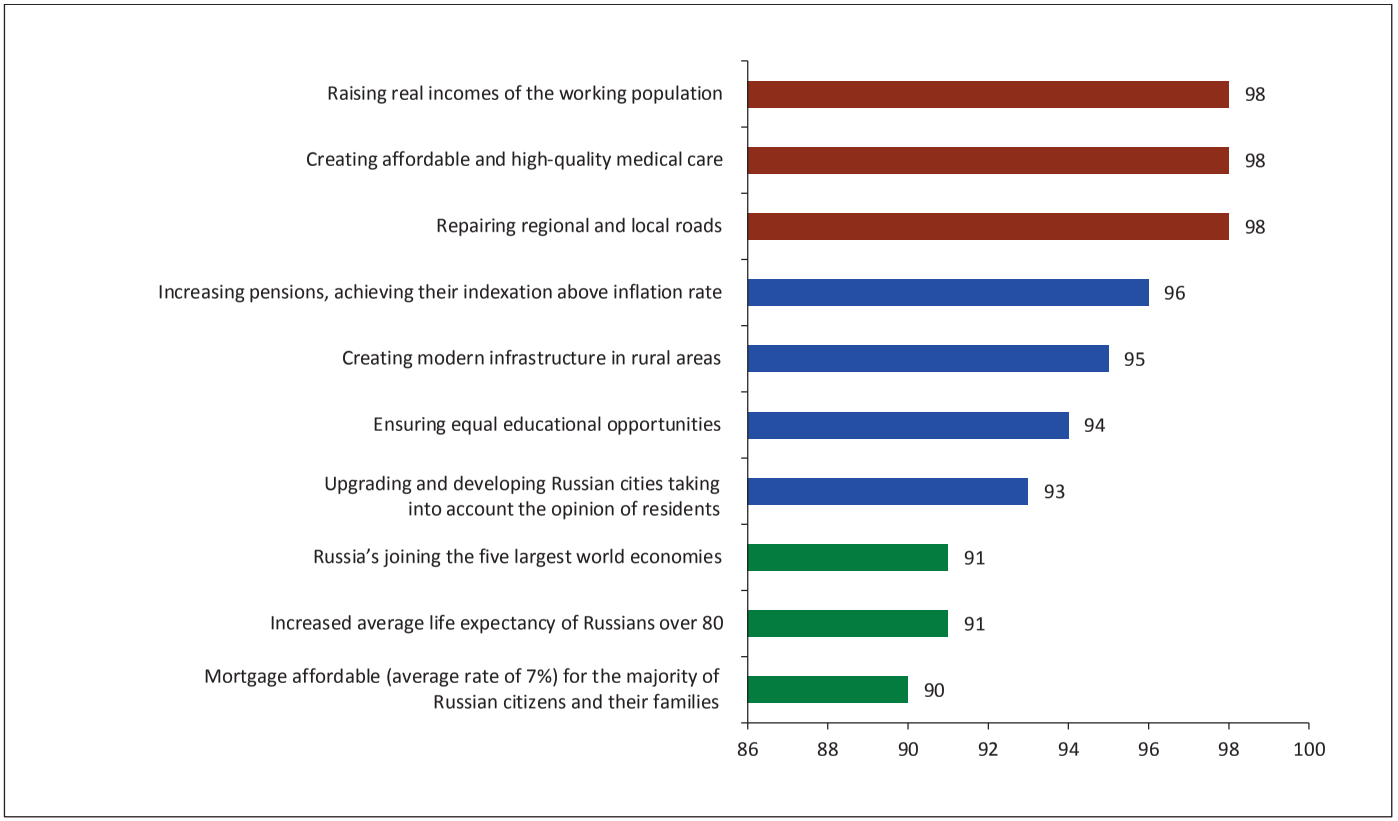
[39] A. Makarov's speech at the SPIEF 2018. *Komsomolskaya Pravda Newspaper*, 2018, May 27. Available at: https://www.vologda.kp.ru/daily/26834.7/3874829/

[40] Korovin V. The Golgotha of the last term in office. *Zavtra Newspaper,* 2018, May 21. Available at: http://zavtra.ru/blogs/golgofa_poslednego_sroka

[41] Some faces are familiar and some – less familiar: political scientists about the new Medvedev government. *Noviye Izvestia information portal*. Available at: https://newizv.ru/news/politics/08-05-2018/litsa-znakomye-i-ne-ochen-politologi-o-novom-pravitelstve-medvedeva

Insert 2

Top 10 most important tasks set in the President's annual Address to the Federal Assembly of the Russian Federation, according to Russians (%, data of the Federal Research Sociological Center of RAS[42])



[42] Filina O. A bird in the hand turned into two in the bush: what Russians think about the feasibility of strategic tasks of the state. *Kommersant Newspaper,* 2018, May 28. Available at: https://www.kommersant.ru/doc/3635558

Insert 2 (continuing)

Respondents' assessment of the feasibility of the goals set in the President's annual Address to the Federal Assembly of the Russian Federation (%, data of the Federal Research Sociological Center of RAS)

Top 10 goals the respondents think can be achieved in the next 5–6 years		Top 10 goals that are unlikely to be achieved	
1. Strengthening Russia's defense; developing and introducing new unique types of weapons	59	1. Raising average life expectancy up to 80 years	46
2. Ensuring a breakthrough in the field of science and high technology	38	2. Repairing regional and local roads	41
3. Affordable mortgage (with an average rate of 7%) for the majority of Russian citizens and their families	34	3. Creating modern infrastructure in rural areas	39
4. Russia's joining the five largest world economies	32	4. Raising pensions, providing their indexation above inflation rate	38
5. Significant growth of small and medium-sized businesses	28	5. Raising real incomes of the working population	37
6. Raising real incomes of the working population	27	6. Creating affordable and high-quality medical care	37
7. Increasing pensions, achieving their indexation above inflation rate	27	7. Providing equal educational opportunities	36
8. Ensuring equal educational opportunities	26	8. Upgrading and developing Russian cities taking into account the opinion of their residents	34
9. Ensuring continuous growth of Russia's population	25	9. Forming an extensive middle class in the country	31
10. Expanding the space of freedom in all spheres of life, strengthening the institutions of democracy and local government	25	10. Reducing the share of the state in the economy	27

S.M. Shishkin: "... besides the state and the army, there are people in Russia, the people who vote for you, Vladimir Vladimirovich. You forgot about them. It is necessary to revive the economy, to make a breakthrough in the economy, and not on paper, but in practice. This requires a program and first of all, personnel. It is not easy to do it, but it is necessary to do it, otherwise all your reforms will be in vain. The government you approved is not for the people. Vladimir Vladimirovich, it is not the government that the people told you about during the election period. Putin is a strong President, but right now we need a leader. The ruling elite must be purged, and only the leader can do it. Can Putin be the leader? He can be. In some cases, he is already the leader. People will help him. But there is no time to be lost"[43].

A. Karavaev (Saint Petersburg): "Please tell us how long will the growth in fuel prices continue? Forty-five rubles per liter of diesel fuel – how much can it be tolerated? We can't bear it anymore, stop it somehow. We made such an important choice on March 18, the whole country voted for you, and you can't stop the price of gasoline from going up..."[44]

An excerpt from an open letter to the President from the Board of "Kizvizvech" – the Kamchatka Krai Union of ancestral and family fishing communities of the indigenous minorities of the North, Siberia and the Far East: "Vladimir Vladimirovich, we voted for you. And we want to show you in percentage terms why Russians, including Kamchatka, voted for you::

- 20% of votes were cast for your achievements in the military-industrial complex, strengthening the army and protecting Russia's external sovereignty;
- 40% of votes cast for you signify our belief that you will change the government completely, and therefore, you will change the approach to national development, in which the officials will no longer treat hard workers and honest businessmen as trash;
- 40% of votes were cast for you, because we want to believe that you and your team will restore the law that will not only put thieves in jail, but also confiscate all their property and the property of their close relatives, which has been acquired illegally. Then there will be no more such terrible fires as in Kemerovo, asphalt paving will not be done in the rain, and building a stadium will not cost like building an entire city. Russia's GDP will grow overnight by an average of 40% of its present value, and the annual economic growth rate will be ahead of that in China. And most importantly, there will be no destitute people in Russia[45].

Many experts (including Yu. Boldyrev and M. Delyagin), when speaking about the key problems and the future of Russia, have pointed out many times that everything is in the hands of the President and the Federal Assembly; they can form a Government that will be able to execute orders and achieve specific indicators contained in the relevant decrees and strategic documents, and to do it effectively, completely and unconditionally.

Therefore, today experts more and more often say (and unfortunately, they often have good reason to say so) that **"in May 2018, Vladimir Putin got the very Government he wanted to get"**[46] **and "the technical government has received a completely technical May Decree in the form of extremely vague strategic goals"**[47]. In 2012–2018, the Government acquired the experience in "implementing" the May Decrees by simply changing calculation techniques, and there is

[43] Shishkin S.M. Do we need Stalin? Yes we do need Stalin. We do need Stalin desperately! *Zavtra Newspaper*, 2018, May 31. Available at: http://zavtra.ru/blogs/stalin_nuzhen_stalin_nuzhen_stalin_nuzhen (S.M. Shishkin is a combat veteran, recipient of four military orders, the order of the Red Banner of Labor, the medal to the Order for Merit to the Fatherland II Degree, Honored Worker of Culture of the RSFSR).

[44] Transcript of the "Direct Line" with V. Putin. *Rossiyskaya Gazeta,* 2018, June 7. Available at: https://rg.ru/2018/06/07/stenogramma-priamaia-liniia-s-vladimirom-putinym.html

[45] President! Don't sell us! *Argumenty nedeli*, 2018, no. 13 (606), April 5. Available at: http://argumenti.ru/society/2018/04/568556?typelink=openlink

[46] Rostovskiy M. The Government is "so-so": why there is actually no Medvedev Cabinet. *Moskovskiy Komsomolets Newspaper,* 2018, May 18. Available at: http://www.mk.ru/politics/2018/05/18/pravitelstvo-ne-akh-pochemu-kabmina-medvedeva-na-samom-dele-net.html

[47] Bashkatova A. The structure of the new government will be adjusted to fit deputy prime ministers. *Nezavisimaya Gazeta*, 2018, May 13. Available at: http://www.ng.ru/week/2018-05-13/8_7223_economy.html

every reason to believe this experience will be reproduced during V. Putin's fourth presidential term... The question is when the society will address the issues of public administration inefficiency and the absence of tangible positive dynamics of the quality of life not to the Prime Minister, but to the President?

And, apparently, this is already happening...

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SPATIAL ASPECTS OF TERRITORIAL DEVELOPMENT

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From Regional Science to "Smart Cities": Intellectual Legacies and Possible Ruptures

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Abstract. We have entered the 21st century facing a global trend of massive urbanization leading to an increasing concentration of population in relatively few, large cities. This exacerbates the share of GDP produced in cities (80%). Today, more than 54% of the world population lives in a city and this number will likely increase by the end of this century to 80%. This trend implies a redefinition of what a city, and what an agglomeration, is. There is then no doubt that the city has become the central point in various social sciences and that agglomeration economics have become an important topic in development economics. Smart Cities have become in this context an important topic in Regional science and in applied economics and geography. There is no doubt that the development of new technologies and especially information technologies have created their own issues. Actually, Smart cities are combining a production function and a housing and living environment one. But one can also see "Smart cities" as a new form of the industrial district issue. Regional science has known an important development since the late 1980 when the Marshallian concept of the "industrial district" came back to favour and became major a topic in development studies. The turn from the "industrial district" to "smart cities" is a much more recent one. But still in smart city studies as in industrial district ones, the same range of issues, some of them purely economic and others more politically oriented, are at stake.

Key words: regional science, smart cities, industrial district, Marshallian district, regional development, urbanization, economic polarization, transportation.

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We entered the 21st century facing a strong and global trend of massive urbanization. This trend lead to increasing concentration of the population in relatively few, large cities and this is exacerbating the share of GDP, which is produced in cities (80%). In the 18th century less than 5% of the world population lived in a city. Today, more than 50% (actually 54% in 2017) [1] of the world population lives in a city and this number will likely by the end of this century be more than 80%. However in this trend we can see different movements. Parts of the large cities population move either inside the border of the agglomeration or sometimes outsides. This lead also to a process of redefinition of what a city, what an agglomeration, is. There is then no doubt that the city has become the central point in various social sciences and that agglomeration economics have become a very important topic in economics and regional science.

Smart Cities have become an important topic in Regional science and in what can be called applied economics and geography. There is no doubt that the development of new technologies and especially information technologies have created their own issues. Actually, Smart cities are combining a production function (where they are supposed to foster innovation) and a housing and living environment one. But one can also see "Smart cities" as a new form of the industrial district issue.

Regional science has known an important development in the late 1980 and the early 1990 when the Marshallian concept of the "industrial district" came back to favor and became major a topic in development studies. The turn in emphasis from the "industrial district" to "smart cities" is a much more recent one and one that could be traced to the massive development of information technologies. But still in smart city studies as in industrial district ones, the same range of issues are at stake.

We propose then a short review of the issue, beginning by exploring the meaning and relevance of what has been called "regional science" and then focusing on the agglomeration effect to see what are the similarities and what are specificities of "smart cities".

1. Regional science

What we call Regional science has traditionally been a field of the social sciences concerned with analytical approaches to problems that are specifically regional or urban [2]. Topics in regional science include, but are not limited to location theory or spatial economics, location modelling, transportation, migration analysis, land use and urban development. It is also deeply concerned by development unbalance and the problem of what has been called misdevelopment [3, 4].

Regional science was founded in the late 1920s when some economists began to become dissatisfied with the low level of regional economic analysis and felt an urge to upgrade it. But even in this early era, the founders of regional science expected to catch the interest of people from a wide variety of disciplines. Regional science has ever been an example of cross-disciplinary research. But, if the diversity of disciplines participating in regional science has helped make it one of the most interesting and fruitful fields of academic specialization, it has also made it difficult to fit the many perspectives into a curriculum for an academic degree.

Regional science took-off in the wake of Walter Christaller's book *Die Zentralen Orte in Sűddeutschland* [5] soon followed by Tord Palander [6] and August Lösch's *Die räumliche Ordnung der Wirtschaft* [7]. It focused from its very beginning on the issue of cities and urban network. Regional science's formal roots date to the aggressive campaigns by Walter Isard [8, 9] and his supporters to promote the "objective" and "scientific" analysis of settle-

ment, industrial location, and urban development. To this core of innovative academic works were soon added important study mostly concerned with economic development (like inter alia Perroux [10, 11], Hirschman [12], Ponsard [13]) and monopolistic competition (Chamberlin [14]).

By the late 1980s, Paul Krugman, himself a highly regarded international trade theorist, put out a call for economists to pay more attention to economic geography in a book entitled *Geography and Trade*, focusing largely on the core regional science concept of agglomeration economies [15, 16]. Krugman's call renewed interest by economists in regional science. To some extent it contributed to found what some term the "new economic geography", which enjoys much common ground with the old regional science. A key concept was the so-called "Industrial District", itself coming from the works of the late Alfred Marshall [17]. This concept became a key point by the end of 1980s and the beginning of 1990s [18].

George Benko and Alain Lipietz developed this idea in *Les regions qui gagnent* a seminal book of the 1990s [19]. They defended the idea that the industrial district was not just an important concept in industrial economics but one relevant too for a socio-economy of development [20]. They compiled various authors, and used what could then be called the "Italian School" [21, 22], to develop a theory of the local/geographic influences in economic development. But they showed too that urbanization and more specifically the type of urban form had decisive an impact [23]. This theory put a great emphasis on the relevance of institution and one of its most important results was to demonstrate that any market is a social creation [24]. Institutions, their cultural and socio-political context, play a great role in the development of both markets and enterprises.

But, the theory of the "industrial district" also allows us to think flexible specialization [25], a point made extremely important by the development of new technologies. Actually a significant part of these last years innovation took place in some "industrial district". To some extent too new technologies are constantly redefining scope and borders of these "districts". The coalescence of information technologies, institutional forms, repartition of political power and cultural contexts is central in the understanding of smart cities. These different factors are also crucial to understand why agglomeration matters in a logic where proximity became a strategy to both accumulate and communicate information [26].

2. Agglomeration effect and agglomerations economics

The new "regional science" or regional economics put indeed a great emphasis on the impact of agglomerations and cities on development [27]. To some extent this has been already the case in the Marshall's theory of the industrial district. But, this doesn't stop to a study of how agglomerations are influencing, and sometimes disturbing, the development pattern in a given country. The emphasis is also put on the reason why some cities or agglomerations are having this magnet effect that can alter to a considerable extent the development process. Reasons are numerous. Of course large agglomerations bring with them economy of scale, a large demand linked to the population, a good infrastructure network and, usually, are well connected to the extern world, either by sea or land transportation.

In this perspective it is also important to look at cluster effect of large infrastructure like ports. As a matter of fact the influence of seaport infrastructure of the cluster Le Havre-Rouen in France extends its influence to Paris [28] as well as the specific dynamics of the metropolis (Paris) is influencing the cluster [29]. Le Havre-Rouen is a global port and its scores well in terms of maritime accessibility. It can pride itself on a relatively large number

of operators, vessels and direct calls at its port, which are an indication of good maritime connectivity. Paris, on the other hand, is a global city. This interesting combination has not been lost on many observers, and the relationship between the two cities – as well as between Normandy and Greater Paris – has been a recurrent subject of interest [30]. This is just one example of how infrastructure development can induce the agglomeration effect. But, in return, it is important to understand how this agglomeration effect could benefit to the development of infrastructure.

But this is not the end of the game. Large agglomerations allow for the concentration of specific competence, knowledge and know-how. These formal and informal information networks play also a large role in the development of innovation and specific economic activities. But, these networks are themselves highly dependent on the governance institutions then in place [31]. In the end the problem of cities and agglomeration have predated by decades the one of "smart cities". These last are sharing with the older problematic a lot of issues. Still, they have also their own specificities. Understanding these specificities is certainly now an important topic for regional science.

An important problem here is what has been called the Tiebout Hypothesis [32]. This theory concludes that an individual or family's decision to move to a community matches their desired level of public goods. There is no doubt that the level (and the quality) of public goods supply plays great a role in the decision to move made by individuals or families. Cities and agglomerations have been seen for centuries as places where the supply, and the quality of supply, of public goods has been particularly good [33]. This has been one of the main factors of the making of the "Large" and the "Very Large" city, with people flocking with time to the place where they were seeing, or supposing, that the public good supply was good. Of course the development of public transportation, both intra-agglomeration and inter-agglomeration, played decisive a role here. Here it is to be noted that the possible implantation of the "Very Fast Train" (or TGV) in North America has generated in in depth study of the economic and social impact [34]. This point has figured high in the research agenda in France too [35].

Transport infrastructure has been hypothesized to impact on the economy by different strands of economics [36], and to have a deep effect on to the birth of cities and agglomeration economics. This can be found both in neoclassic economics as well as in institutional economics. Classical location theory emphasised the role of transport costs as a determinant of the location of economic activities [37]. The New Economic Geography and Regional Science also emphasize the role of transport costs as a location factor [38]. This role was seen as important in the development of the agglomeration effect [39]. They however do that within the context of imperfect competition and different degrees of interregional labor mobility. The theory of endogenous growth also developed a framework in which public infrastructure, including then transport infrastructure [40], can be defined as a source of economic growth through its contribution to technical change [41]. A reduction in transport costs and transport improvements are making displacement faster and easier. This is true for public but also for freight transport. These factors lead to a reduction in firms' input costs or could allow them to have access to a greater and more effective resources pool and thus increase factor productivity [42]. In addition, lower production and distribution costs induced by transport improvements can also result in scale effects and foster competition levels, which in turn

result in higher overall productivity levels due to a natural selection process [43].

There is then empirical evidence showing that transport improvements also enhance economic growth, and these improvements are usually coming first in or around large agglomerations [44]. But transportation infrastructure can also foster the development of a polycentric agglomeration through the formation and development of sub-centers [45]. This has been noted in the impact of the "Very Fast Train" (or TGV) development in France [46]. If the general impact of a strong emphasis on public transportation is generally beneficial to the productivity and influence of an agglomeration [47], it is important not to underestimate the potential redistribution of functions and wealth, which could then take place.

Such wealth redistribution could take place inside the agglomeration as it could take place between cities and agglomeration. Here the example of redistribution effect generated by the location of stations is important to note [48]. To some extent competition between cities and even parts of large agglomeration around the location of a given TGV station could influence the general pattern of local economic development [49, 50]. As a matter of fact one has to be very cautious about possible perverse effects of this location as mobility and non-mobility could be a factor of social segregation [51].

3. Urbanization and underdevelopment

However, the agglomeration effects can also have a perverse dimension. Urbanization can also be linked to massive a problem of underdevelopment [52]. Migration to a city could just be a despair strategy and not a strategy of hope and could lead to the development of slums. The poverty distribution pattern in Latin America, Africa and India is a case in this point. According to a survey made some years ago over 78% of the Latin America and Caribbean population lived in urban areas in 2007 with a high concentration of poverty. This is making this region a more highly urbanized one than Europe, Africa or Asia but also one where urbanization is liked to poverty. The present situation is a little better in Africa, but evolutions trends are showing the same pattern.

In Africa, urbanization is lagging behind what we know in Latin America but it has too largely been translated into rising slum establishments, increasing poverty and inequality, with large variations in the patterns of urbanization across African regions. North Africa has a higher proportion of urban population (47.8%) relative to Sub Saharan Africa (32.8%). The relatively fewer slums in North African countries is mainly attributed to better urban development strategies, including investment in infrastructure and in upgrading urban settlements. In contrast, Sub Saharan Africa has the lowest proportion of urban population (32.8%), but the highest proportion of slum dwellers (65%). The growth of Sub Saharan Africa population, and of urban population, could well be explosive in the future years *(Table 1)*.

In India we have too a large urbanization trend that would pose unprecedented challenges to India's growing cities and towns in providing housing and infrastructure (water, sewerage, transportation, etc.), and addressing slums [53]. Already, slums account now for about 26% of all urban population in cities. In Mumbai, more than half the population lives in slums, many of which are situated near employment centers in the heart of town, unlike in most other cities in developing countries.

Latin America and Caribbean countries, which consist primarily of medium-income to low-income countries, are also more urban than the average for the high-income countries, according to the World Bank [54]. Urban

Table 1. Sub-Saharan urban population: growth to 2025 (millions)

Year	1990	2010	2025	% growth (1990–2025)
Sub-Saharan Africa	527	937	1362	258%
Urban Population	149	387	705	**473%**
Urban % of Total	28%	41%	52%	
Source: Venard J.L. Urban Planning and Environment in Sub-Saharan Africa, UNCED Paper no. 5 (AFTES) 1995.				

populations in Latin America and Caribbean countries have tended to concentrate into large cities. There were 67 cities in Latin America and Caribbean countries in 2005 that had populations of over one million inhabitants and four cities with populations of 10 million or more – Mexico City (19 million), Sao Paulo (18.8 million), Buenos Aires (12.8 million), and Rio de Janeiro (11.7) million. By 2020, Africa will have too 11 mega-cities (with 5 million inhabitants or more) and almost 3000 cities with populations of more than 20,000, an increase of almost 300% from 1990 *(Table 2)* [55].

This level of population is raising specific problems *per se*. Not only this situation is putting agglomeration infrastructure under big constraints but also it raises problem of environment and crimes, which are at best extremely difficult to manage [56]. A similar situation can also be seen in Africa where population is driven toward the city either by the income ratio between "official" city income compared to rural ones [57], by the supply of public good or by non-economic factors like civil wars [58].

Urbanization, by fostering economic growth, has helped reduce absolute poverty in the developing world but appears to have done little for urban poverty, with the numbers of poor living in urban areas increasing at the same time that the number of rural poor have been decreasing. This process has progressed further in Latin America and Caribbean countries than in other regions. In Latin America and Caribbean countries, the majority of the poor (income of less than $1 a day) were already living in urban areas as of the mid-1990s, and by 2002, over 59% of those living on less than "$1 a day" and over 65% of those living on less than "$2 a day" were living in urban areas [59].

Rapid growth in urban populations in Africa is also major a problem. It will entail a rapid growth both in the size and number of urban agglomerations.

From these data we can see that urbanization could take very different forms either in developed countries or in poor ones. From this one can deduce that the development of "smart cities" is a luxury that only rich countries can afford. But problems of agglomeration development, problems of sustainability and of pollution are even worse in the poor country large cities. To some extent, the need to achieve a transition to a "smart city" or to find a way of increasing city "smartness" is even greater in a poor country than in a wealthy one.

Table 2. Sub-Saharan city growth to 2020

Size	1990	2020	% change
More than 5 million inhabitants	0	11	
1 to 5 million	18	59	536%
500,000 to 1 million	26	75	288%
100,000 to 500,000	180	585	325%
20,000 to 100,000	790	2,200	278%
Source: Venard J.L. Urban Planning and Environment in Sub-Saharan Africa, UNCED Paper no. 5 (AFTES) 1995.			

4. From formal to informal factors: tilting the balance?

This turned the reasoning from focusing on "material" factors to look to "immaterial" ones, like institutions and "social capital" both at the individual and collective levels, making the link with the old vision of the city as a place of civilization. The informal mood that can develop in a city is also to be seen as a development factor. It is an important fact linked to what has been called the "framing effect" [60, 61]. And this last factor is then one of the important when it comes to a "smart city". This raises the issue of the balance between formal and informal development factors, between structural and macroeconomic ones [62].

Analysis of agglomeration and region-specific factors identified in the neoclassical and the endogenous growth theories are starting with Solow [63] and Swan [64], both papers being published the same year. Endogenous growth models have been developed, among other, by Romer [65, 66], Lucas [67], Aghion and Howitt [68]. They emphasize the role of physical and human capital [69] accumulation on economic growth. Physical capital accumulation can take the form of private sector investment or public sector investment (in infrastructure for example). Still these works emphasize a mechanical accumulation effect much more than the recombination effect that usually takes place when more modern capital is added to older one. This recombination effect is highly obvious in the development of agglomeration where quite frequently a very old capital is operated on the side to a modern one and with very specifically combinations. To a large extent the density of economic activity [70], which is combining "old" (or traditional) ones with much more innovative and modern ones, is also a factor of development and one that the traditional endogenous growth theory doesn't see. Tilting the balance towards formal factors is an argument made by the neo-Schumpeterian endogenous growth model by Aghion and other authors [68, 71], which highlights the costs of market imperfections in upstream sectors [72]. The broad conclusion of their model is that lack of competition in upstream sectors leads to lower productivity growth in downstream sectors. The difference in productivity attracts investment in downstream sector, usually emplaced in agglomerations.

But two other factors have been identified in the literature as influencing positively sector productivity growth. First, we have the growth, which is coming at the international technological frontier for a given sector. It has a positive effect on growth in lagging country-sectors and it could be experienced mostly in enterprises developing in large agglomerations [73, 74], as they are most exposed to international competition but also to exchange of information. Here we could see a specific agglomeration effect, related to the informal information structure created by accumulation of highly experienced people with a fair experience of what is done in other countries. This is called technological pass-through. Second, by a more traditional catching-up effect (as described in the late 1950 by Alexander Gerschenkron [75]), the efficiency gap between this frontier and the follower sectors also enhances growth in the follower sectors.

But we have too informal factors, usually studied by historians and sociologists, but of no less an importance to "formal" factors. The emphasis put on to institutions in different studies is trying to capture this phenomenon [76]. Governance appears to be an important issue [77, 78]. Spillovers form large agglomerations are also important and could redefine the map between winners and losers [79].

This is not however the end of the game. The development of imperfect information theory of these last twenty years [80] put a direct emphasis on "face to face" communication and on the behavioral aspects of economic interactions [81]. We are entering a new conceptual world were "individual actors" are embedded into hierarchies and networks. This is obviously important as these hierarchies and networks will influence, directly or indirectly, individual decision making [82]. But this is not stopping here and we have also to deal with a new situation were hierarchies and networks are no more to be seen as alternatives or in opposition. We can have recombination of hierarchies and networks, and there is some hierarchy in a network, as well as some network in a given hierarchy. But here, we are back to the issue of rules, be they formal or informal. However, three categories must then be distinguished. First of all there are the rules of the Environment that is rules that delimit the action space of the organization (be it a hierarchy or a network). Then we have Organizational Rules, which define the attributions of the members of the collective structure, and then Sharing Rules, which specify the conditions of distribution within the collective are added to them [83]. These different kinds of rules emphasize the balance between delegation and on-the-spot democracy, a problem that itself paves the way to the balance between distance and proximity.

5. The agglomeration effect and polycentric urban systems

This emphasis put on regions and agglomerations raises now the issue of what a city or an agglomeration is. As a matter of fact the agglomeration borders, the difference between administrative, economic and social borders and, in the end the more specific question of what is an agglomeration have considerably evolved in the last twenty years. The fact that the concept of polycentric urban systems emerged is a proof that borders are sometimes ill defined or hard to define [84]. As a matter of fact the emerging spaces where people live and work and where the bulk of economic interdependencies takes place is usually referred to in the literature as "functional regions". They possibly didn't recoup administrative regions as the law in different countries defines them. An economic region is not necessarily an administrative one.

Among these functional regions, the "functional urban areas" (or FUAs) are characterized by the presence of one or more urban centers, of different sizes and economic importance. These centers are forming sometimes what can be called a hierarchized system. The reduction of transport and communication costs will continue to make urban centers increasingly interconnected and change urban areas from monocentric agglomerations to a more polycentric system of integrated urban centers and sub-centers. This has to be defined. Starting with the most general meaning, any given area can be defined polycentric if it contains two or more centers. With just a bit more precision, an area is polycentric if its population or employment is not concentrated to a substantial extent in one single center [85]. The relevance of this idea is important when it came to study the development of large "de-facto" regions shaped by massive urbanization.

The concerned literature distinguishes between a morphological dimension – which focuses on population, employment, land use, and other material factors. – And a more "functional" one [86, 87, 88]. Such a definition is linked to the functions carried out by cities or the connections among them [89]. However, the two dimensions are actually very much related to one another and interactions between them are making a clear-cut distinction quite difficult.

The morphological dimension of polycentricity focuses on the size and distribution of urban centers across space. This dimension is often associated with the extent to which territory is characterized by a balanced development or not and by long-term effect of previous administrative or development policies. The functional dimension of polycentricity focuses then less on the internal characteristics of the centers – such as size, density, etc. – and more on the way these centers organize the rest of the territory by supplying the functions that shape the territorial hierarchies [90, 91]. We are actually back to the Christaller's idea [5].

There is however a big difference between a loosely hierarchized polycentricity and one dominated by a big metropolis. The agglomeration effect is actually quite different in a big metropolis. The metropolis tends then to reorganize the whole polycentric system, imposing on other cities its own constraints and the political agenda of its leaders. The whole process of center-periphery relations is born again but this time at a sub-national level. But in both cases it is clear that the borders of the city have become blurred. The distinction between what is a city and what is not, important for centuries, has become in some cases unusable.

New concepts of course have been introduced in the last two decades to identify and describe regional spatial structures where several urban areas co-exist and might be able to generate positive externalities beyond the boundaries of the urban areas [92]. The characteristics of regional spatial structures can have different implications in terms of economic outcomes through, for example, agglomeration economies or consumption benefits [93], ensured by a higher variety of consumption possibilities in large agglomerations [94]. These advantages can be reached in large cities with high population and job density. However, it has also been argued that the advantages of agglomeration can be "regionalized", and achieved in regions characterized by the presence of several interconnected urban centers.

6. The "metropolis" special case

On the other hand we are confronted to the "metropolis" case, that is the giant city moving out of its traditional border like an unbound Prometheus [95]. It is a problem both for developed countries and poor countries alike [96]. These "Very Large Cities" or megalopolises are present whatever le level of development. This giant city not just grows by absorbing new territories. It grows to by exerting a magnet effect on to other and smaller cities, which then tend to lose their individuality and to become "satellites" of the bigger one [97]. Sometimes, the development of transport infrastructure accelerates this phenomenon. One good example has been the impact of the French fast train system (TGV) on to medium cities like Le Mans or Vendome [98].

The unrolled development of the very large city or Metropolis has been a problem faced by urban developer, economist and geographer for decades. As a matter of fact the spatial structure at the metropolitan scale has indeed multidimensional policy relevance [99]. This spatial structure has been traditionally conceptualized in urban economics in the 1960s as monocentric. It means that large cities were seen with a central business district (CBD) located at the center of the area [100, 101]. The CBD was characterized by the highest job density. But this density was to decline monotonically as the distance from the CBD went increasing [102]. However, metropolitan areas have been expanding in the last decades and their spheres of influence have changed and regionalized. In a time perspective, as technological progress takes place and income increases, the relative costs of being far from the main center decreases and people can

move further away from the CBD, where land is cheaper, congestion lower and housing size higher. In the same time development of new transportation infrastructure the opportunity cost of living far from the CBD is reduced and the upper income part of the population tends to favor places with less congestion letting the poorest part of the population to concentrate in what have previously been the wealthy center of the city [103] as in United States. But the reverse process could exist as well, and we are seeing what has been called "gentrification" of the city center [104]. This gave rise to a new form of inequality and social divide into the Very Large City. The VLC or Metropolis extension now goes often well beyond traditional administrative boundaries and, as a conse-quence, other new or pre-existing centers coalesce or integrate in the larger "functional region" [105] or emerge from a decentralization process from the CBD be it voluntary or not [106].

Allen Scott has shown for Los Angeles that what is now dominating is a network of districts whose hierarchy is subtle and frequently evolving [107]. Still some places are playing the role of a magnet for different economic activities [108]. This magnet effect is of particular importance to understand how the megalopolis is internally constantly restructuring and evolving. As a matter of fact the way population and economic activities distribute across the metropolitan space can affect the economic performance of metropolitan areas, through shaping the intensity of agglomeration economies. The degree of metropolitan polycentricity has been found to be associated with higher car dependency.

Metropolitan polycentricity can also be understood by focusing on morphological features and land development patterns. Under this perspective, metropolitan polycentricity can be seen as a model of urban development that is alternative to dispersion and that is sometimes called "decentralized concentration" [109]. In principle, it combines the need to accommodate urbanization with that of limiting generalized dispersion of activities across space, which is often referred to as sprawl or "edgeless" city [110]. It could however give birth to its own pathology [111, 112]. A process of clusterization, called suburbanization, can also follow the development of the giant city [113]. As a matter of fact the most common pattern of urban evolution of the last century was suburbanization, meaning the movement of people from central locations to commuting zones. Some scholars highlighted that suburbanization was an international phenomenon that occurred throughout the last century in almost all countries.

7. How "smartness" is blending with the traditional thinking

One can then hardly disputes M. Batty's observation [114]: "In the study of cities, there are many competing paradigms". This is obvious in Regional science. Certainly the current awareness of asymptotic urbanization has stimulated a great number of debates, but also the feeling that "new technologies" are creating new problems.

First, we have to try to assess the new reality. If the issue of "Smart cities" is not new it became major an issue approximately ten years ago. In the midst of the 2008–2009 economic crises most large cities of the developed and emerging world realized that they were in competition with other cities in ways that they had not previously experienced. They were not only competing with their neighbors at the national level, but also, and that was a result of the Internet and global supply networks, they were competing with peers on the other side of the world. The massive impact of new technologies, their widespread introduction, destabilized the whole process of urban design.

However, the phrase "Smart Cities" is not completely new and may find its origins in the "Smart Growth" expression of the late 1990s [115]. The phrase "Smart Cities" has been adopted since 2005 by a number of technology companies for the application of complex information systems to integrate the operation of urban infrastructure and the supply of public goods [116, 117].

Broadband network developments are greatly affecting the interaction potential of various actors [118] (e.g. individuals, small businesses, institutions and local governments,) by providing access to both worldwide knowledge and information sources and resources as well as a broad range of tools to connect both locally and globally. Based on the challenging new network opportunities [119], and on steering competitiveness gains and community development efforts, the concept of "smart" communities and "smart" cities has appeared. Searching the literature available, however, a clear-cut definition of "smart" communities and "smart" cities does not exist. Furthermore, a number of terms similar to "smart" communities and cities have appeared. They were like "wired" communities, "broadband" communities, "digital" communities, "networked" communities, "smart community network" and "community informatics", and "intelligent" communities. All these terms seem to be used interchangeably by the various researchers adding a lot to the confusion. Sometimes, they appear however to be different. Hence, one author wrote about the difference about an "intelligent" and a "smart" city [120]. They all imply nevertheless communities that are making "*a conscious effort to understand and engage in a world that is increasingly "connected*" [121]. By the way, an important factor in the development of "smart cities thinking" has also been the necessity to make the city of the future much easier to live and "greener" than it previously was [122] (hence the issue of sustainability [123]), and to foster democratic process at the local level [124].

Although there are certain differences in the way the above terms are used by the various researchers, all definitions have three key aspects in common, namely: the communication mean (network infrastructure – technology – ICTs); the process (networking of various actors); and the goal pursued (public involvement or other).

"Smart" communities are defined as those communities in which local leaders and stakeholders, by use of electronic networks and the Internet, are forming alliances and partnerships in order to innovate and extract new economic and social value [125]. In this definition, emphasis is placed on the network deployment (transport and ICTs), but also on investments in human and social capital in support of sustainable community objectives and quality of life, by means of engaging social participation as well as user-specific technologies and community-building applications. However such a definition overtakes the issue of conflicts arising, or that could arises, between different groups interested by what the city or the community could become. By the way, such a definition overtakes too the possibility that a dominant enterprise could have a predatory behavior that could shape very differently the future of the city or community.

8. Back to regional science

From a regional science point of view, the idea of a "wired" city as the main development model and of "connectivity" as a source of growth is brought to the forefront for increasing local prosperity and competitiveness [126]. We are back to the issues of agglomeration effect and regional development, but in a quite different context and with a quite different vocabulary. A broader definition, provided at

the Smart Cities Workshop [127], defines a "smart" city as *"... a city that makes conscious effort to innovatively employ ICTs in support of a more inclusive, diverse and sustainable urban environment*", a definition that is also adopted by the California Institute for Smart Communities [128]. An alternative approach for defining "smart" communities is to place placing emphasis on the importance of social and environmental capital in urban development. This is important indeed. Technology, how radical it could be, has never been the main primer of economic and urban development. It was governance and its linked social issues that were. Social conflicts were ever been both the core and the main accelerator of institutional emergence and development [129]. This implies communities whose citizens are taught to learn, adapt and innovate, but also, and this is probably the decisive factor, communities whose citizens have the power to decide, that is democracy in its actual sense. People's empowerment is decisive a factor for the development of a true "smart" city [130]. It has a strong focus on social inclusion and on participation in community affairs and decision-making processes in order to reach social and environmental objectives [131].

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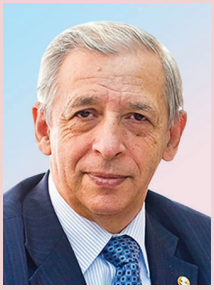
Foreign Direct Investment in the Economy of the Russian Far East



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Abstract. The article considers the trends and patterns of foreign direct investment in the Russian economy in the context of mega-regions, the features of attracting and spatial distribution of foreign direct investment (FDI) in the regions of the Far East. The purpose for the study is to assess the economic effects generated by foreign investment in the Far East. The hypothesis is the assumption that attracting foreign investment in the region is to a greater extent a tool to maximize the economy of scale, rather than eliminating financial imbalances. The initial data of the study are statistical materials of the Central Bank, as well as macroeconomic indicators published by federal and regional statistical agencies. The methodological framework of the study is the concept of modern general theory of foreign direct investment, in particular the concept of spatial distribution of foreign investment. The article presents the assessment results of spatial performance and modification of the spatial-sectoral structure of foreign investment in the Far East, and the macroeconomic effects of their application. A new scientific result is a study to assess the impact of special institutional regimes formed in the Far East on the performance and

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structure of foreign investment, showing the possibilities and limitations of the stimulating effect of these regimes. The interval values of scale and structure of attracting foreign investment in the future have been determined. The research substantiates the hypothesis that the main motive for investors' strategic choice is natural rent seeking based on the access to mineral deposits (both hydrocarbons and other resources) and processing of natural resources; and this motive is invariant in relation to political and institutional innovation. The results of the study are applicable in the framework of applied regional analysis and regional economic policy-making. An important area of further research is modeling investment transfers between the countries of North-East Asia and the Russian Far East.

Key words: Far East, foreign direct investment, deployment, regions, investing country, offshore, North-East Asia, foreign invested enterprises, projects, advanced special economic zone, free port of Vladivostok.

Introduction

One of the essential components of the "new economic policy" for the development of the Russian Far East is the stimulation of foreign capital inflow, primarily of foreign direct investment considered as an alternative resource for economic development and a source of technological innovation. The first attempt to use foreign investment as a resource for economic development in the Far East was concession agreements in the 1920s [1; 2]. Foreign direct investment began to be used as a source of economic development and a tool for developing the region's natural resource base since the mid-1960s, when the first compensation agreements were concluded with Japan using the formula "capital and technology for natural resources". Substantially, these agreements were large-scale barter transactions with parties represented by national governments [2; 3]. In the 1980s, foreign direct investment was already applied based on economic agents themselves, with institutional guarantees and special state incentives (benefits) for foreign investors localized in the region, established in the law on foreign investment (1987) [3]. The current stage of investment cooperation in the Far East is characterized by absence of a special institutional regime for foreign investment, which determines the subordination of performance, scale, sectoral and territorial structure of foreign investment to comparative advantages of the capital functioning in the region compared to other options for its placement.

Therefore, the performance and structure of foreign direct investment (FDI) can serve as an indirect indicator of success of the region's economic development policy in terms of increasing its competitiveness in the capital market, as well as the assessment of potential of absolute advantages of the Far East in the field of natural factors of FDI attraction.

These estimates are described the article through analyzing the trends of FDI attraction and spatial distribution in the regions of the Far East, taking into account the changes in the information framework in connection with the transition to the methodology of the Central Bank in the accounting of foreign investments. Such studies have been widely conducted since the early 2000s both in relation to the Russian economy as a whole [4; 5; 6] and in the aspect of comparative spatial analysis of structural and dynamic indicators and effects [7; 8; 9; 10].

At the same time, the objective of assessing the responses of the socio-economic systems of specific regions to the use of foreign direct investment in the region has not been solved to date. In particular, it is necessary to investigate how the relations between the performance and scale of foreign investment, on the one hand, and macroeconomic dynamics in a particular region – on the other, are modified depending on the characteristics of the economic structure, domestic market capacity, integration of the regional system into interregional and global chains. Assessing the efficiency of accounting a set of specific factors for attracting and operating foreign investment in the investment and macroeconomic policy in a specific region.

Theoretical concepts of FDI research

The studies of the performance, the geographical and sectoral structure, the patterns of distribution, the forms and sources of funding, and the effects of foreign direct investment are based on the whole set of theoretical concepts.

These concepts are based both on the assumption that foreign direct investment is carried out in markets with perfect competition (presence of a large number of sellers and buyers, product homogeneity, free access to information, etc.), and on the assumption of imperfect markets (presence of barriers to foreign trade, transaction costs, transportation costs and taxes) [11; 12]. In both cases, a large number of variables and different factors (macro-, micro- and strategic) are considered.

Macro-factors include the size of the host economy's FDI, the interest rates, wages and profitability. Micro-factors refer to the characteristics of firms and industries which provide certain advantages to transnational corporations as opposed to other firms. These include product differentiation, technological and promotional effects, product life cycle, and firm sizes. A number of strategic factors combine the circumstances that indirectly affect decision-making on foreign investment [13].

Theoretical concepts describing the spatial distribution of foreign direct investment according to investment motives in conditions of market of perfect competition, are based on the assumption that decisions about FDI location are dominated by comparative assessments of return on capital in different countries and regions [14; 15], the desire to diversify business [12; 16] as well as maximize the economy of scale through placement of investment in countries and regions with large market capacity for relevant products [12; 17; 18; 19; 20].

More complex structures describe the patterns of foreign direct investment with the introduction of the idea about a more realistic assumption of imperfection of markets. These include the hypothesis of industrial organization [21; 22; 23], the hypothesis of internalization [24; 25; 26], the hypothesis of spatial distribution [13; 27; 28; 29; 30], Dunning eclectic theory [31; 32; 33; 34], the hypothesis of product life cycle [35], the hypothesis of oligopolistic reaction [36] and some others.

Regardless of the type of markets which operate direct foreign investment, it is impossible to accurately and comprehensively explain the motives, causes and effects from capital placement only from the point of view of goal setting and internal capital efficiency. These grounds are sufficient when describing the motives and results of functioning capital placement in a homogeneous institutional environment, which is the national economy.

However, in the case of international flow of venture capital, the essential conditions

influencing the decisions regarding FDI and the results of the implementation of these solutions are as differentiated across countries and regions as poorly formalized combinations of institutions and economic policies (especially modes of financing, exchange rate regimes, tariff and non-tariff barriers, tax policy, strategic priorities and restrictions on foreign capital entering national markets, etc.).

It is impossible to take into account this variety of conditions within any unified system of canonical concepts (theories). The essential specific features of combination of factors and conditions characteristic of specific cases of foreign investment location, make it mandatory to formulate adequate concepts and hypotheses describing the performance and structure of foreign investment related to a particular country or period. This to a greater extent is related to the problem of explaining regional FDI location (especially within medium and large countries), which is less represented in theories and hypotheses than in the case of national economies. This determines not only, and not so much the existence of a certain freedom in the formulation of hypotheses and application of various theoretical concepts in the description of the regional aspect of FDI, but also the need to test their adequacy empirically, their compliance with the features of territorial and sectoral development.

The testing can be carried out with the help of econometric models (with an adequate statistical framework), which has precedents in the Russian research practice [37; 38], but does not lead to reliable results since it takes into account only a limited set of important characteristics of regions for investors [39]. In some cases, the best results are obtained through descriptive analysis using author's databases and questionnaire methods.

In Russia, one of the most well-known theoretical models of FDI location in the regional context is the model of hierarchical wave diffusion [40] based on the hypothesis that foreign investors create their first enterprises, as a rule, in key economic centers or their suburbs, and then "master" adjacent territories, which is expressed over time in reducing the territorial concentration of FDI. However, this model is much more suitable to describe the investment strategies of individual economic agents, rather than explain the comparative dynamics, especially the structure and effects of foreign investment in the regions. If the number of foreign investors remains constant the model can explain the investment processes in the interregional aspect. But with an increased number of new direct investors entering the country, which, like their predecessors, start with the largest economic centers, the concentration of FDI can continue and even increase. In addition, there are fundamental exceptions to this model, which relate just to the principal cases of conditions in the Russian economy. First, this model does not consider the situation where the market scale makes it sufficient for the investor to be limited to a limited amount (or even a single) of investment, exploiting economies of scale (as, for example, in the case of car assembly plants). Second, investment takes place in border regions, rather than in major economic centers. Third, there are situations where a foreign investor acquires a ready-made enterprise or develops cooperation ties. Finally, which is the most important in the framework of this article, the given model is not suitable for describing the situation of investment in development and export of natural resources, which is extremely important for the Russian Far East and similar economic regions.

Therefore, in this article, the hypothesis of spatial FDI location is considered a theoretical hypothesis explaining the trend and structure of foreign direct investment in relation to the Far Eastern federal district and its constituent entities of the Russian Federation, as in the case of other resource-oriented regions. According to it, FDI flow and location is based on immobility of production factors (labor force, sources of raw materials, etc.). This immobility leads not only to spatial differentiation of cost of production factors (which generates the effects of comparative advantages or, in a later version, the effects of economic units), but also to the limited effects of absolute economic advantages.

Features of information support for analysis of foreign direct investment in Russia

Until 2014, statistical accounting of foreign investment in Russia was carried out according to the "Methodological regulation on the organization of statistical monitoring of foreign investment according to the manual of balance of payments"[1]. The Unified Interdepartmental Information and Statistics System of the State Statistics Committee have collected quarterly data on foreign investment since 2004.

The features of the classification of foreign investment inflow were types of activity (according to Russian National Classifier of Types of Economic Activity (OKVED)), world countries (investors), regional breakdown by federal district and Russian constituent entity. The data were presented for all types of foreign investment (direct, indirect and other), which helped carry out a deep dynamic and structural analysis of foreign investment inflow in the sectoral and regional context to identify trends and regional characteristics. But since 2014, Russia has made a transition to accounting for only foreign direct investment[2]. This resulted in the loss of comparability of data on foreign investment for 2004–2014 and for the period from 2015.

Since the second half of 2015, Russia has started to publish FDI statistics collected by the Central Bank using a new technique, on direct investment accumulated at the beginning of 2015 by Russian constituent entity, including data on FDI accumulated in them, the structure of investment by country, geographical and economic zone of direct investors, and types of economic activity. The amount of FDI accumulated in a Russian constituent entity is a relevant statistical indicator for evaluating the existing regional disparities in attracting FDI [41]. However, it is impossible to analyze regional patterns, peculiarities and trends of foreign investment inflow from the regional perspective using this indicator, although these problems were widely analyzed in the scientific literature [42; 43; 44]. The Central Bank began to publish statistics not only on FDI received but also on FDI withdrawn only in 2011, while the significant inflow of foreign investment occurred in the 1990–2000s. In addition, statistics on FDI inflow have never been detailed: no open data on FID country of origin (to assess the role of offshore investment and other convenient jurisdictions) or on the sectoral structure of investment were available.

These and other statistical novelties have led to significant flaws in analytical studies on regional aspects of foreign direct investment in Russia [45; 46]. In some areas such as formulation and testing of various hypotheses,

[1] Resolution of the State Statistics Committee of the Russian Federation no. 204, dated 28.10.2002.

[2] *Methodology of official statistical accounting of direct investment in Russia and direct investment from Russia abroad.* Available at: http://cbr.ru/statistics/credit_statistics/meth-kom-di.pdf; On the approval of the procedure for providing primary statistics on direct investment to the Bank of Russia: Order of the Central Bank of the Russian Federation (Bank of Russia) no. 3519-U, dated 28.12.2014.

analysis of data on FDI flows and balances in Russian constituent entities, new statistics provide certain opportunities, but in general there are significant shortcomings which are noted by many experts and foreign investors[3].

Imperfection of investment accounting becomes a problem for its objective analysis and making management decisions. An objective analysis of investment performance is often hampered by incomplete accounting data for small and medium investment projects and enterprises, imperfect methods of calculating accumulated investment and defining country's ownership of investment. Official statistics on accumulated investment may differ several times from data based on the volume and structure of investment of individual projects. Thus, according to the Central Bank, by the end of 2016, accumulated direct investment from China to Russia amounted to 2.27 billion dollars and, according to the Eurasian Development Bank (EDB), they amounted to 8.23 billion dollars. The Chinese sources also do not provide an opportunity to clearly assess the scope of investment cooperation. The statements of official representatives of the Chinese side are also contradictory.

To some extent, the use of author's databases on specific investment projects with foreign investment would help avoid the problems of incomplete statistics [47]. A good example can be EDB and IMEMO RAS databases.

The key advantage of such information-based works is the degree of detail of data used for further analysis. It is possible to find out the country of investment origin (and understand whether investment is really foreign), the nature of a project (a start up or a ready-made business), its industry, the share of foreign investment in the company's authorized share capital (whether a foreign investor controls the enterprise[4]).

However, the formation of an investment projects database is a very time-consuming process; which inevitably has to be limited to collection of information only about relatively large (or available) investment projects. Moreover, such databases offer a very limited scope for quantitative analysis of regional FDI distribution, as it is virtually impossible to obtain information on annual investment volumes.

The peculiarities of information support for analytical studies on the problem of foreign direct investment determine a number of limitations in integrity of conclusions regarding both regional aspect of FDI performance and structure, and its role in the economy of specific regions, particularly in the Russian Far East.

Foreign direct investment in the Russian economy: regional distributions

Taking into account the above features of information on FDI inflow and use in the Russian economy, which characterizes the movement of capital value in account balance, it should be noted that the distribution of investment in the context of macro-regions (federal districts) reflects these information features. The main area of FDI attraction is Moscow and the Northwestern federal district (mainly Saint Petersburg), where 72% of all investment is registered in 2012 and almost 78% – in 2017 (*Tab. 1*).

[3] Experts: statistics on investment in the Far East are contradictory. Available at: https://dv.rbc.ru/dv/29/03/2018/5abd521b9a794732fae0849f?from=main (accessed: 30.03.2018).

[4] A direct investor is an investor who is a resident of a country whose participation in the capital of a resident of another country provides him with at least 10% of the total number of votes attributable to the voting shares that make up authorized share capital. A foreign direct investor may be a legal entity or a natural person, an international organization or a public authority.

Table 1. Foreign direct investment flows and balances by federal district, %, Russia=100%

	2012	2017*
Central federal district	59.2 / 75.8	67.6 / 50.2
Northwestern federal district	12.9 / 13.8	10.2 / -0.1
Southern federal district	1.4 / 0.3	1.1 / -3.3
North Caucasian federal district	0.1 / -0.1	0.4 / 0.3
Volga federal district	3.3 / 2.0	2.0 / 1.1
Ural federal district	14.3 / 12.2	4.7 / 8.1
Siberian federal district	2.6 / -7.6	5.8 / 14.5
Far Eastern federal district	4.7 / 1.1	7.5 / 27.0

* Data for 9 months.
Note. Data excluding withdrawal of direct investment, undistributed investment by constituent entity and the Crimean FD. The data and use of signs are consistent with the IMF sixth edition of "The manual of balance of payments and international investment position" (MBP6) according to the principle of assets/liabilities. The operations signs: "+" – increased assets and liabilities; "-" means decreasing assets and liabilities. Signs of balance of operations in "Direct investment" line "+" – excess of assets over liabilities; "-" – excess of liabilities over assets.
Source: data from the Bank of Russia.

This is in line with the previously mentioned concept of concentration of foreign investment in metropolitan areas, which are associated with the main markets. The Moscow Oblast attracts investment also through the fact of a significant part of foreign companies and companies using foreign investment registered in Moscow. There is also another important reason for this extraordinary concentration of foreign direct investment – debt instruments account for a large share of foreign direct investment, and an accounting system based on balance of payments tracks financial flows associated with investment. Most of these investment flows to Moscow and through Moscow.

The situation with attracting and using foreign direct investment seems somewhat different if we take into account investment outflow. In this case, the proportion between applied investment in the areas of preferential production concentration focused on domestic and foreign markets changes significantly. In 2012–2017, the share of investment balances (inflow minus outflow) decreased for Moscow and the Northwestern federal district from 88.6 to 50.1%. At the same time, the share of macro-regions with predominantly export-oriented foreign capital investment increased from 3.5 to 39.6% (see Table 1).

This indicates the replacement of investors' expectations of effects of domestic market with foreign trade income. The indirect evidence of this trend is also the dramatic change in the characteristics of investment outflows compared to inflows. In 2012–2017, the ratio of withdrawn investment to the amount received for the corresponding year increased from 61 to almost 81% for "capital regions", but decreased from 91 to 16% for Eastern regions.

The observed substitution effect is in line with the above-mentioned concept of production factors immobility as a basis for decisions in FDI location. But from the point of view of effects on the growth of the Russian economy, this trend is extremely negative. Shifting the FDI concentration zone towards the export primary sector means narrowing the basis for increasing domestic aggregate economic demand as a factor in economic growth.

Foreign direct investment in the economy of the Far East

In general for the Far East, the performance of both inflow and balance of foreign direct investment is monotonous (*Fig. 1*). In 2012–2017, the economy of the region received more than 65 billion dollars of FDI, and the cumulative balance over the years amounted to over 33 billion U.S. dollars, or (at current exchange rates) more than 23% of the total fixed capital investment in the region over the years.

At the same time, the importance of foreign direct investment as a source of accumulation in the economy of the Far East rapidly increased, largely due to devaluation of ruble at the end of 2014 and a constant decline in investment withdrawal rate in the Far Eastern economy, which indicates investors' long-term interests who in the region (*Fig. 2*).

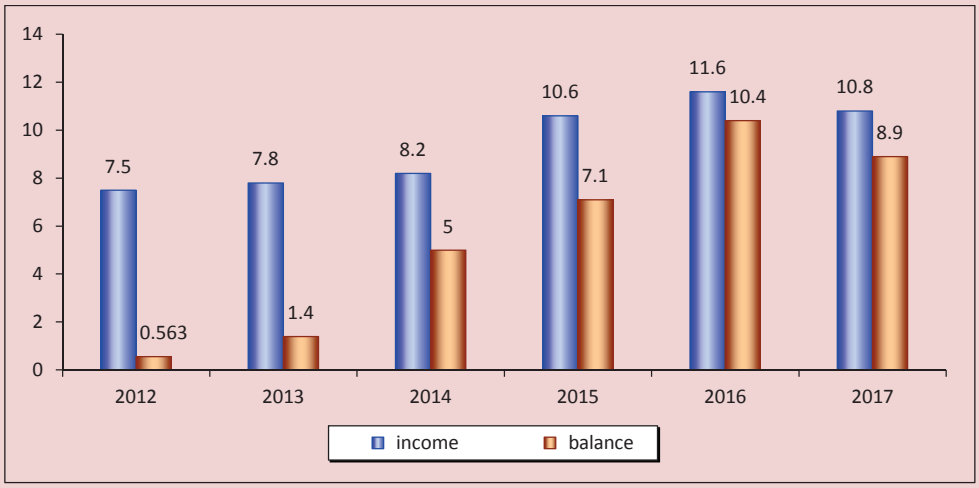
The nature of these interests is illustrated by the intra-regional distribution of FDI among Russian constituent entities. In 2012–2017, 68.4% of all FDI received by constituent entities, according to the Central bank, in the far East was accumulated in the Sakhalin Oblast[5]. That is, the main investment subject is production and processing of hydrocarbons.

In general, by the beginning of 2017, the accumulated volume or remains of foreign direct investment in the Far Eastern economy amounted to about 62 billion dollars, almost 90% of which were in the Sakhalin Oblast.

At the same time (in contrast to the average situation in Russia), loan capital comprised a small part (about 7% of FDI balances), which largely explains the low share of foreign capital outflow from the region (*Tab. 2*).

Of course, in this case, a high degree of capital participation is achieved through investment in projects of the Sakhalin oblast (1.6% of the accumulated capital in the form of loans). For other constituent entities with the exception of Kamchatka Krai, foreign direct investment to a large extent takes the form of loans to finance investment projects. However,

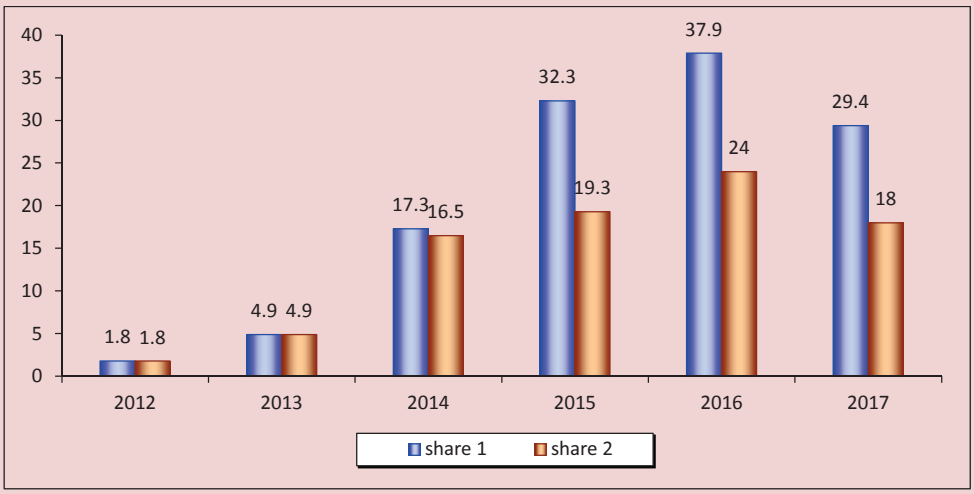
Figure 1. Performance of FDI in the economy of the Far East, billion U.S. dollars



Source: data from the Central Bank.
Note: 2017 – according to data for 9 months.

[5] Data from the Bank of Russia for 2012–2017.

Figure 2. Share of FDI in total fixed capital investment in the Far East, %



Sources: data from the Bank of Russia; Socio-economic situation in the Far Eastern federal district for the corresponding years.

Note. Share 1 – with the actual average annual ruble exchange rate, share 2 – with the conditional ruble exchange rate equaling the average rate in 2013.

Table 2. Foreign direct investment in the Far Eastern federal district (FEFD), balances on Russia's constituent entities by instrument (as of 1.01.2017, million U.S. dollars)

	Total	Capital participation	Debt instruments
Far Eastern federal district	**62245**	**57942**	**4303**
Sakha (Yakutia) Republic	1813	779	1034
Kamchatka Krai	216	199	17
Primorsky Krai	2117	1005	1112
Khabarovsk Krai	1023	329	695
Amur Oblast	984	704	280
Magadan Oblast	11	1	9
Sakhalin Oblast	55574	54673	901
Jewish Autonomous Oblast	202	87	115
Chukotka Autonomous Okrug	305	166	139
Source: data from the Bank of Russia.			

investment projects lending has no parallel with the compensation agreements previously widely used in the Far East, under which debt and interest payment has been carried out in the form of assurance export supplies of goods manufactured at lend enterprises. It means that the part of FDI representing loan capital, it is actually Russian investment that uses foreign capital as a financial tool for project implementation.

From this point of view, the Russian Far East has a significant advantage over other macro-regions where a much larger share of FDI refers to lending capital, i.e. the real impact of value-adding foreign investment is more limited. However, in the case of the Far East, there is a different problem in terms of the real impact of FDI on the region's economy – the spatial-sectoral monopoly on FDI attraction and use.

More than 90% of FDI accumulated in the region is concentrated in natural resource extraction and exploration (*Tab. 3*), mainly of fuel and energy minerals, which resulted in the formation of the asymmetric sectoral FDI structure, and therefore in suppressed investment multiplier.

Until 2012, the main investing countries (by place of registration of investing companies) in the Far East were the Netherlands and Japan. But during 2015–2017 the situation has changed significantly. The main investment donors for the Far East are offshore territories and other sources (the category "not distributed by country") which are very difficult to decipher due to "confidential data".

This is related to the transition to financing of major oil and gas projects through specially created companies in offshore jurisdictions. This explains the less noticeable share of Japan as an investor country judging by the role of Japanese companies in Sakhalin oil and gas projects. "New" statistics of the Central Bank has reflected this changed scheme of foreign investment (*Tab. 4*). The statistics "homeland" of more than 92% of FDI received in the Far East during this period is offshore territories such as the Bahamas, Bermuda and Cyprus, which reflects the general trend toward minimizing investment risks in emerging markets, in particular in Russia.

The real FDI impact on the region's economy is evident at both macro- and micro-level. At the macro-level, this impact would have to be felt through the link of FDI balance inflows to gross regional product growth, as well as through the reaction of total investment in fixed capital to changes in FDI balance. However, this dependence is practically not detected (*Fig. 3*).

Table 3. Foreign direct investment in the Far Eastern federal district, balance by economic activity, million U.S. dollars

Types of activity	As of 01.01.2015	As of 01.01.2017
Total for the Far Eastern federal district	**41550**	**62245**
Real estate operations	61	100
Professional, scientific and technical work	-	-
Finance and insurance	50	38
Mineral extraction	***36816***	***56041***
Manufacturing	0	484
Other services	830	1154
Agriculture, forestry, hunting and fisheries	3	10
Constructions	66	187
Wholesale and retail trade; vehicle and motor-vehicle repair	51	120
Transportation and storage	69	-28
Not distributed by economic activity	3604	4139

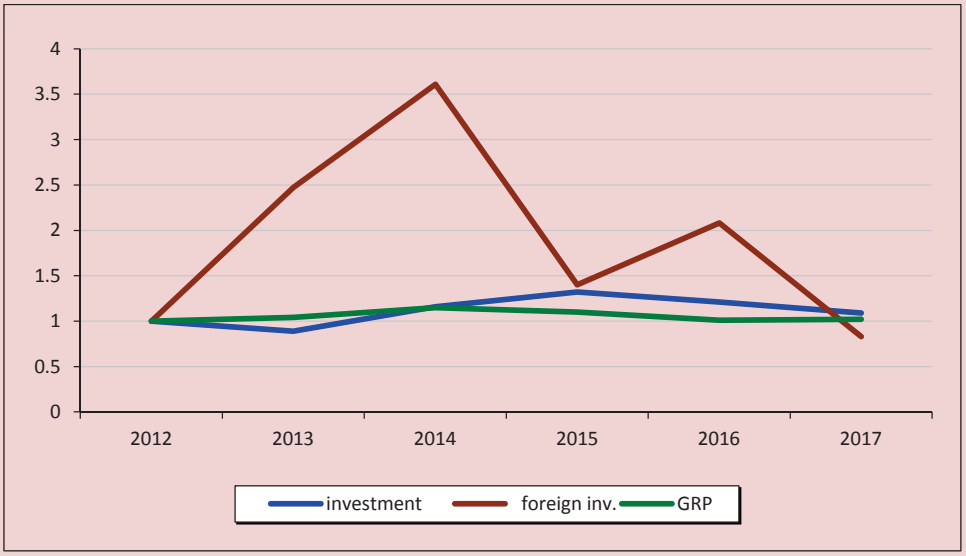
Notes: 1. The data are consistent with the IMF "Balance of payments and international investment position manual", 6th edition, and are presented according to the principle of assets/liabilities. The definition of types of economic activity corresponds to the main classification categories of the 4th revision of the UN International Standard Industrial Classification (ISIC4) and its European equivalent (NACE2). Data on economic entities receiving direct investment were initially formed based on the all-Russian classification of economic activities (OKVED) by main type of activity and then regrouped according to the ISIC4 methodology. Starting from 01.04.2017, OKVED2 is used. The main type of economic activity of a commercial organization is the one that, according to the results of the previous year, has the largest share in the total volume of products and services provided.
2. Data include investment in banks and other sectors; confidential data are included in the column "not distributed by economic activity".
Source: data from the Bank of Russia.

Table 4. Geographic structure of accumulated direct foreign investment in the Far Eastern federal district, million U.S. dollars

	As of 01.01.2015	As of 01.01.2016	As of 01.01.2017	As of 01.10.2017
Total investment	41550	39431	62245	60952
The Bahamas	20828	21227	33275	32486
Bermuda	14443	13177	21192	20555
Cyprus	2121	1942	2622	3247
Not distributed, including confidential data	3059	2395	3593	3190
Other countries	1099	690	1563	1474

Notes: 1. The data are developed according to the IMF "Balance of payments and international investment position manual" (6th edition).
2. Financial and non-financial investment included.
Source: data from the Bank of Russia.

Figure 3. Growth of nominal values of investment and GRP (% to the previous year)



This is partly due to the fact that, as noted above, FDI in the Far East is spatially localized within the Sakhalin Oblast, and the effects of its application are marginally localized within the Far East itself. In addition, investment in Sakhalin Shelf projects (main FDI recipients) is at a stage where investment lags are significantly greater than in the first years after starting exports of finished products. Accordingly, the period from 2012 to 2015 is not sufficient to capture the investment effects.

At the micro level, the effects of foreign investment are seen as a stimulus for entrepreneurial activity in the economy, in particular through an increase in the total amount of functioning economic actors. For some constituent entities in the region, foreign direct investment is indeed an important factor in increasing the amount of entrepreneurship (the Jewish Autonomous Oblast, the Amur Oblast, the Sakhalin Oblast). But in general, the entrepreneurial effect of foreign investment is very limited in terms of the share of enterprises with foreign investment in the total number of commercial enterprises operating in the district (*Tab. 5*).

Table 5. Number of enterprises with foreign participation as of 01.01.2017

Constituent entity in the Far Eastern federal district	Foreign	Joint	Total with foreign participation	Share in the total number of enterprises, %
Far Eastern federal district	**3442**	**1444**	**4886**	**2,5**
Sakha (Yakutia) Republic	207	81	288	1,1
Kamchatka Krai	60	77	137	1,2
Primorsky Krai	1326	571	1897	2,7
Khabarovsk Krai	548	302	850	1,9
Amur Oblast	570	123	693	4,1
Magadan Oblast	78	30	108	2,1
Sakhalin Oblast	395	217	612	3,5
Jewish Autonomous Oblast	239	36	275	8,2
Chukotka Autonomous Okrug	19	7	26	2,4

Source: *Russian regions. Socio-economic indicators. 2017: statistics book*. Rosstat. Moscow, 2017. P. 653.

As a rule, we are talking about small enterprises, judging by the fact that in the Sakhalin Oblast, which accounts for almost 90% of foreign investment, only 12.5% of all enterprises with foreign investment operate in the district. The largest number of such enterprises (70% of the total) is registered in Primorsky and Khabarovsk krais and in the Amur Oblast, which account for only a small part of accumulated foreign direct investment but have a diversified economy, which provides much greater opportunities for establishing small domestic demand-oriented enterprises.

Institutional regime and foreign investment

Since 2012, the Far East has been implementing a set of institutional innovation united by the term "new Eastern policy" in scientific literature and official documents [48; 49]. One of the elements underlying it is overcoming the objective restriction caused by the narrow domestic market through establishing, including with the use of foreign capital, enterprises with export potential. The second declared goal of this policy is the expansion of the investment base to develop the economy of the Far East also by attracting foreign capital. The government has chosen the creation of localized preferential investment regimes and operation of enterprises in the form of advanced special economic zones (ASEZ) and free port of Vladivostok (FPV) as the main tool for solving this two-fold problem.

To date, such platforms with preferences for investors have been created in almost all regions in the Far East. From the above data it is not yet possible to draw conclusions about the results of institutional innovation in terms of expanding the intra-regional export base and increasing the total investment resource for regional economic development. As noted above, foreign investment is still allocated almost exclusively to operating the traditional export commodity sector and is concentrated mainly in a single, albeit a very large-scale, investment export project. This is evidenced by the portfolio of new investment projects of the Far East Investment Promotion Agency (IPA), which mainly offers investment projects in deposit development and mineral of natural resources (3.6 trillion of 4.6 trillion rubles).

Some hopes for the improvement of the investment and business climate are associated with the "institutional harbors" created and being created in the region. According to the report of the Ministry for the far East Development, the expected investment of non-resident companies in Russia in projects

Table 6. Projects with foreign investment in "institutional harbors" (end of 2017))

Country	Investment, mln RUB	Number, units
Total	**247683**	**43**
China	159713	23
Japan	64645	5
Singapore	2053	2
South Korea	3131	5
Australia	10648	2
Lithuania	77	1
Vietnam	6500	1
The Netherlands	46	1
The USA, India, the UK	871	3
Source: data from the Far East Investment Promotion Agency.		

located in these "harbors" can be comparable in scale with the annual balance of foreign direct investment (4.7 billion U.S. dollars); 73% of these projects not being related to mineral extraction. The flagship in this virtual investment is China, with companies associated with more than 88% of project costs *(Tab. 6)*. To what extent can the expectations that foreign investment in "institutional harbors" will be able to diversify the economic structure in the Far East be justified, the near future will show.

Conclusion

The analysis of the territorial and sectoral structure of FDI flow to the Russian Far East helps conclude that the main strategy of foreign investors in the region is to provide access to and opportunities for the development of mineral deposits (both hydrocarbons and other resources), i.e. extraction of natural resource rent, as well as further resource processing using other non-mobile production factors. This indicates the appropriateness of the hypothesis of spatial distribution of FDI resulting from the modern theory of FDI and spatial economics, whose consistency can be tested with accumulation of objective statistical data on FDI and analysis of databases on investment projects with foreign participation in the macro-region and some regions of the Far Eastern federal district.

The particular feature of direct foreign investment in the economy of the Far East is its pronounced spatial and sectoral localization. The main part of investment is concentrated in Sakhalin hydrocarbon projects. This determines the limited impact of FDI on the performance and structure of the region's economy.

The institutional innovation of the past 5 years is not yet able to significantly change FDI interaction and regional macro- and micro-economics. However, the range of investing countries is expected to be significantly expanded and the level of FDI structural diversity – to be increased. The establishment of "institutional harbors" in each constituent entity in the Far East creates a fundamental opportunity to offer profitable projects in a variety of sectors in almost every Far Eastern region.

The study whose results are reflected in the article helps obtain new data on the system of economic effects of attracting and applying foreign direct investment in the economy of the Far East. It is demonstrated that in the context of the Far East, the spatial and sectoral localization of foreign investment is dominated by the economic availability of non-mobile production factors, rather than by the comparative efficiency of mobile factors. Accordingly,

the most adequate theoretical concept for describing the process of FDI transfer is the hypothesis of spatial distribution that obtains reliable statistical evidence in the case of the Far East. The importance of institutional environment for regional development and spatial distribution of production factors widely discussed in the scientific literature is studied in the article in relation to the phenomenon of construction of "institutional harbors" in the Far East and their impact on the processes of foreign investment. It is established that in conditions of the modern Far East, the scale and location of foreign direct investment is invariant in relation to institutional modifications with maximum sensitivity to the possibilities of extracting natural resource rent.

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Promoting Economic Growth in Regions of the Russian Federation by Boosting the Development of Non-Resource-Based Exports

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Abstract. At present, the issues related to economic growth rate, increase in gross regional product, and expansion of budget revenues of territories are coming to the fore. Export is an important resource for regional economic development. However, despite the fact that exports play a major role in the economy, Russia's share in foreign economic activity is insignificant (1.8%) and tends to decrease. In absolute values, Russia's export is ten times lower than that of China and five times lower than that of the U.S. Under the circumstances, it is crucial to determine the priorities of export activity. In this regard, the goal of our study is to determine the priorities and directions in boosting export activity as a necessary aspect of economic growth of territories and development of the national economy. In accordance with the goal of the paper, we consider the evolution of the views on the role of export activity in economic growth and develop a scientifically substantiated methodological approach to assessing the real share of non-resource-based export of Russia's regions in the total volume of goods shipped abroad. We also develop our own approach to classifying non-resource-based exports, study foreign experience in providing support to export activities, consider Russia's current infrastructure, and prove that it is necessary to implement governmental policy to provide comprehensive system-wide support to exporter enterprises. This can be done with the help of the system approach; it is also necessary to develop a set of tools and measures to enhance the growth of non-resource-based export at the federal and regional levels. In conclusion, we focus once again on the need to develop methodological aspects of assessing the real share of non-resource-based export of Russia's regions. At the further stages of the study, we will substantiate and develop a mechanism for managing non-resource-based exports of the regions on the basis of stimulating the development of non-resource-based exports in order to promote economic growth.

Key words: non-resource-based export, economic growth, problems, differentiation, territories, promotion.

Introduction

The issue of providing economic growth, which is one of the key problems in economic science, depends on many factors. Different interpretations of the concept of "economic growth" provide both quantitative (extensive) and qualitative (intensive) characteristics of growth. Quantitative characteristics reflect changes in the number of goods and services produced and the dynamics of these changes; qualitative characteristics indicate the potential of the economic system to meet the new growing needs of society [1]. Economic growth is characterized by the dynamics of absolute macroeconomic indicators such as gross domestic product (GDP), gross national product, national income and others. Relative indicators of economic growth that characterize it quantitatively represent the value of GDP per capita, disposable income per capita, and the as indicators of consumption, savings and investment, the growth rate of industrial production in general and in certain types of economic activity.

It should be understood that long-term economic development of the state can be ensured only by intensive economic growth. At the same time, despite the need to ensure it, Russia lags behind the leading world economies and developing countries in this respect *(Tab. 1)*.

It is obvious that current growth rates (unstable from year to year) are not enough to achieve the objectives of improving competitiveness at the global level. According to

Table 1. **GDP growth rate in some countries**, %*

Country	2012	2013	2014	2015	2016
China	109.9	109.5	109.2	108	108.1
Malaysia	107.4	106.4	107.9	106.1	105.6
South Korea	104.2	104.6	105.2	103.9	104.2
Singapore	105.8	106.7	105.4	103	103.3
UK	103.2	103.6	104.9	103.3	103.1
Germany	102.5	102.2	103.4	102.6	103.1
USA	104.1	103.3	104.2	103.7	103
France	102	102.2	102.4	102.4	102.5
Japan	103.4	103.6	102.1	102.3	102.3
Russia	105.4	102.9	102.5	98.2	101.1
* Compiled on the basis of [2].					

experts from Stolypin Growth Economy Institute, the Russian economy under the inertial development scenario will grow only in 1.5 times by 2035, while the global average will show a four-fold increase (compared to the level of 1990) [3]. By 2035, Russia may go down by GDP at purchasing power parity (PPP) from 6th to 10–15th position, and by GDP per capita at PPP – from 52nd to 65–70th position. We can expect China, India, Turkey to exceed the nominal per capita GDP of Russia by 2020, and in terms of per capita GDP by PPP – at the turn of 2030. Thus, ensuring economic growth is a key factor in national security and international competitiveness of the state.

One of the directions of economic growth is export activity. It is one of the priorities of the policy of any state, as it has a significant impact on the foreign economic market environment of the country and economic development of its territories. Non-commodity exports in developed and developing countries are among the main points of economic growth of territories, accounting for the largest share in the total volume of exported goods and services.

At the same time, in Russia, the need to expand export activity and primarily non-resource-based exports has not been defined as a real priority in economic development of the state for a long time. This is evidenced by the fact that the main provisions of the export policy were not reflected in the May 2012 Decrees of the President of the Russian Federation.

In the framework of his Decree "On national goals and strategic objectives of the Russian Federation for the period up to 2024" dated May 7, 2018 No. 204, the development of non-resource-based exports is defined as one of the sources of growth of the Russian economy. The President noted that it was necessary to continue work on the removal of administrative barriers in foreign trade and create the most favorable regime for export-oriented companies. In addition, the objective was to achieve the amount of exports (in value terms) of non-resource-based and non-energy goods equal to 250 billion USD per year, including mechanical engineering products –50 billion USD per year, agricultural products – 45 billion USD per year, and the total value of services provided – 100 billion USD per year.

At the same time, the measures of support for non-resource-based exports implemented at the federal and regional levels today are not always systematic, and their efficiency is low.

Under the circumstances, it is of fundamental importance to identify correctly the priorities and the most promising areas of export activity as a source of economic growth of territories and to ensure sustainable

development of the national economy, not only in the long term but also in the medium term.

In this regard, the goal of our study is to determine the priorities and directions for promoting export activities as a necessary aspect in providing economic growth of territories and development of the national economy. To achieve this goal, the following tasks need to be solved: to consider the evolution of the theory of international exchange in economics, to carry out an international comparison of development of export activities, to study approaches to the classification of analytical commodity groups in exports, to consider foreign experience in supporting export activities, to study the development trends of Russia's non-resource-based exports, to analyze the system of its support at the national and regional levels, to develop key tools aimed at the development of non-resource-based exports in the regions.

Scientific novelty of our research consists in the development of a scientifically substantiated methodological approach to evaluating the real share of non-resource-based exports of the Russian regions in the total volume of products shipped abroad and a system of tools and measures to enhance the growth of non-resource-based exports at the federal and regional levels.

Theoretical aspects of the research

There are four viewpoints on the relationship between economic growth and export activities. The first one is the neoclassical growth hypothesis, which proves that economic growth is caused by exports. This view is determined by the following factors:

– expansion of exports increases labor productivity [4];

– expansion of exports leads to the creation of better products due to the need to take into account international requirements [5];

– export urges companies to invest heavily in new technologies, which provokes an increase in the rate of capital growth and technological transformation [6, 7]

– export-oriented approach in the economy with surplus labor determines the expansion of employment and growth of real wages [5, 8];

– export helps reduce the dependence of the national currency on exchange rates [9].

The second viewpoint is that export depends on economic growth. Higher productivity leads to a reduction in unit costs, which contributes to the growth of exports [10]. Economic growth affects export growth if domestic production grows faster than domestic demand [11, 12, 13].

The third viewpoint, which is a combination of the first and second ones, suggests that there may be a bilateral causal relationship between exports and economic growth [14, 15, 16].

Finally, the fourth viewpoint denies the existence of causal relationship between exports and economic growth as a result of development and technological change [17].

We fully agree that export is one of the most important drivers of economic growth of a country and its territories, thus it is advisable to talk about the growth of its non-resource-based component.

The works of Porter and other modern scientists put forward and substantiate a theory that the competitiveness of a country in a particular industry depends on its ability to implement innovation and modernization [18]. This provides for the need to organize deep processing of raw materials and build production chains with high added value. Thus, according to Porter's theory, the country's competitiveness depends on the development of non-resource-based exports as the most competitive group of goods.

In addition, according to Porter, there are four determinants: local market resources and opportunities, local market conditions, local suppliers and complementary industries and local firm characteristics.

That is, the increase in the competitiveness of the state is provided by the development of non-resource-based exports at the local (regional) level, which proves the need to direct the efforts of regional authorities to support producers.

Research methods

Studying non-resource-based exports is complicated by the availability of different approaches to this economic category in different countries. Considering foreign experience in the formation of analytical commodity classifications, we can distinguish two main methodological approaches.

The first approach presented in the UN Commission on Trade and Development (UNCTAD), which allocates analytical groups of goods similar to the groups allocated by the WTO (agricultural products, fuels and mining products, manufactures, machinery and transport equipment, textiles) [19, 20]. UNCTAD has two classifications of goods: Manufactured goods by degree of manufacturing and Product by technological categories [21]. The main drawback of this approach is that in the categories of goods high-tech products are considered alongside simple products.

The second approach is used by the Statistical Office of the European Union in the framework of analytical tables and reviews of "International trade" [22]. For instance, the Federal Statistical Office of Germany uses the classification of foreign trade goods as economic indicators of national and regional statistics [23; 24]. The key aspects in determining the product is the labor intensity and complexity of goods. These product groups are encrypted for automatic data processing as follows: food industry; industrial economy; return/replacement of deliveries (defective goods, finished products with defects, spare parts deliveries) [23, 24].

As for the Russian Federation, it uses an approach developed by AO Russian Export Center in cooperation with the All-Russian Academy of Foreign Trade (ARAFD) and made legally binding according to Chapter 21 of the Tax Code and used by the Ministry of Finance [25, 26].

Thus, according to the parameters that are proposed and developed by AO Russian Export Center together with the ARAFD, the categories of "resource-based and non-resource-based exports" mean the following [27]:

1. Resource-based exports are the exports of minerals and other natural resources, including waste and scrap.

2. Non-resource-based exports are the exports of goods not included in the list of resource-based goods (including: energy export; non-energy export of the upper, middle and lower technological process stages).

With this formulation, it is possible to achieve the goal of increasing non-resource-based exports by 7% in the framework of the state program "Development of foreign economic activity" [28]. But at the same time, from the viewpoint of economic development of territories, the emphasis is placed on quantitative characteristics, i.e. the volume of exports as a whole. In this case the quality component recedes to the background.

In addition, there is an approach of the Ministry of Finance of the Russian Federation, which is used in the calculation of VAT on export groups of goods *(Tab. 2)*.

Table 2. Comparative characteristics of approaches to the classification of export goods

Name	AO Russian Export Center	RF Ministry of Finance	Author's approach
1. Resource-based export	Export of minerals and other natural resources, including waste and scrap.	Export of extracted minerals and other natural resources, materials produced from them, subject to further processing.	Export of minerals and other natural resources, materials produced from them to be further processed (semi-finished products).
2. Non-resource-based export	Export of goods not included in the list of raw materials.	No specific wording is provided.	It is not only the supplies of complex finished products – power units, aircraft, cars and other high-value goods to foreign markets. First of all, it is the export of parts and components for the upward global value-added chains.
3. Main criterion for classifying the goods as raw materials or raw materials	Extent of human participation in the formation of its fundamental characteristics.	Determined by the Government of the Russian Federation in accordance with the unified commodity nomenclature of foreign economic activity of the Eurasian Economic Union	The degree of increasing types of economic activity in the world export market with priority directions in the country's exports in accordance with the unified commodity nomenclature of foreign economic activity of the Eurasian Economic Union
4. Resource-based categories	Materials available in the natural environment and extracted from it. Minerals, as well as wood and some other natural materials. Waste generated in the production process: scrap metal, waste paper, plastic, glass, wood waste, etc.	Mineral products, chemical products and related industries; wood and products thereof, charcoal; pearls, precious and semi-precious stones, precious metals; non-precious metals and products thereof	Goods in the form of raw materials: agricultural raw materials (grain, oil seeds, industrial crops, vegetables, fruits, etc.); chemical products: drug components, fertilizers, including inorganic chemicals: ammonia, sulfuric acid, caustic and calcined soda, etc., and organic chemicals: hydrocarbons, alcohols, esters; products of the metallurgical industry: cast iron and steel and products thereof, untreated non-ferrous (basic) and precious metals; products of the fuel and energy complex: oil, gas, oil products, coal coke and other; products of the forest-industry complex and items made from it (logs, unprocessed wood, timber, etc.); waste generated in the production process and used in the future as raw materials
5. Non-resource-based categories	Non-commodity energy products – processed fuel (petroleum products, coal coke and other) and electricity. Products according to the degree of processing: lower, middle, upper	No specific classification is given	Categories of goods in the form of finished products: mechanical engineering; chemical industry; metallurgical industry; other product categories (including finished products of food, forestry, light industry).

Thus, we propose an approach to commodities and non-commodities exports, which is to a greater extent close to the wording of "commodity", represented for the purposes of Chapter 21 of the Tax Code of the Russian Federation [29]. From our point of view, resource-based exports should be understood as exports of minerals and other natural resources, materials produced from them and subject to further processing (semi-finished products). At the same time, non-resource-based exports are not only the supplies of complex finished products – power units, aircraft, cars and other high-value goods to foreign markets. First of all, it is the export of parts and components for the upward global value-added chains.

With this approach to the classification of goods on the basis of the customs nomenclature of foreign economic activity of the EAEU, exports are divided into raw-materials-based (semi-finished goods) and non-raw-materials-based and include the following groups (items). Non-raw material exports will include categories of goods in the form of finished products: engineering; chemical industry; metallurgical industry; other commodity categories (including finished products of food, forestry, and light industry).

At the same time, all goods that are not included in the list of non-commodity exports should be included in resource-based exports. According to our approach, this group includes the following commodity items: agricultural products and raw materials (grain, oil seeds, industrial crops, vegetables, fruits, etc.); chemical products: drug components, fertilizers, including inorganic chemicals: ammonia, sulfuric acid, caustic and calcined soda, etc., and organic chemicals: hydrocarbons, alcohols, esters; products of the metallurgical industry: cast iron and steel and products thereof, untreated non-ferrous (basic) and precious metals; products of the fuel and energy complex: oil, gas, oil products, coal coke and other; products of the forest-industry complex and items made from it (logs, unprocessed wood, timber, etc.); waste generated in the production process and used in the future as raw materials.

Research results

We have made calculations, and compared the obtained data with the results of calculations by the method of calculations used by AO Russian Export Center. According to the approach used by the Russian Export Center, in 2016, the share of non-raw materials exports in Russia was 55.4% (147.4 billion USD; *Tab. 3*), of which 17.2% (32.8 billion USD) is the volume of energy goods. According to our own approach, non-resource-based exports account for only 29.8 billion USD, which accounts for just over 10% of total exports. Thus, about 90% of products supplied to foreign markets are products of low technological processing or raw materials. This, in turn, indicates the possibility of obtaining only short-term benefits and cannot bring the proper economic effect in the long term.

Considering the volume of non-resource-based export in the regional context, it is worth noting that it is distributed unevenly. And this is typical for the calculations carried out both in the framework of the methodology used by the Russian Export Center, and in the framework of our own approach *(Tab. 4)*. The largest share in non-resource-based exports in Russia as a whole, according to our own approach, belongs to engineering products (58.2%), and to oil products (29.1%) according to the Russian Export Center methodology. In the Sakhalin Oblast, the largest share of non-resource-based exports (85.11%) belongs to the products within the group "Ships, boats and floating structures".

Table 3. Classification of non-resource-based exports based on the approach used by AO Russian Export Center and our own approach

Indicators	AO Russian Export Center			Our approach
	Non-resource-based exports, total	Non-energy exports	Energy exports	
Volume, billion USD	147.4	109.2	38.2	29.8
Share in the total volume of exports of the country, %	55.4	38.2	17.2	10.4

Table 4. Non-resource-based export of the regions of the Russian Federation and its share in Russia's total non-resource-based exports in 2016 (top 20 regions)

Region	Approach of AO Russian Export Center			Region	Our own approach		
	Per capita, USD	Share in the volume of non-resource-based export, %	Rank		Per capita, USD	Share in the volume of non-resource-based export, %	Rank
Moscow	41023.4	25.9	1	Sakhalin Oblast	1139.9	1.8	1
Saint Petersburg	11769.9	7.4	2	Moscow	684.4	26.8	2
Sverdlovsk Oblast	6926.8	4.4	3	Saint Petersburg	569.6	9.5	3
Krasnodar Krai	5536.6	3.5	4	Leningrad Oblast	504.4	2.9	4
Republic of Tatarstan	5344.5	3.4	5	Sverdlovsk Oblast	466.7	6.4	5
Rostov Oblast	5211.2	3.3	6	Nizhny Novgorod Oblast	453.8	4.7	6
Moscow Oblast	4719.9	3.0	7	Novosibirsk Oblast	426.5	3.7	7
Leningrad Oblast	4645.4	2.9	8	Kaluga Oblast	380.4	1.2	8
Krasnoyarsk Krai	4297.1	2.7	9	Moscow Oblast	351.7	8.2	9
Perm Krai	4172.5	2.6	10	Yaroslavl Oblast	350.3	1.4	10
Republic of Bashkortostan	4093.6	2.6	11	Smolensk Oblast	346.0	1	11
Tyumen Oblast	3881.1	2.5	12	Republic of Komi	337.7	0.9	12
Chelyabinsk Oblast	3857.2	2.4	13	Arkhangelsk Oblast	284.3	1	13
Irkutsk Oblast	3806.8	2.4	14	Republic of Karelia	281.8	0.6	14
Samara Oblast	3619.4	2.3	15	Ulyanovsk Oblast	224.8	0.9	15
Lipetsk Oblast	3017.0	1.9	16	Kurgan Oblast	218.8	0.6	16
Tula Oblast	2852.8	1.8	17	Republic of Tatarstan	212.7	2.6	17
Vologda Oblast	2807.6	1.8	18	Kaliningrad Oblast	212.6	0.7	18
Kemerovo Oblast	2802.5	1.8	19	Kostroma Oblast	196.7	0.4	19
Nizhny Novgorod Oblast	2779.9	1.8	20	Rostov Oblast	184.8	2.5	20

The uneven distribution of export activity has led to the fact that, according to our approach, top ten subjects provide for 69.3% of the total volume of non-resource-based exports in the country *(Tab. 5)*. While the last 63 subjects account for less than one fifth of that.

Thus, today the structure of non-resource-based exports in Russia is largely formed by the goods of low technological processing. And its bulk (up to 70%) is formed in ten regions of the Russian Federation. We think that the proposed approach largely reflects the current structure of non-resource-based exports; and the achievement of the planned indicators in this situation will stimulate the development of high-tech production and, consequently, contribute to economic growth.

Export support in other countries is a system of interacting and interconnected governmental and non-governmental organizations. On the whole, an assessment of international experience in export promotion shows that the work is being carried out in the following main areas *(Tab. 6)*.

Table 5. Distribution of regions by share in all-Russian non-resource-based exports

Level	Approach of AO Russian Export Center		Our own approach	
	Number of regions, units	Their share in the total volume, %	Number of regions, units	Their share in the total volume, %
High	15	71.3	10	69.3
Average	10	14.9	9	11.7
Low	57	13.6	63	19.1
Note. High – the share above 2%; average – from 2 to 1%; low – below 1%.				

Table 6. Areas of support for export activities in other countries

Key export support methods/tools	Countries/territories
1. Export funding	
1.1. Trade and credit financing	EU countries; Belarus, USA, China, South Korea, Japan
1.2. Insurance	China, South Korea, Japan, UK, France, Germany, USA
1.3. Investment	China, UK, Germany, USA, Japan, Malaysia
2. Export subsidies	
2.1. Direct subsidies	USA, Japan, Germany
2.2. Tax credits /deductions (in the production of exported products from imported components)	Malaysia, South Korea, Germany, USA
2.3. Subsidization of interest on export credits	Germany, Italy, The Netherlands, UK, Japan
3. Export-promoting organizations	
3.1. Creating a favorable image of the exporting country in international markets	USA, Germany, Italy, France, China, South Korea, Japan
3.2. Promoting the products through trade missions, international exhibitions/fairs, etc.	EU countries; USA, South Korea, Japan, Belarus
3.3. Information and consulting support for exporters to enter foreign markets	EU countries; USA, Belarus, China, South Korea, Japan and other countries
3.4. Marketing support-definition of target products and markets	India, UK, Germany, France, USA, South Korea, Malaysia
4. Special economic zones	
4.1. Tax benefits	EU countries; USA, China, Malaysia
4.2. Simplified procedures for the import of components and export of products	EU countries; China, South Korea, Japan, Malaysia
4.3. General research and production infrastructure	UK, Germany, Ireland, USA, China, Japan
Source: our own compilation.	

Analysis of foreign experience in supporting export activities (primarily in the EU and the USA, in a number of countries with developing economies – Korea, India, China) shows that most countries have formed a comprehensive system for support of export-oriented companies. It involves state assistance at all stages of the project aimed at creating an export product: from R&D (for example, the availability of appropriate research and production infrastructure) to the stage of service maintenance. This system takes into account the requirements of companies in both financial and non-financial instruments.

Russia is also developing a system to support export activities of companies. For instance, in 2003, the Concept for development of the state financial (guarantee) support for industrial exports was approved, which provides for the creation of a system of state guarantees for political and long-term commercial risks in export operations, for the expansion of long-term export credit, for the creation of a mechanism for reimbursement of interest rates on export loans of Russian credit institutions. In 2008, the Concept for long-term socio-economic development of the Russian Federation for the period up to 2020 was approved. It points out the need to expand the opportunities for implementation of Russia's comparative advantages in foreign markets and to use the opportunities of globalization to attract capital, technology and qualified personnel to the country.

In 2014, the State program of the Russian Federation entitled "Development of foreign economic activity" was approved; its goals provide for the achievement of definite values of the following indicators: "growth rates of exports of non-commodity goods", "growth rates of exports of non-resource-based and non-energy goods", "share of machinery,

equipment and vehicles in the export of goods". In 2015, AO Russian Export Center (REC) was established, its purpose is to work with exporters in the "single window" mode in the field of financial and non-financial support measures. In 2016, the REC Group was formed, which provides comprehensive support to all exporters of non-resource-based goods without industry-related restrictions [28]. For instance, AO Eksimbank of Russia, which is included in the REC group and is an agent of the Government of the Russian Federation for state support of export, issues loans to companies and provides on-demand different types of guarantees on its behalf.

In 2017, the projects "System measures for the development of international cooperation and exports", "International cooperation and export in the industry", and "Development of exports of the products of the agro-industrial complex" were launched, which also imply the development of non-resource-based exports. In addition, the Strategy for the development of export of the automotive industry and automotive components production in the Russian Federation for the period till 2025", the Strategy for the development of exports in the sector of agricultural engineering for the period till 2025, and the Strategy for the development of export of railway engineering were approved.

Over the past 5–7 years, the infrastructure that supports non-resource-based exports in the country has been actively formed *(Tab. 7)*. Non-financial measures and certain elements of the system of financial support of exports at the federal level have been developed and are now implemented. They include export credits, interest rate subsidy program, insurance against business and political risks, and state guarantees and loans.

At the same time, despite the range of financial and non-financial support instruments available in the Russian Federation, the effectiveness of this support is rather low in comparison with developed countries (USA, Germany, Japan), which is confirmed primarily by the chain of interaction at all stages of the export cycle. First, the competitiveness of credit instruments in Russia is weaker than in other countries (in the Russian Federation, interest rates on the loans for exporting enterprises are much higher than in other countries where there is a possibility of interest-free installment payments, for example, in Japan); and second, the range of companies that can be recipients

Table 7. Measures of export support in the Russian Federation*

Instruments	Institutions
Financial measures for export support	
1. Loans	State Corporation Vnesheconombank; ZAO Eksimbank of Russia; OAO MSP Bank
2. Insurance	OAO EXIAR
3. Guarantees	ZAO Eksimbank of Russia
Non-financial measures for export support	
1. Information and advisory measures	AO Russian Export Center; trade missions of the Russian Federation in other countries.
	Regional centers of support for export-oriented small and medium-sized businesses.
2. Promotion and organization measures	AO Russian Export Center; RF Ministry of Economic Development; RF Ministry of Industry and Trade.
	Trade missions of the Russian Federation in other countries
	Regional centers of support for export-oriented small and medium-sized businesses.
3. Eliminating barriers to export	RF Ministry of Economic Development; Agency for Strategic Initiatives; Federal Customs Service, FSTEC Russia, AO Russian Export Center.
* Compiled on the basis of [29].	

of support is narrow (Eksimbank's services can be used only by large exporting companies); third, the financial component at the regional level is non-effective or does not exist at all (in Russia all financial support is provided mainly through Eksimbank, whose office is located only in Moscow).

Despite the wide range of support measures implemented by the authorities, even the regions leading in non-resource-based exports do not carry out comprehensive and systematic work in this direction.

In our opinion, it is necessary to talk not about the support of exporting enterprises, but about the management of export activities at all levels, based on the implementation of the relevant structural policy of the state.

Proposals and conclusion

The main tools in the formation of governmental policy in the field of development of exports and building a full cycle from the initial (market research) to the final (agreements with foreign contractors) stage should be as follows:

1. Building an effective program to support export activities of the full cycle according to the "region–federal center–region" type, where the exporter is a beneficiary, and the prerogative in obtaining financial support and expanding non-financial measures is formed at the regional level in cooperation with national specialized organizations and supervising ministries.

2. Designing segment forms of support with the construction of an integrated system aimed at the development of export-oriented non-resource-based industries, taking into account best practices of foreign countries.

3. Defining promising territorial shop groups (sectors) in order to create financial forms of support at the regional level aimed at specific exporter organizations.

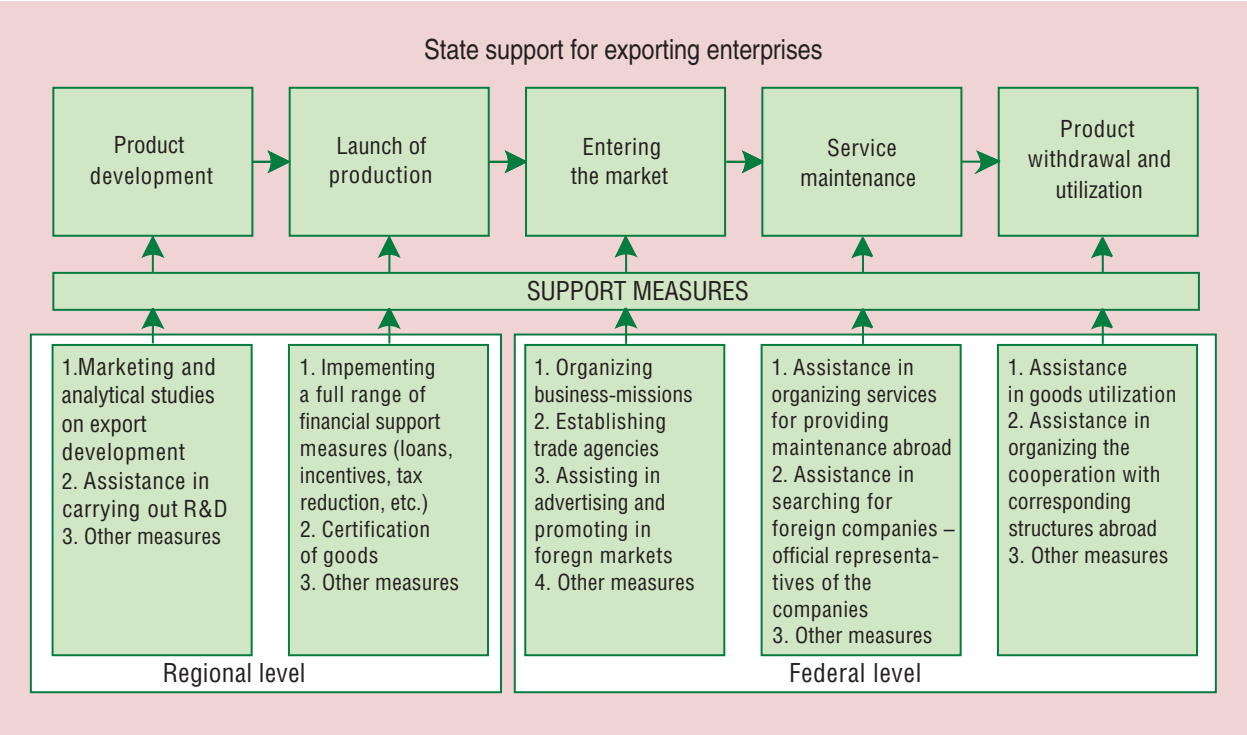
4. Monitoring (on a permanent basis) the condition of international specialization both at the federal (in comparison with the developed and developing countries) and at the regional levels, in order to determine the export component (primary and non-primary goods) to make a forecast and develop new forms of support, as well as to adjust the existing forms of support aimed at the development of exports and formation of economic growth of territories.

5. Organizing an indicative assessment by the authorities at the regional level, based on the feedback from the participants of export activities, in order to analyze the effectiveness and feasibility of the use of existing measures in compliance with the principle of transparency.

In order to boost the growth of non-resource-based exports and its share in GDP, it is necessary to implement governmental structural policy to ensure comprehensive system support for exporting enterprises. Various support measures are required, depending on the life cycle of the product, and this should be taken into account when forming state support for exporting enterprises *(Figure)*.

In fact, now there is only support for enterprises at the stage of product promotion on the market (marketing and sales). While export activity consists is not only in selling products abroad, but also in their development and production. Therefore, it seems appropriate to organize support for companies at all stages of implementation of projects [30]. We note that now there is no support at the stage of after-sales maintenance and disposal of goods. Support for exporting enterprises at the stage of product development and production should be provided at the regional level.

Although it is necessary to consider exports in the regions in the aspect of tactical and



strategic control, at present operational management of exports is carried out with a focus on support with elements of fragmented policy; therefore, it is necessary to develop systems for methodological support with the creation od a classification in high-tech exports in order to generate statistics and build forecast models.

In this regard, the main task for the authorities in the export policy should be to establish such conditions under which export could show a business entity its strategic horizons of development in the long and medium term, rather than provide only short-term benefits. This requires the system approach, including the above-described range of solutions aimed at fostering a diversified export portfolio, which represents the set of the nomenclature of goods of a particular enterprise and, in particular, the total number of registered business entities engaged in manufacturing (production) in the region and in the supply of products to foreign markets. At the same time, the main thing in the approach we propose is to reduce risks by creating package conditions at all stages of the export cycle and building new infrastructure elements in the form of a coordination center and a committee for the development of export expansion. The expansion of the range of supplies and the development of high-tech exports will not only increase the revenues of the budgets of all levels, but also, mainly, will provide long-term investments in the economy of the country and its regions [31; 32].

We would like to point out once again that the supplies of high-tech products of the non-resource-based export segment can become the main driver of the economy of Russian regions, which will contribute to the production of high-quality competitive products that are in demand in the world markets.

To sum up, we would like to point out that this study is comprehensive. Its results contribute to the development of metho-dological aspects, the assessment of the

real share of non-resource-based exports of Russian regions in the total volume of products shipped abroad, and the development of tools and measures to enhance the growth of non-resource-based exports at the federal and regional level.

The further stages of our study will be to identify groups of competitive factors that have a direct impact on export activities in non-resource-based export in regions in the context of providing economic growth; another direction of our study is to substantiate and develop a mechanism for managing non-resource-based export of regions by promoting the development of non-resource-based exports in order to ensure economic growth.

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Principles of Deploying the Objects of Social and Transport Infrastructure in Regional Strategic Planning Documents

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Abstract. In Russia, the development of strategic socio-economic development programs is regulated by Federal Law 172-FZ of June 28, 2014, according to which long-term development ideas should be displayed on the schemes of territorial development. The main problem in the development of territorial planning schemes concerns the accuracy of forecasting the number of population living in municipal entities in relation to the time horizon determined by strategic plans. Practical application of the correlation between the population and the number of jobs created or saved can translate the amount of financial resources provided for the implementation of long-term development programs into quantitative indicators necessary to calculate the number and capacity of social and transport infrastructure facilities. The goal of our research is to prove the existence of statistical dependence of the number of population on the number of jobs in the regional and municipal economy. To achieve the goal we determined the statistical correlation between the population of Russia's regions and the number of jobs in the economy (employed population). We propose to discuss the findings of the study in the form of a debate on the principles of formation of territorial development plans. Without denying the importance of self-identification of the population, we substantiate the possibility to receive the means to satisfy human needs as a fundamental criterion for choosing the place of residence. Since employment is the most common way of obtaining such means, the indicator "number of jobs in the economy of the territorial entity" is justified as the main quantitative indicator that can accumulate the most common strategic ideas of socio-economic

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development. Based on the requirements of existing legislation, we conclude that it is advisable to apply the ratio of the number of jobs to the number of population as 1 to 2. We conclude that this approach to forecasting the number of population provides the most reliable system of substantiation when making decisions about deploying the objects of regional significance in the scheme of territorial development of constituent entities of the Russian Federation. The development of territorial planning schemes as part of strategic planning documents ensures concretization of long-term ideas of socio-economic development that are worked out and approved by local authorities.

Key words: strategic planning, population, jobs, social infrastructure, objects of regional significance, territory of settlements, socio-economic development, territorial planning scheme.

Introduction

The law on strategic planning in Russia[1] stipulates the necessity to develop a strategy for its spatial development (Article 20, Federal Law 172-FZ). At the regional level, spatial development is determined by the territorial development scheme of the RF subject (Article 38, 172-FZ). Requirements to the regional scheme of territorial development are set out in Chapter 3, Articles 9–28 of the Urban Development Code of the Russian Federation[2]. Schemes of territorial planning of Russian Federation subjects, according to Item 3, Article 14 of Federal Law 190-FZ, contain the following information:

"1) location of transport (railway, water, air transport), highways of regional or inter-municipal importance;

2) prevention of emergency situations of inter-municipal and regional character, natural disasters, epidemics and elimination of their consequences;

3) education;

4) healthcare;

5) physical education and sports;

6) other areas in accordance with the powers of constituent entities of the Russian Federation".

Based on the above provisions of the current legislation, the government, in accordance with the Constitution (Articles 39–43) assumes the obligations concerning the establishment, maintenance and development of social infrastructure in settlements. It goes without saying that making decisions on the placement of regional social infrastructure depends on the number of residents in the settlement (in this case the settlement can be a large metropolis, a rural settlement, etc.). The number and capacity of social infrastructure facilities are established in accordance with current design standards[3] and depend on the number of residents of urban and rural settlements. New social infrastructure facilities are constructed and existing financed at the expense of budgets of all levels, and the amount of funding depends on the number of residents[4]. Unfortunately the above-mentioned normative documents do not contain recommendations for determining the number of residents in settlements. The search for other related documents in the available reference and legal systems did not give a positive result.

[1] On strategic planning in the Russian Federation: Federal Law 172 of June 28, 2014 (as amended July 3, 2016)

[2] Urban Development Code of the Russian Federation: Federal Law 190 of December 29, 2004 (as amended July 29, 2017)

[3] Items 4.4, 11.2, Appendix D SP 42.13330.2016. Set of rules. Urban development. Planning and development of urban and rural settlements. Updated version of SNiP 2.07.01-89: approved by the Order of the Ministry of Construction of Russia dated December 30, 2016 No. 1034/pr.

[4] On the requirements to the allocation of medical organizations of the state health care system proceeding from the needs of population: Order of the Ministry of Health of the Russian Federation No. 132n dated February 27, 2016.

In this regard, the search for quantitative indicators that describe regional socio-economic development strategies and can ensure the reliability of the population forecast are among topical problems of strategic planning. Forecasting changes in the number of population in the regions and municipal entities remains a particularly acute issue. It is difficult to overestimate the importance of the reliability and accuracy of the forecast showing changes in the number of residents resulting from the implementation of long-term socio-economic development programs and projects.

Having studied periodicals containing scientific research findings that consider the reasons for the change in the number of rural and urban settlements, we can draw the following conclusions.

Some foreign researchers consider that fluctuation of the number of residents is a result of territorial development, which, in turn, is considered as a function of business development (entrepreneurship):

– depending on the volume of "export" revenue, that is, the volume of export of goods and services outside the territory in question[5];

– depending on one center where economic activity is concentrated (modernization of J. von Thünen's theory[6]), which is a condition for achieving economic balance in a situation when the number of residents is small[7], and in the case of joint consideration with A. Lösch's model[8], it is possible to assess socio- economic implications of population growth[9];

– depending on the production capacity of industrial enterprises involved in the global technology chain of mass production goods[10];

– depending on the value of transactional (primarily transportation) costs[11].

– Others consider the number of residents to be a function that depends on the efficiency of infrastructure:

– providing diversification of the economy[12];

– promoting self-employment of households[13];

– reducing the gap between rural and urban settlements[14];

– contributing to the growth of the efficiency of commodity exchange[15].

In our country, the change in the number of urban and rural population is multidirectional

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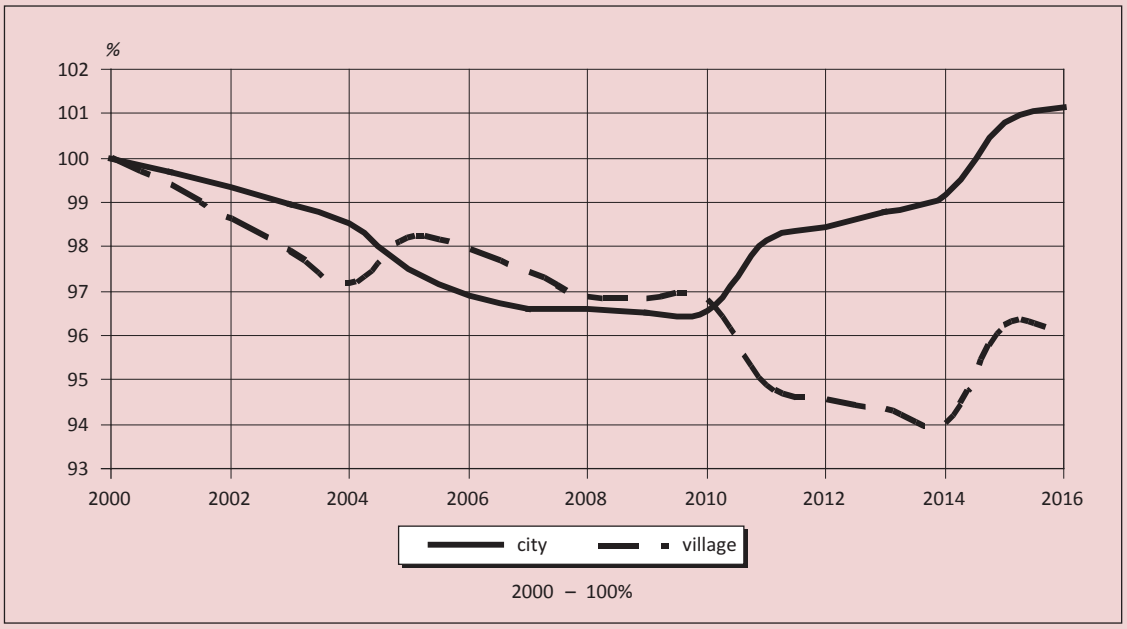
Figure 1. Dynamics of the number of urban and rural residents in the Russian Federation in 2000–2016



Source: Russian statistical yearbook. 2016. P. 69, Tab. 4.2: statistics collection. Rosstat. Moscow, 2016. 725 p.

(Fig. 1). Due to a higher rate of rural population reduction (the dotted line in the figure) Russian scientists study in more detail the issues of socio-economic development in rural areas. On the part of public administration authorities, the change in the dynamics of rural population is associated with the implementation of the relevant federal target[16] program[17] and the strategy for socio-economic development[18].

The integrated approach is of critical importance in promoting sustainable and dynamic development of Russian villages[19]. Russian researchers point out the following major efforts that can promote positive dynamics of socio-economic development:

– "preserving" labor potential[20];

– strengthening demographic capacity with the help of economic prospects, including those related to the revival and creation of transport[21] corridors[22];

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– creating a favorable investment climate with the aim of establishing new and preserving current enterprises[23];

– creating advanced development territories (zones)[24];

– creating conditions for promoting agricultural production competitiveness[25].

According to a brief review of foreign and Russian publications, most researchers believe that the number of population depends on the effectiveness of economic activity. Effective economic activity is provided by labor resources, therefore, it is logical to assume that the number of population in settlements depends on the number of jobs distributed in the territory of urban or rural settlements. Thus, the goal of our research is to prove the existence of a statistical dependence of the number of population on the number of jobs in the economy. To achieve this goal, we performed a statistical analysis of the dependence of the population in the regions of Russia on the number of jobs.

Research methods

The main source of information on the population in Russia's regions is official statistics published by the relevant state agency (Federal State Statistics Service – Rosstat). It is logical to assume that such information can be used most effectively in research methods like mathematical statistics including systematization and identification of statistical regularities in order to build probability models of mass random phenomena[26]. Since the subject of our study covers socio-economic processes (population and jobs) that belong to economic categories, it will not be a mistake to narrow down the tools we use to the tools traditionally used by econometrics. We believe that the construction of pair regression will make it possible to avoid the discussion initiated by J. Keynes[27] and I. Tinbergen[28] concerning the effectiveness of correlation analysis.

Results

The change in the number of population and jobs in Russia's regions was executed in relation to the maximum value. Moscow has the maximum values. *Table 1* shows regional changes in the number of population relative to the capital of the Russian Federation.

The above distribution of changes in the number of population in Russia's regions has some features that are worth paying attention to:

– first, the maximum value of the sample is constant and equal to the maximum population in the region (in the above samples it is Moscow);

– second, the minimum value of the sample reduces progressively relative to the highest value (Tab. 1, columns 1, 4, 7);

– third, the number of regions in the first interval is steadily increasing (Tab. 1, columns 3, 6, 9).

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Table 1. Distribution of the number of population in Russia's regions in relation to the number of population in Moscow

2005			2010			2015		
Interval, %		Number, units	Interval, %		Number, units	Interval, %		Number, units
1	2	3	4	5	6	7	8	9
0.47	12.91	45	0.43	12.88	49	0.40	12.85	52
12.91	25.35	20	12.88	25.32	18	12.85	25.30	15
25.35	37.79	8	25.32	37.77	8	25.30	37.75	8
37.79	50.23	4	37.77	50.21	2	37.75	50.20	2
50.23	62.67	1	50.21	62.66	1	50.20	62.64	1
62.67	75.11	0	62.66	75.10	0	62.64	75.09	0
75.11	87.55	0	75.10	87.55	0	75.09	87.54	0
87.55	100.00	1	87.55	100.00	1	87.54	100.00	1

Source: Regions of Russia. Socio-Economic Indicators. 2016: data from Tab. 2.1, pp. 37, 38.: statistics collection. Rosstat. Moscow, 2016. 1326 p.

The distribution of the number of jobs *(Tab. 2)* observed by the state statistics of the Russian Federation is very similar to the distribution of population (see Tab. 1).

Having compared the values given in Tables 1 and 2 we see that the dynamics of changes in the minimum values of the statistical samples under consideration (columns 1, 4, 7, in Tab. 1 and columns 1, 4, 7 in Tab. 2) is similar. The number of the interval in which major changes take place should be considered as a notable difference. If the distribution of regions by the number of population shows major changes in the first interval of values (columns 3, 6, 9 in Tab. 1), then the distribution of Russian Federation subjects by the number of jobs (employed population) shows major changes in the second and third intervals (columns 3, 6, 9 in Tab. 2). *Figure 2* provides graphical representation of the data from Tables 1 and 2.

It is well-known that the number of people living in a territory depends on the number of jobs available there. However, we did not find any published research findings that would assess the degree of such dependence. It is common knowledge that the pace of demographic changes is slow; for example, in relation to the duration of human life. Taking into account the above statements, we can say that the increase in the extent of impact of the number of jobs on the number of population in RF subjects by 2% over the past 15 years (line 1 in Tab. 3) can be estimated as significant. This conclusion is based on the results of a standard statistical study of the two arrays of values (population in RF subjects and the number of employees in RF subjects); the main results of quantitative values processing are given in *Tab. 3.*

Statistical significance of the dependence of the number of population on the number of employees in RF subjects is confirmed by the test according to the standard Student's and Fisher's criteria. Thus, we can speak with confidence about the existence of a statistical relationship between the number of population and the number of jobs in RF subjects. This important statement is necessary when designing long-term (strategic) directions of socio-economic development; it can also be used in the assessment of implications (both social and economic) of investment programs and projects.

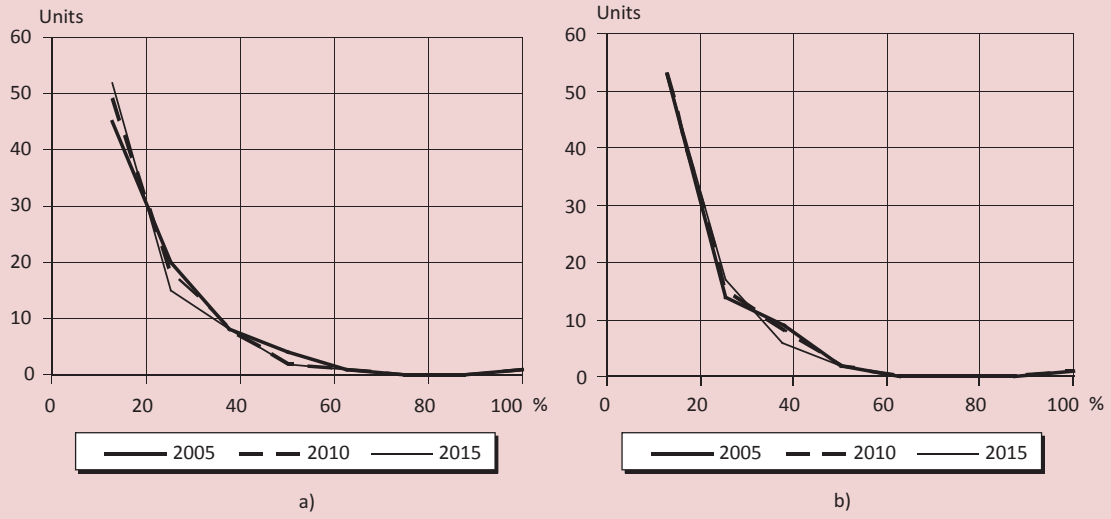
It should be noted that our attempt to study the dynamics of changes in the dependence of the number of population on the number of jobs for the period from 2000 to 2015 does not

Table 2. Distribution of the number of jobs in the regions of the Russian Federation relative to the number of jobs in Moscow

2005			2010			2015		
Interval, %		Number, units	Interval, %		Number, units	Interval, %		Number, units
1	2	3	4	5	6	7	8	9
0.62	13.04	53	0.55	12.98	53	0.44	12.89	53
13.04	25.46	14	12.98	25.41	15	12.89	25.33	17
25.46	37.88	9	25.41	37.84	8	25.33	37.77	6
37.88	50.30	2	37.84	50.27	2	37.77	50.22	2
50.30	62.72	0	50.27	62.70	0	50.22	62.66	0
62.72	75.15	0	62.70	75.13	0	62.66	75.10	0
75.15	87.57	0	75.13	87.56	0	75.10	87.55	0
87.57	100.00	1	87.56	100.00	1	87.55	100.00	1

Source: Regions of Russia. Socio-Economic Indicators. 2016: data from Tab. 3.4, pp. 108, 109.: statistics collection. Rosstat. Moscow, 2016. 1326 p.

Figure 2. Distribution of Russian Federation subjects relative to the indicators of Moscow: a) by the number of population; b) by the number of jobs (the number of employed population)



Source: Tables 1 and 2 of the present paper.

Table 3. Statistical characteristics of the results of mathematical processing of statistical values describing the dependence of the number of population in RF regions on the number of employed population (pair regression)

Indicator	Year		
	2005	2010	2015
Degree of influence (slope of the line to the abscissa axis), k	1.920	1.926	1.953
Correlation coefficient, *r*	0.986	0.987	0.990
Mean square deviation, R^2	0.972	0.975	0.979

Source: our own compilation according to the results of the study of pair correlation of the arrays of values given in Tab. 2.1 on pp. 37, 38, in Tab. 3.4 on pp. 108, 109 in the statistics collection *Regions of Russia. Socio-Economic Indicators. 2016*. Rosstat. Moscow, 2016. 1326 p.

allow us to speak about the existence of a significant dependence. For example, correlation coefficient was r = 0.33 for the values describing the change in the number of population in relation to the number of people employed in the economy for the period from 2000 to 2015. Similar studies carried out for each RF subject show a significant spread of values of the correlation coefficient and in the negative range of values, as well. Having studied annual population distribution and the number of workers in Russia's regions made we obtained mathematical calculations that meet the requirements for statistical significance (i.e. tested on Student's and Fisher's criteria).

The findings of the study indicate that no contradictions have been found both from the aspect of the logic of functioning of the socio-economic system and from the aspect of formalization of such logic into statistical dependence. On the basis of this, it seems quite convincing to conclude that when designing long-term programs for development of regional economy it is advisable to proceed from the fact that for each job there are at least two residents. This proof is of particular importance when it is necessary to work out territorial planning schemes relating to an integral part of the system of documents of regional and municipal strategic planning.

Our desire to build a system of justification for a similar conclusion in relation to rural areas has not yet been successful. Main reasons for this failure lie in the difficulty of defining the employed population living in rural areas. For example, if the number of people employed in agriculture is registered by state statistics bodies, then it is not yet possible to divide jobs into urban and rural ones in trade, education, health care, and transport. In addition, according to statistics agencies, urban population comprises not only the residents of urban districts, but also those of urban settlements. At the same time, the infrastructure of urban settlements does not always correspond to even a minimum level of that in urban districts. At the same time, quantitative assessment of the impact of the number of jobs on the number of population in RF regions is unlikely to be lower in rural areas. This assumption is based on the dynamics of changes in the number of urban and rural population in the Russian Federation (see Fig. 1).

Discussion

The fact that territorial development schemes are now included in regional strategic planning documents specifies the provisions of long-term socio-economic development programs to include objects of regional importance. Due to the fact that the federal legislation has no clear regulations concerning the list of objects of regional importance, each RF constituent entity has its own regulatory framework, reflecting the view of its local government. In addition, territorial development schemes should help overcome "mismatch between socio-economic and spatial components of regional planning"[29]. We agree with the fact that socio-economic and territorial development programs in most regions exist independently of each other[30].

[29] Yushkova N.G. Improvement of tool support of the spatial approach to regional planning: problems, specifics, trends. *Ekonomicheskie i sotsial'nye peremeny, fakty, tendentsii, prognoz=Economic and Social Changes, Facts, Trends, Forecast*, 2014, no. 6, pp. 225-242.

[30] Yushkova N.G. Strategic directions in planning spatial development of regional systems and imperatives of state administration. *Region: ekonomika i sotsiologiya=Region: Economics and Sociology*, 2014, no. 3, pp. 94-112.;

Yushkova N.G. Improvement of tool support of the spatial approach to regional planning: problems, specifics, trends. *Ekonomicheskie i sotsial'nye peremeny, fakty, tendentsii, prognoz=Economic and Social Changes, Facts, Trends, Forecast*, 2014, no. 6, pp. 225-242. DOI: 10.15838/esc/2014.6.36.17; Yushkova N.G. Development of space systems and strategic planning: adapting to the imperatives of the features of the innovation economy. *Vestnik UrFU=Herald of the Ural Federal University*, 2014, no. 4, pp. 72-86.

Our practical experience of participation in the work on the development of regional schemes of territorial planning shows that creative teams that design such documents should include representatives of a number of fundamental sciences: urban planners, geographers, economists, environmentalists, EMERCOM specialists, road workers, and specialists in the construction and operation of modern urban engineering systems. It is important to note that "the need to consider the strategy of socio-economic development in the territorial aspect" for many years was emphasized by A.G. Granberg [31]. However, the fact that the necessity of territorial planning schemes is stipulated by federal legislation does not guarantee that socio-economic development strategies will be designed in conjunction with the schemes of territorial location of objects of regional importance. There are many reasons for this. Among the most significant ones is the lack of a common point of view on the processes taking place in the territory of RF subjects [32]. Let us provide some debatable viewpoints as examples.

Periodicals often contain works on the study of regional identity. We agree with the opinion of their authors concerning the importance of people's regional identity. We consider it an interesting proposal to construct "mental maps describing people's ideas of their surrounding area" [33]. However, designing such maps as alternatives to physical, geographical and economic ones is unlikely to contribute to the preservation and even more so to the growth of the number of population. We can prove it by the results of the above studies: they show that the place of residence of people in modern society is often determined by the source of their income (work), rather than by how they identify themselves. Since jobs are a product of investment activity and are associated with the location of production facilities, it should be concluded that the most populated areas are determined by the owners of capital rather than by the majority of people.

Some authors believe that the landscape of a territory primarily determines its attractiveness as a place of residence for people [34]. We cannot say for certain that such a point is not true. During a long period of time, indeed, settlements emerged not only in economically more profitable areas (near transport communications), but also in those with convenient landscapes, providing the opportunity to produce a sufficient amount of food. The ever-deepening division of labor against the background of high rates of scientific and technological progress has led to the fact that a person does not need to participate in the production of food. Consequently, the choice of residence is often determined by the amount of income received for labor. It would be incorrect to say that the price of labor in a capitalist society is fair.

Investors' interest in funding the projects that create production facilities and, as a result,

Glaz'ev S.Yu., Ivanter V.V., Makarov V.L., Nekipelov A.D., Tatarkin A.I., Grinberg R.S., Fetisov G.G., Tsvetkov V.A., Batchikov S.A., Ershov M.V., Mityaev D.A., Petrov Yu.A. Development Strategy of the Russian Economy. *Ekonomicheskaya nauka sovremennoi Rossii=Economic Science in Modern Russia,* 2011, no. 3, pp. 7-31.

[31] Granberg A.G. Strategy for territorial social and economic development of Russia from idea to realization. *Voprosy ekonomiki=Economic Issues,* 2011, no. 9, pp. 34-40.

[32] Aganbegyan A.G., Mikheeva N.N., Fetisov G.G. Modernizing the real sector of the economy: spatial aspect. *Region: ekonomika i sotsiologiya= Region: Economics and Sociology,* 2012, no. 4, p. 7-44.

[33] Sharygin M.D. Public geography in Russia: a thorny path of development. *Geograficheskii vestnik=Vestnik of Geography*, 2017, no. 2, pp. 17-25.

[34] Pankov S.V. Rural settlements in the structure of boundary contrast. *Sotsial'no-ekonomicheskaya geografiya. Vestnik rossiiskikh geografov-obshchestvovedov=Socio-Economic Geography. Bulletin of Russian Social Geographers,* 2017, no. 1, pp. 137-148.

provide the territory with jobs (employment) is associated with the desire to make profit. If we consider profit as part of the value added created by employees, then the conflict between labor and capital is inevitable[35]. The level of such a conflict is usually measured by the indicator of "social tension". Government institutions are working to reduce such tension by limiting the desire for profit and by ensuring the social security of employees.

It is important to emphasize the role of public administration authorities in determining the territories that have the most favorable conditions for the development of entrepreneurship (location of production facilities). These conditions include the availability of all kinds of resources necessary for the production of goods or services and for the sales of finished products. In this regard, the location is not always chosen according to the criteria of suitable landscape. Often, the reduction of non-production costs is considered one of the main criteria in this regard. At the same time, the impact of production capacities on population growth is difficult to underestimate (the opposite is also true: the reduction in production capacities (jobs) leads to a reduction in the number of residents).

We see the coincidence of positions in the proposals related to "the need to shift to the level of territorial socio-economic systems of different ranks and types"[36]. This approach reflects the current processes of "pulling" the population to major settlements. Such centers of attraction ("pulling" centers) have features such as the availability of jobs in the economy, cost of labor, and quality of living environment. The formation of territorial socio-economic systems in Russia's rural areas is considered particularly relevant. We think that the essence of such systems is to unite several settlements on the basis of equal partnership of several municipal entities. The difference from the modern unification of settlements in municipal entities consists in the fact that each settlement within the agglomeration is a subject of law and takes an equal part in addressing issues of local importance. Such an association may be called a rural agglomeration.

The Russian legislation provides for various forms of cooperation for such an association: on the basis of multilateral agreements on joint activities, the creation of one legal entity or the delegation of authority to a single management body (execution of decisions). In agreement with the point of view on the impact of rural lifestyle on the quality of human capital[37] it is possible to identify areas of rural lifestyle at a new level of comfort in the proposed rural agglomeration. Under the level of comfort we mean the provision of housing with water supply, sanitation, and energy resources in the amount sufficient for heating in the winter time. Rural way of life includes owning a house and a cultivated land plot with the possibility to engage in animal husbandry in the amount determined by the household.

Realizing the inevitability of the convergence of the quality of urban and rural infrastructure, it is important to provide the rural agglomeration with the areas where urbanization degree is higher and is chara-

[35] Marx K. *Capital*. Moscow: AST, 2001. Vol. 1. 1697 p. P. 201.

[36] Baklanov P.Ya. Spatial development of a region: basic principles and approache to analysis and estimation. Sotsial'no-ekonomicheskaya geografiya. *Vestnik rossiiskikh geografov-obshchestvovedov=Socio-Economic Geography. Bulletin of Russian Social Geographers*, 2017, no. 1, pp. 4-12.

[37] Patsiorkovskii V.V. Sociology of resettlement as a special sociological theory. *Sotsiologicheskie issledovaniya= Sociological Studies*, 2012, no. 4, pp. 25-34.

cterized by low-rise multi-dwelling development. In this case, the demand for housing of any kind can be satisfied, and the number (density) of the population will meet the existing regulatory requirements for the provision of public services in the field of education and health care in the amount guaranteed by the Constitution of the Russian Federation. It is important to emphasize that housing construction is traditionally considered to be a locomotive in the development of territorial economy[38].

Conclusions

It is for a reason that we have provided logical and mathematical proof in relation to the conclusion that seems obvious at first glance. Our participation in the work on the formation and justification of regional schemes of territorial planning shows that not all representatives of the academia and public administration are supporters of the thesis about, probably, a critical role of the indicator "number of jobs in the economy". Ongoing studies of the impact of the number of jobs suggest that the impact of jobs on the number of residents depends on the type of economic activity. Even today we can say that the extent of such influence largely depends on other factors rather than on the amount of labor spent on the production of a single volume of production.

If we use the number of jobs created or maintained in the territorial economy as one of the main indicators for the formation of a regional socio-economic development strategy, then the formalization of the ideas of long-term development in the schemes of territorial development becomes reasonable and quite specific. The application of the indicator "number of jobs" does not exclude the use of indicators describing the achievement of strategic objectives for the growth of the quality of population in regions and nationwide. However, the change in the employment potential of the population in the joint and integrated socio-economic and territorial planning can provide the concentration of efforts of public administration and local self-government to achieve specific results, which can lead to synergistic effects that can be manifested in human development, as well.

The practical application of the dependence of the number of residents on the number of jobs in the economy of a region or municipality will help ensure the accuracy of socio-economic development forecasts and plan the placement of objects of regional importance in areas that can ensure high efficiency of capital investments from the budget. In this case the number of jobs can be determined depending on the amount of investment in fixed capital, taking into account specific features of each type of economic activity.

Forecasting the number of people living in the municipality depending on the number of jobs, for example, in the ratio of 2:1, respectively, greatly simplifies the assessment of the need for socio-economic infrastructure objects. Such objects, as a rule, include education, health care, security, and transport communications facilities. All of these objects in most cases belong to the objects of regional importance. Thus, the scheme of territorial planning is transformed into a document that contains a map which registers strategic development ideas adopted by local authorities in accordance with the current Russian legislation.

[38] Oleinik P.P., Kuzmina T.K., Zenov V. Intensification of the investment process of construction. *MATEC Web of Conferences*, 2016, vol. 86, pp. 05019; Lapidus A.A. Integral potential effectiveness of organizational and technological and managerial decisions of building object. *Applied Mechanics and Materials*, 2014, vol. 584–586, pp. 2230-2232.

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Regional System of Economic and Social Factors in the Formation of Innovation Development Resources

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Abstract. Accelerated reorientation of the Russian economy on innovation development and the implementation of new industrialization and import substitution tasks are major strategic problems for Russia; finding the solutions to these problems will make it possible to overcome the lag in socio-economic development and eliminate the consequences of the economic crisis and sanctions of Western countries. Therefore, the goal of the study is to identify the key resource indicators that determine the level of use of innovation potential of territorial systems and to build on this basis our own approach in order to analyze and adjust modernization development in regions. Research methods are based on the use of economic and mathematical methods, factor and correlation analysis. We identify factors that have the greatest impact on innovation indicators. We assess the degree of their impact on innovation development. The list of factors we have identified is used to assess the degree of differentiation of regions within the Central Federal District according to the level of resource provision of innovations. The original data for the analysis are normalized, which eliminates the problem of different units of measurement. On the basis of the results obtained, the regions of the Central Federal District are ranked by the groups of key factors influencing the innovation indicators. Using the scatterplots constructed, we identify leader territories and the regions in which the resource provision of high-tech development is at an insufficient level. The technique we propose to use on the updated basis provides an opportunity to assess the efforts of regional administrations to address the problems of economic modernization and import substitution. The assessments show that the resource provision of innovation developments requires state support and regulation, and at the federal level, too. The algorithm we propose has significant scientific prospects from the standpoint of expanding the structure of factors influencing the formation of conditions for the knowledge economy in constituent entities of the Russian Federation. The tools we have developed and the factor models we have highlighted can be used by regional authorities for diagnostics, forecasting and development of promising programs to attract investments that promote innovation development of territories.

Key words: innovation development, resource provision, region, analysis of factors.

Introduction

The necessity to deal with the implications of the global economic crisis and ensure the conditions for neutralizing the impact of the sanctions imposed by Western countries brings to the fore the task of organizing import substitution and, as a consequence, re-industrialization in key sectors.

In this regard, socio-economic policy in Russia and its regions is focusing on improving the efficiency of economic activity and accelerating the rate of its development with the help of innovation, cutting-edge scientific achievements, advanced technology and equipment. Its goal is to boost regional systems that form resource-based conditions of innovation development to ensure effective impact of activities of organizations, promote production and productivity growth, and improve the standard of living and quality of life.

Thus, the formation of the resource potential of the regional system becomes one of the most important aspects for its functioning. Meanwhile, it is necessary to take into account other factors and conditions in the formation of socio-economic and innovation space in the territories.

The goal of the study is to identify key socio-economic and resource indicators that determine the level of use of innovation

potential of territorial systems and to design our own approach for the purposes of analyzing and adjusting modernization development in regions.

The present work has the following objectives:

1) to study a methodological scientific base that reveals different directions of resource support of innovation development in regions;

2) to substantiate our own methodological approach to the monitoring of indicators and to the selection of key factors in regional resource potential that influence innovation development on a quantitative basis;

3) to interpret the results of the analysis and to identify possible directions of their use in the work of regional and federal authorities.

Domestic and foreign practice of resource support of innovation development of regions

The works of Russian and foreign scientists have formed a significant methodological foundation that makes it possible to analyze objectively the level of development of socio-economic and innovation potential in regions.

It should be noted that the prospects and processes of economic development in Russia and in its regions are considered and analyzed by many Russian scientists.

These include L.S. Blyakhman, S.Yu. Glazyev, R.S. Grinberg, V.V. Ivanov, N.I. Ivanova, D.E. Sorokin, A.G. Fonotov [1–8]. Western researchers, such as M. Armstrong, G. Becker, R. Beatty, J. van Dane, G. Mensch, R. Nelson, M. Porter, J. Silverberg, L. Turrow, R. Forster, R. Holt, J. Schumpeter [9–19] studied the issues of innovation development.

However, it should be emphasized that the above mentioned authors address the problems of formation, development and implementation of innovation on a national and to a lesser extent – regional scale. The issues of providing resources for innovation developments are recognized as an important factor in innovation development, but there are not many individual studies on these problems. In the Russian economic science and in dissertations, these aspects have also received insufficient attention in recent years.

We can provide a number of examples of dissertations on the issues of providing resources for innovation developments: Doc. Sci. dissertations of S.V. Yurin (Moscow, 2010) and O.S. Chechina (Saint Petersburg, 2017); Cand. Sci. dissertations of Yu.V. Markina (Chelyabinsk, 2012), S.S. Kalashnikova (Voronezh, 2013), and P.A. Sukhanova (Perm, 2015)[1].

Analyzing the publications of Russian and foreign authors on the issues of resource support of innovation activity, we can distinguish some of their features.

For example, we agree with V.V. Kislitsina and colleagues on the fact that the functioning of a regional system should provide for positive dynamics of formation of its social, resource, economic and environmental potentials [20, p. 369]. S.N. Kukushkin emphasizes the importance of analyzing economic performance at different levels of economic systems management in order to identify the scale and structure of innovation development, while at the same time paying attention to the critical issue of their limited use and insufficient amount of resources available for these processes, lack of financial sources, and high economic risk [21, p. 109; 115].

[1] Sergei V. Yurin. Resource support of innovative development in Russia: Doc. Sci. (Econ.) dissertation. Moscow, 2010.; Oksana S. Chechina. Human capital management for innovative development of the region: Doc. Sci. (Econ.) dissertation. St. Petersburg, 2017.; Yulia V. Markina. Improvement of resource support for innovative development of the region's economy. Chelyabinsk, 2012.; Svetlana S. Kalashnikova. A system for managing the resource provision for innovative development of the region. Voronezh, 2013.; Polina A. Sukhanova. Indicative assessment of the regional innovation system taking into account the cluster approach. Perm, 2015.

Other authors, in particular, E.A. Yakovleva and colleagues, O.Yu. Patrikeeva and S.V. Kryukov, without refuting the above arguments, point out that when financial and material resources for innovation production are insufficient, then the role of the government rapidly becomes more important through the appropriate tax and depreciation policy, allocation of loans and subsidies, creation of complex funds, and personnel training. And we can not but agree with this. At the same time, it is emphasized that socio-economic development of regions depends largely on the performance of regional authorities. The activities of the authorities to attract and use all types of resources, including investment, in their territory contribute to the expansion of the use of advanced technologies and modern equipment, forming the growth of production, tax revenues and improving the quality of life [22, 23]. We believe that the role of regional authorities should continue to grow from the standpoint of strengthening innovation development of territories.

However, assessing the importance of state support to innovation development, V.V. Belsky points out negative implications of this phenomenon for the regions, as the majority of state-owned enterprises engaged in science and technology are focused on addressing issues of the federal level and are separated from actual needs of the regions and their social and economic environment; that is why local authorities should understand the rationality of location of productive forces [24, p. 170].

In this regard, a group of scientists including O.A. Khokhlova, A.A. Alkhazov, V.A. Stolbov, A.R. Bakhtisin and colleagues emphasize the fact that the region as the owner and manager of local resources is interested in satisfying the needs of the territory; the criteria of these needs are multiplication of regional wealth, improvement of environmental situation, creation of new jobs, promotion of its own competitiveness, development of human capital, achievement of the balance of traditional and innovative prerequisites for economic development. Based on this, it is reasonably concluded that the set of promising opportunities, both being implemented and being developed, for productive use of resources for innovative development of the territory is formed by the resource potential of the region [25–28].

In this regard, A.N. Shvetsov clarifies that the tasks of ensuring innovation development and creating conditions for economic growth also have the territorial dimension, which is very important for Russia. The need for innovative incentives is widespread and enormous, but only a few selected regions can actually use opportunities offered at the federal level. It seems that this situation can have negative consequences, since co-financing on the part of the region is a mandatory requirement for the allocation of federal funds for innovative projects; and regions in most cases do not have financial resources.

It turns out that funds are not allocated to those who need them most, but to those who can co-finance them; this situation enhances interregional and intraregional disparities [29, p. 41].

O.S. Sukharev, sharing these concerns, adds another important problem hampering the development of innovation orientation of the economy; this problem is insufficient orientation of Russia's financial and banking system toward the needs of the real sector of economy and toward strengthening its capacity to create innovation and commercialization [30, p. 135]. We believe that this is one of the most important obstacles to resource support of innovation progress.

Similar proposals are expressed by E.B. Lenchuk who argues that post-industrial economy is not the one in which there is no production, but the one in which the real sector is dominated by intellectual labor and high technology based on the latest knowledge. At the same time, the transition to a new model of economic growth is associated with addressing the task of "new industrialization", which involves the revival and further development of the real sector of the economy on the most advanced technological basis [31, p. 22].

Having studied the issues concerning the provision of resources to innovative processes and the increasing role of socio-economic systems in this activity, A.V. Gladysheva and her colleagues have found out that, for example, human resources in conjunction with innovation approaches to management form not only competitive advantages, but also conditions for high competitive positions of the regions themselves [32, p. 35]. And human resource management from the standpoint of knowledge economy or cognitive economy formation, according to E.I. Kudryavtseva, together with cognitive management technologies which formed the methodology of human capital management, opens the possibility of combining the competences of employees in the direction of the core competence of an organization [33, p. 63].

This line of reasoning leads us to recognizing the importance of the works of foreign authors such as economists H. de Groot, J. Poot, and M. Smit who analyze the processes of innovation development of regions and provision of these activities with appropriate resources. These scientists believe that active use of innovation resources ensures sustainability in the formation and development of the regional economic system [34].

E. Zimmermann believes that resources allocated to the improvement of innovative potential are a condition that supports the development of this system, which is of particular importance in the appropriate regulation and management [35].

J. Hauser, G. Tellis, and A. Griffin believe that innovations can change their appearance due to the variety of resources used; they can make appropriate modifications to the products in different markets, while replacing the previously existing ones with fundamentally new product offerings [36].

Moreover, according to V. Zemlickiene, innovation development of regions is composed of and depends greatly on how its enterprises use innovation and resources in their practice and get fundamentally new products on the market at their expense, outstripping their competitors and strengthening the capacity of the region [37].

Innovation technologies emerging in the course of ongoing research are a source of production modernization for economic sectors. But they can not always bring the desired result. In this regard, according to T. Bresnahan and M. Trajtenberg, great opportunities are provided by the so-called general purpose technologies. If they participate in the processes of regular upgrading and modernization with the necessary improvements, they are able to use other technologies, improving them [38].

H. Godoe believes that the development of technological innovation depends largely on the provision of financial and resource support to research, as well as on the demand from the market. Many technological innovations are absolutely rational as a result of increasing the dynamics of technological regimes. However, "radical" innovations can be the result of intuition [39].

Thus, the analysis of domestic and foreign practice of resource support of innovative development of regions has shown that regions are not only the owners but also the managers of resources for innovative development, and regions ensure their involvement and rational use, too. The extent to which the region is provided with resources for these purposes determines the degree of innovation in its economy and ultimately economic growth.

Research methodology and substantiation of its choice

In the course of the research we propose to analyze the influence of the aggregate part of the indicators we selected that affect the innovative characteristics, and to determine the status and significance of their impact on the level of innovative development.

In the beginning this analysis will be carried out on the economy of the Russian Federation as a whole; then we determine the degree of resource impact on innovative development of regions within the Central Federal District; after that we rank the regions of the Central Federal District and identify the leading regions from the standpoint of innovative factors. We choose this approach since it will allow us to analyze the state of the resource support in the whole country and compare it with the situation in the federal district and in the region and, thus, to identify the weakest directions of resource support of innovative activity in the regions.

We select 13 indicators for 2010–2015 throughout the Russian Federation in order to determine the regularities in the economy and their impact on the formation of economic, social, technological and other resources that ensure the formation of conditions for innovative development *(Tab. 1)*.

Initially these values are brought in line with comparable prices through the recalculation of the indicators of deflator indices for the economy as a whole. Based on the results obtained, we calculate chain indices, which allow us to compare the calculations made and determine trends in the economy.

Table 1 shows that gross domestic product in comparable prices grew very slowly in 2010–2015: from 1.2% in 2011 to 2% in 2015, the total index of gross regional product experienced even more significant fluctuations: it was negative in 2011 and 2014, it was at the level of 2.4 and 5.9% in 2012 and 2013, and increased by 23.7% in 2015 compared to 2014. With regard to fixed assets in the economy and their annual growth, we note that these indicators also grew very unevenly. For example, fixed assets increased by 11.2% in 2011, by 2.8% in 2012, by 0.7% in 2013, by 2.1% in 2014, and by only 95.8% in 2015 in relation to the previous year. Investments in fixed assets at the beginning of the period grew a little, and their fall was 8.2 and 9%, respectively, in 2014–2015. As for the innovative indicators characterizing the economy, we can say that, for example, the volume of shipped innovative goods experienced a slight increase at the beginning of the period and reached negative values -3.8% and -3.2% by 2014–2015. Expenditures on research and development decreased accordingly and in 2015 amounted to 99.7% from the level of 2014. Expenditures on technological innovation has been growing at an unstable rate, amounting to the same 99.7% in 2015 compared to the previous year. As for the social indicators of government's performance, then their ability to provide resources for innovative development of economic sectors is also experiencing the impact of the crisis and, according to most estimates, either has a very insignificant growth, or is in the negative zone. Thus, it can be noted that in recent years of crisis, the capacity of the Russian economy to provide resources for innovative development has decreased significantly.

Table 1. Major socio-economic indicators for the Russian Federation for 2010–2015 (in comparable prices)

Indicator	2010	2011	2012	2013	2014	2015
GRP, billion RUB	18.9	17.9	18.4	19.5	15.9	19.7
Chain index		0.946	1.024	1.059	0.817	1.237
GDP, billion RUB	38687768	39165036	39483822	40595001	41111454	41928474
Chain index		1.012	1.008	1.028	1.013	1.02
Fixed assets in economy, billion RUB	71787.7	79847.4	82049.8	82603.4	84336.5	80804
Chain index		1.112	1.028	1.007	1.021	0.958
Commissioning of fixed assets, billion RUB	144.4	144.5	148.7	155.3	159.5	160.7
Chain index		100.093	1.029	1.045	1.027	1.008
Investment in fixed assets, billion RUB	9728.9	11788.0	12674.6	12981.3	11780. 8	10721.1
Chain index		1.212	1.075	1.024	0.908	0.91
Volume of shipped innovative goods, billion RUB	14187.5	14760.4	15430.0	15644.6	15042.7	14555.9
Chain index		1.04	1.045	1.014	0.962	0.968
R&D expenditures, billion RUB	811.3	816.5	858.0	872.1	917.0	914.7
Chain index		1.006	1.051	1.016	1.051	0.997
Expenditures on technological innovation, billion RUB	811.3	816.5	858.0	872.1	917.0	914.7
Chain index		1.006	1.051	1.016	1.051	0.997
Average per capita incomes, RUB	18958	20780	23221	25928	27766	30474
Chain index		1.096	1.117	1.117	1.071	1.098
Average annual number of employed people, thousand people	64493	67644	67968	67901	67813	68389
Chain index		1.049	1.005	0.999	0.999	1.008
Average monthly nominal salary of working organizations, RUB	32479.5	31256.6	32656.1	34652.6	35159.6	34030
Chain index		0.962	1.045	1.061	1.015	0.968
Average pensions, RUB	11589.2	10971.7	11083.9	11536.1	11670.4	11986
Chain index		0.947	1.01	1.041	1.012	1.027
Retail trade turnover, million RUB	25596786	25552479	26228835	27550271	28517448	27538371
Chain index		0.998	1.026	1.05	1.035	0.966
Source: our own development based on the Russian Statistics Yearbook, 2016: Statistics Collection. Rosstat. Moscow, 2016. 725 p.						

Results

In order to identify specific features in the development of socio-economic systems of different levels, it seems appropriate to analyze macro-systems of the national, district and regional levels. Taking into account the fact that individual indicators do not directly influence the growth of innovation, and others are actually the final ones, we have made a list of nine statistical indicators *(Tab. 2),* on the basis of which it is possible to assess the structure of resource support of innovative development. We include a set of nine indicators in the analysis, first, due to their explanatory value that allows us to identify the results achieved in the socio-economic space of the country and the amount of resources allocated to territorial development. Second, there are no difficulties in collecting official data on this group of indicators for quite a few periods; this provides an opportunity to form qualitative conclusions both in terms of current efficiency and the dynamics of changes in the selected key parameters.

Research findings of the scientists mentioned above show that successful innovative activity has a positive impact on the overall economic performance of territories.

Table 2. Table of indicators assessing resource impact on innovative development

Investment in fixed assets	X1
Organizations engaged in R&D	X2
Domestic current expenditure on research and development by type of work	X3
Innovative activity of organizations	X4
Expenditures on technological innovation	X5
Volume of innovative goods, works, services	X6
Value of fixed assets	X7
Depreciation of fixed assets	X8
Average annual number of employed people	X9

Table 3. Coefficients of correlation between the factors and the outcome indicator*

Factor	Correlation coefficient to GDP (national level)	Correlation coefficient to GRP (district level)	Correlation coefficient to GRP (regional level)
X1	**0.99**	**0.99**	**0.99**
X2	**-0.68**	**-0.65**	**-0.85**
X3	-0.24	-0.26	-0.31
X4	**0.73**	0.44	0.39
X5	**-0.84**	-0.29	-0.29
X6	**0.95**	**0.91**	**0.91**
X7	**0.99**	**0.99**	**0.99**
X8	0.32	-0.23	0.02
X9	**0.83**	**0.91**	**-0.92**

* Significant factors are highlighted in bold.

Therefore, it is possible to use the value of gross domestic product for the national level and the value of gross regional product for the level of a single region as a general criterion for assessing economic performance. Thus, those resources that correlate with the final indicator of development can be assessed as having an impact on competitiveness and innovation factors.

The level of impact of the factors on the final result can be assessed by calculating the correlation coefficients of the factors specified in Table 2 relative to gross domestic product and gross regional product at the national level, the level of the federal district (Central Federal District) and at the regional level (Vladimir Oblast), respectively. The correlation coefficients we have calculated are presented in *Table 3*.

While analyzing the values obtained we should note that the correlation coefficient values whose modulus is close to one indicate the presence of a strong correlation between the values. Accordingly, at the national level, X3 (domestic current expenditure on research and development by type of work) and X8 (depreciation of fixed assets) should be excluded from the previously defined list of indicators, because the correlation coefficients are less than 0.5 (in modulus), which indicates a weak correlation.

It should be noted that the sets of indicators at the level of the Central Federal District and the Vladimir Oblast are identical, but they differ in composition from that of the national level. At the district and regional levels, indicators X3 (domestic current expenditure on research and development by type of work), X4 (innovative activity of organizations), X5 (expenditures on technological innovation), and X8 (depreciation of fixed assets) should be excluded from the initial set due to their weak correlation with the result indicator.

These conflicting assessments may be due to different levels of management, control and funding of ongoing processes. For example, depreciation of fixed assets and, accordingly, their replacement relates more to the level of a single enterprise (micro level). As well as the issues of working out a policy to increase overall innovation activity among firms belong to the national level and have a weak connection with the value of the resulting indicator at the regional level.

The list of the factors can be divided into three groups:

– organizational factor (X2, X4, X9);

– financial and investment factor (X1, X5, X3);

– production factor (X6, X7, X8).

We have arranged the factors into groups with the help of factor analysis, which allows us to solve two important problems of our study: to describe the object of measurement both comprehensively and in a compact way. With the use of this method it is possible to identify hidden variable factors responsible for the presence of linear statistical correlations between the variables under consideration.

With the help of this analysis we can reduce the number of indicators and prove their socio-economic unity. We have carried out the factor analysis on certain groups of indicators at the national level. The results are presented in *Table 4*.

Thus, each of the formed groups of indicators is a single socio-economic phenomenon; in addition, they describe a certain amount of general variability (the proportion of dispersion due to significant factors): 76% – o rganizational factor, 84% – financial and investment factor, 75% – production factor.

As a result, we have reduced the final list of indicators, and now it is as follows:

– federal level – X1, X2, X4, X5, X6, X7, X9;

– regional level – X1, X2, X6, X7, X9.

Thus, in order to carry out the analysis at the level of individual constituent entities of Russia we should choose the factor model of the district level rather than the model of the national level, because trends in the development of the district coincide with the particular case of the region.

The identified list of factors was used to assess the differentiation of regions within the Central Federal District by the level of resource impact.

The initial data were normalized, which allowed us to solve the problem of the presence of different units of measurement for comparison and analysis of the results.

Normalization was carried out by calculating the ratio of the actual value of the indicator of the i-th region for the year *j* (X_{ij}) to the maximum indicator for this period among the selected subjects (X_{max}) (1):

$$X_{norm} = \frac{X_{ij}}{X_{\max}} \quad (1)$$

Table 5 contains an example of normalized indicators in the context of Russia's constituent entities. The remaining calculated normalized indicators were determined similarly.

In order to identify a single indicator for the block (according to the list given above), we determined a single indicator based on the formula for calculating the geometric mean. The data obtained are shown in *Table 6*.

The analysis has shown that Moscow (#18) and the Moscow oblast (#10) are permanent leaders in all the selected factors for the entire period under consideration; it is due to their

Table 4. Results of the factor analysis

Organization factor		Finance and investment factor		Production factor	
Indicator	Factor coefficient	Indicator	Factor coefficient	Indicator	Factor coefficient
X2	0.85	X1	0.89	X3	0.84
X4	-0.94	X5	0.86	X6	-0.97
X9	-0.82	X8	0.88	X7	-0.94
Prp.Totl	0.76	Prp.Totl	0.84	Prp.Totl	0.75

Table 5. Normalization of the data broken down by regions within the Central Federal District (organizations engaged in research and development)

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgorod Oblast	0,029	0,029	0,027	0,032	0,029	0,021	0,022	0,020	0,021	0,023	0,027
Bryansk Oblast	0,025	0,025	0,024	0,024	0,029	0,023	0,031	0,030	0,029	0,031	0,023
Vladimir Oblast	0,044	0,044	0,041	0,036	0,038	0,033	0,033	0,032	0,030	0,035	0,038
Voronezh Oblast	0,072	0,072	0,083	0,079	0,076	0,077	0,080	0,080	0,077	0,075	0,078
Ivanovo Oblast	0,038	0,038	0,036	0,027	0,027	0,028	0,023	0,028	0,026	0,028	0,028
Kaluga Oblast	0,042	0,042	0,042	0,050	0,052	0,049	0,056	0,056	0,056	0,058	0,054
Kostroma Oblast	0,010	0,010	0,010	0,011	0,008	0,008	0,008	0,008	0,010	0,010	0,011
Kursk Oblast	0,029	0,029	0,024	0,023	0,023	0,020	0,025	0,023	0,022	0,021	0,022
Lipetsk Oblast	0,013	0,013	0,011	0,016	0,014	0,013	0,016	0,014	0,017	0,018	0,033
Moscow Oblast	0,262	0,262	0,310	0,319	0,332	0,343	0,344	0,339	0,323	0,336	0,309
Orel Oblast	0,023	0,023	0,027	0,026	0,019	0,019	0,022	0,021	0,019	0,020	0,023
Ryazan Oblast	0,020	0,020	0,020	0,023	0,024	0,021	0,023	0,024	0,026	0,028	0,032
Smolensk Oblast	0,018	0,018	0,017	0,019	0,020	0,023	0,022	0,021	0,026	0,024	0,035
Tambov Oblast	0,029	0,029	0,028	0,029	0,030	0,029	0,046	0,048	0,037	0,035	0,037
Tver Oblast	0,053	0,053	0,055	0,053	0,043	0,037	0,038	0,039	0,040	0,039	0,044
Tula Oblast	0,028	0,028	0,028	0,030	0,028	0,028	0,029	0,027	0,025	0,028	0,028
Yaroslavl Oblast	0,033	0,033	0,034	0,039	0,043	0,039	0,044	0,045	0,041	0,042	0,053
City of Moscow	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000	1,000

Table 6. Final indicators of resource impact of selected factors on innovative development

	Organizational factor										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgorod Oblast	0.057	0.056	0.053	0.058	0.056	0.048	0.048	0.046	0.047	0.048	0.053
Bryansk Oblast	0.050	0.050	0.048	0.047	0.052	0.045	0.052	0.050	0.049	0.049	0.043
Vladimir Oblast	0.072	0.071	0.067	0.062	0.065	0.060	0.059	0.059	0.056	0.060	0.063
Voronezh Oblast	0.111	0.111	0.117	0.113	0.112	0.112	0.114	0.114	0.111	0.108	0.110
Ivanovo Oblast	0.054	0.054	0.053	0.045	0.045	0.046	0.042	0.046	0.044	0.045	0.045
Kaluga Oblast	0.057	0.057	0.056	0.061	0.063	0.061	0.064	0.065	0.064	0.065	0.063
Kostroma Oblast	0.023	0.023	0.023	0.023	0.019	0.020	0.020	0.020	0.021	0.021	0.022
Kursk Oblast	0.053	0.053	0.047	0.045	0.046	0.042	0.047	0.045	0.043	0.042	0.043
Lipetsk Oblast	0.034	0.033	0.031	0.036	0.035	0.034	0.037	0.034	0.037	0.038	0.052
Moscow Oblast	0.341	0.341	0.372	0.378	0.387	0.393	0.394	0.389	0.381	0.388	0.375
Orel Oblast	0.039	0.039	0.041	0.040	0.034	0.033	0.036	0.036	0.034	0.034	0.036
Ryazan Oblast	0.042	0.041	0.041	0.042	0.043	0.041	0.042	0.043	0.044	0.045	0.048
Smolensk Oblast	0.037	0.037	0.035	0.037	0.039	0.042	0.041	0.040	0.044	0.041	0.050
Tambov Oblast	0.049	0.049	0.047	0.047	0.049	0.048	0.060	0.061	0.053	0.051	0.052
Tver Oblast	0.073	0.072	0.072	0.070	0.064	0.058	0.059	0.059	0.059	0.058	0.061
Tula Oblast	0.059	0.059	0.059	0.060	0.058	0.058	0.058	0.056	0.053	0.056	0.056
Yaroslavl Oblast	0.060	0.059	0.060	0.063	0.067	0.062	0.066	0.066	0.063	0.063	0.070
City of Moscow	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Financial and investment factor										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgorod Oblast	0.077	0.077	0.088	0.108	0.108	0.131	0.147	0.112	0.092	0.078	0.091
Bryansk Oblast	0.019	0.019	0.021	0.027	0.026	0.057	0.056	0.038	0.043	0.043	0.038
Vladimir Oblast	0.038	0.038	0.038	0.049	0.047	0.068	0.070	0.050	0.046	0.048	0.050
Voronezh Oblast	0.063	0.063	0.066	0.084	0.098	0.172	0.181	0.149	0.154	0.156	0.164
Ivanovo Oblast	0.026	0.026	0.025	0.022	0.027	0.041	0.038	0.024	0.024	0.021	0.016
Kaluga Oblast	0.030	0.030	0.031	0.045	0.069	0.102	0.090	0.079	0.069	0.065	0.057
Kostroma Oblast	0.031	0.031	0.020	0.018	0.018	0.021	0.021	0.017	0.016	0.018	0.016
Kursk Oblast	0.039	0.039	0.039	0.043	0.049	0.063	0.068	0.055	0.051	0.048	0.044

End of Table 6

	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Lipetsk Oblast	0.066	0.066	0.076	0.083	0.092	0.139	0.131	0.076	0.072	0.068	0.072
Moscow Oblast	0.397	0.397	0.401	0.517	0.500	0.538	0.525	0.424	0.416	0.418	0.397
Orel Oblast	0.021	0.021	0.022	0.031	0.028	0.029	0.040	0.033	0.031	0.031	0.032
Ryazan Oblast	0.052	0.052	0.044	0.043	0.055	0.055	0.062	0.055	0.053	0.039	0.034
Smolensk Oblast	0.032	0.032	0.027	0.032	0.039	0.067	0.066	0.046	0.040	0.037	0.037
Tambov Oblast	0.032	0.032	0.033	0.040	0.044	0.074	0.080	0.068	0.070	0.072	0.076
Tver Oblast	0.052	0.052	0.041	0.047	0.052	0.113	0.110	0.066	0.057	0.055	0.046
Tula Oblast	0.046	0.046	0.041	0.047	0.058	0.098	0.091	0.069	0.064	0.062	0.066
Yaroslavl Oblast	0.093	0.093	0.063	0.057	0.057	0.099	0.094	0.066	0.061	0.057	0.043
City of Moscow	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000
	Production factor										
	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015
Belgorod Oblast	0.065	0.055	0.109	0.160	0.105	0.074	0.062	0.042	0.035	0.041	0.038
Bryansk Oblast	0.080	0.072	0.073	0.071	0.080	0.038	0.028	0.021	0.014	0.017	0.025
Vladimir Oblast	0.070	0.089	0.065	0.051	0.056	0.043	0.052	0.035	0.028	0.030	0.027
Voronezh Oblast	0.134	0.106	0.137	0.108	0.100	0.096	0.070	0.039	0.029	0.044	0.052
Ivanovo Oblast	0.021	0.026	0.033	0.032	0.030	0.027	0.021	0.005	0.004	0.005	0.005
Kaluga Oblast	0.060	0.062	0.053	0.046	0.055	0.053	0.050	0.031	0.024	0.025	0.022
Kostroma Oblast	0.043	0.026	0.022	0.026	0.032	0.023	0.018	0.010	0.007	0.008	0.006
Kursk Oblast	0.049	0.054	0.041	0.028	0.018	0.019	0.027	0.017	0.017	0.024	0.020
Lipetsk Oblast	0.122	0.099	0.098	0.114	0.181	0.132	0.091	0.054	0.051	0.063	0.052
Moscow Oblast	0.677	0.728	0.717	0.742	0.782	0.589	0.405	0.281	0.269	0.320	0.276
Orel Oblast	0.035	0.035	0.031	0.038	0.029	0.036	0.022	0.005	0.005	0.005	0.004
Ryazan Oblast	0.058	0.041	0.050	0.052	0.071	0.047	0.035	0.017	0.015	0.019	0.016
Smolensk Oblast	0.025	0.036	0.036	0.039	0.059	0.031	0.020	0.013	0.014	0.022	0.013
Tambov Oblast	0.040	0.046	0.050	0.043	0.049	0.029	0.024	0.013	0.009	0.017	0.014
Tver Oblast	0.085	0.124	0.061	0.112	0.141	0.097	0.069	0.038	0.032	0.017	0.023
Tula Oblast	0.065	0.062	0.053	0.042	0.054	0.064	0.088	0.055	0.039	0.047	0.048
Yaroslavl Oblast	0.115	0.119	0.094	0.139	0.127	0.123	0.085	0.054	0.037	0.042	0.028
City of Moscow	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000

clear leadership in the initial data, which are quantitative *(Fig. 1)*. We should point out the Voronezh Oblast (#4), which is also a leading region and it clearly stands out among the rest of the subjects.

In order to differentiate the other regions into groups we designed a three-dimensional scattering diagram for 2015 (final period) *(Fig. 2)* under condition that the identified leading subjects were excluded.

While analyzing the graph we identified leading regions (the indicators of which tend to the maximum for all the three factors): these regions are the Belgorod, Lipetsk, Voronezh and Tula oblasts.

The Orel, Ivanovo and Kostroma oblasts, whose development indicators are minimal, can be considered as lagging behind.

Conclusion

Summing up the results of this study, we should emphasize that we have formed a tool that makes it possible to assess the resource component associated with the provision of innovative development. The list of criteria we formed has been adjusted on the basis of the differences revealed in the factor models of development of social and economic systems at the appropriate levels of administrative subordination. The analysis has revealed significant deviations in the list of factors characterizing the features of their innovative development in the national, district and regional indicators. At the same time, we have found out that the structures of innovation assessment factors in the federal district and in the constituent entity of Russia are the same.

Figure 1. Scattering diagram of regions within the Central Federal District, 2015

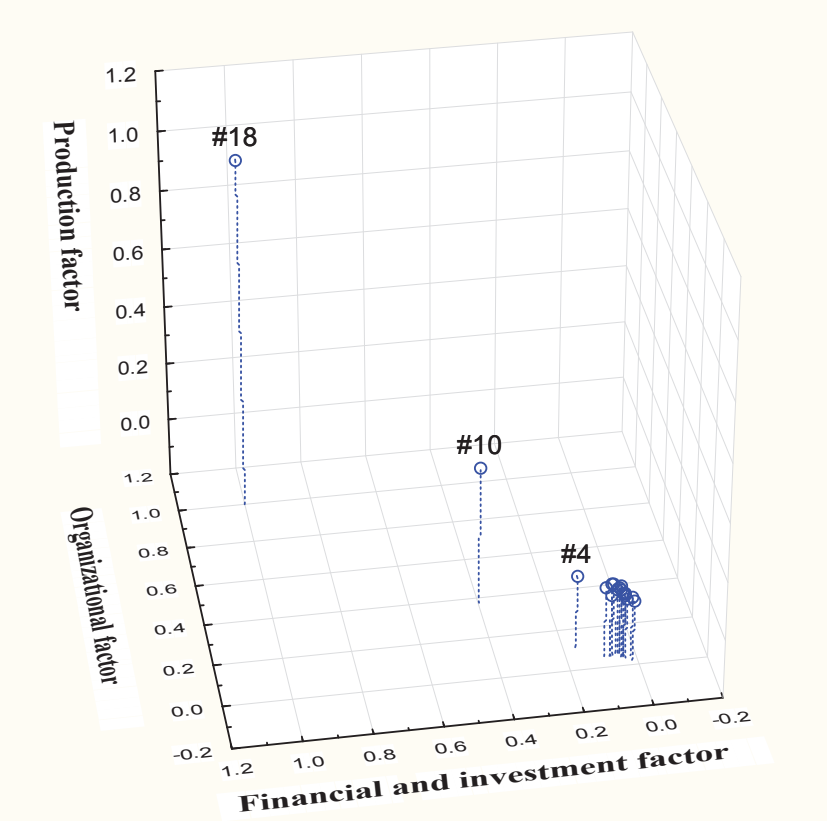
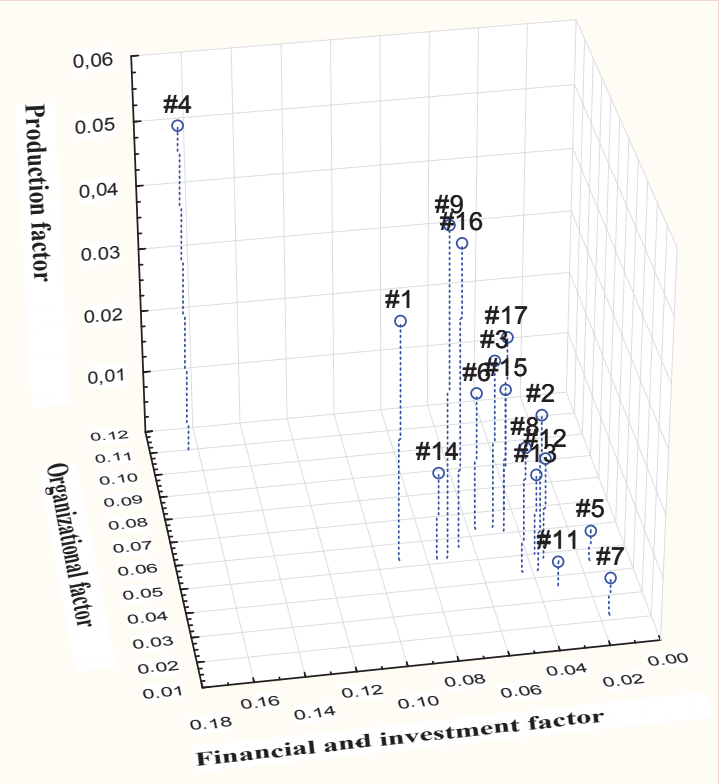


Figure 2. Scattering diagram of regions within the Central Federal District, except Moscow and the Moscow Oblast, 2015



Belgorod Oblast	1	Lipets Oblast	9
Bryansk Oblast	2	Oryol Oblast	11
Vladimir Oblast	3	Ryazan Oblast	12
Voronezh Oblast	4	Smolensk Oblast	13
Ivanovo Oblast	5	Tambov Oblast	14
Kaluga Oblast	6	Tver Oblast	15
Kostroma Oblast	7	Tula Oblast	16
Kursk Oblast	8	Yaroslavl Oblast	17

The final list of assessment criteria and indices that we obtained became the basis on which we created scattering diagrams in the three-factor space. The graphic interpretations show the absolute leadership of the two territories – the city of Moscow and the Moscow Oblast. However, it should be noted that the Voronezh Oblast has quite a strong position too, which is comparable to the above territories by a number of criteria. Among other subjects of the Central Federal District we can consider the Orel, Ivanovo and Kostroma oblasts as outsiders. This set of tools can be used by regional authorities to assess, plan and forecast the development of resource support for the activities of constituent entities in any federal district, as it takes into account individual characteristics of each territory.

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"Smart" Benchmarking as a Basis for Strategic Planning in Regional Development*

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Abstract. Addressing the problem of scientific substantiation of the region's development priorities is an urgent issue for both regional researchers and territorial managers. At the same time, when determining the areas of development, the emphasis is often put on successful experience of the leading territories. This method of transplantation of best practices in order to improve the performance of the object under analysis is called benchmarking. In classical understanding, the key stages of regional benchmarking are: selection of the leading region for comparison, identifying the differences between the leading region and the region under analysis, analysis of key success factors of the leading region, and implementing successful experience in the economic practice of the research area. At the same time, the absence of preliminary analysis of reasons and prerequisites for achieving leadership by best regions, comparison of territories with objectively different characteristics of socio-economic development, leads to non-compliance with the most important principle of regional development planning – the principle of goal-setting. The solution to this problem is possible through using a new type of benchmarking, the so-called "smart benchmarking". Its peculiar feature is preliminary identification of structurally similar territories – "identical regions". Thus, defining the priorities for the development of the object under study is based on successful experience of the regions identical to it. In this paper, the necessity of using the tools of "smart" benchmarking in Russia is justified. The authors reveal the essence and advantages of this approach, determine integral criteria characterizing the regions' similarity: the geodemographic environment, the level of education, innovation development, the sectoral structure of the economy, investment climate, economic openness, and social values. In the context of these criteria, a corresponding database of statistical data, including 34 indicators of territorial development, was formed. With due regard for domestic peculiarities of the regional economy the authors developed an algorithm for the benchmarking procedure and tested it in Russian regions. The systematization of identical territories is carried out based on calculation of indices of structural distances and construction of the distance matrix for Russian regions. The features of the social and economic situation of Perm Krai are determined in detail and analyzed by comparing its development indicators with those of the regions most similar in structural terms. The paper applies the methods of mathematical statistics, grouping and generalization, the system approach, as well as methods of visualization of data under analysis. Based on the analysis results it is concluded that the methodology of the benchmarking procedure can be used by public authorities to justify effective areas of regional development.

Key words: "smart" benchmarking, regional development, strategic planning, distance matrix, benchmarking procedure, identical regions.

Introduction

Solving the problem of effective functioning of socio-economic systems at any level is always associated with the search and identification of strategic development priorities. At the same time, special attention of both theorists and practitioners is focused on territorial units at the meso-level – regions due to the fact that the most important elements of the innovation process are, as a rule, geographically localized, resulting in competitive advantages being formed at the regional, rather than the national level [1, pp. 24–25].

According to the results of analyzing the current state of research on regional development, most of the problems of strategic management are concentrated in internal management functions, in particular, in organization and planning. Thus, Russian

researchers consider the most problematic issues in formation of effective regions' development strategies the following: lack of coordination of interests and development goals of economic actors [2, p. 49], difficulties in achieving the objectives of the innovative development strategy [3, pp. 250–255], uncertainty in approaches to managing socio-economic development of the region [4, p. 2393], copying of strategic documents on regional development [5, p. 7, 12].

Thus, addressing the issue of effective management of functioning and development of Russia's constituent entity is closely connected with the search for a universal, transparent approach to planning activities to identify effective investment patterns and objects of priority budget financing. Therefore, we can make a fairly objective conclusion that the defining stage of the procedure for strategizing is the process of determining the priorities of region's development. Academic papers on this problem can be divided into three areas.

The first area of identifying regional development priorities includes research where the researchers are guided by industry parameters to improve the region's economy when defining the promising areas. Thus, V. Rokhchin and A. Dalgatova note that priority development should be given to economic activities and production with certain advantages over the rest [6, p. 100]. The work of A. Avezov and M. Azimova focuses on identifying the most promising areas and parameters of region's economic development, ensuring its sustainable growth [7, p. 32]. According to S. Lipina, priority should be given to the sectors that are able to generate positive changes in the territory's economy, and ensure further competitiveness and economic stability [8, p. 18].

The second area includes works by researchers promoting the research approach to identifying regional development priorities. Within the framework of this approach, innovative, breakthrough areas of regional economic development based on the results of scientific research and development are determined as the main ones. Thus, S. Tikhomirov in his work considers strategic priorities for region's development as the main areas of research and development, implementing which should provide a significant contribution to the social, scientific, technological, and industrial development of the country and help achieve national socio-economic goals [9, p. 33]. G. Manicad argues that the process of establishing priorities is a choice between alternatives to regional scientific research [10, p. 13]. W. Janssen, A. Kassam and A. Janvry define regional priorities as a hierarchical series of research projects arranged in order of importance of their implementation results, which will improve the region's performance [11, p. 75].

The third area of identifying regional development priorities includes research works, which in determining future areas of development of the region's economy are focused on the experience of the leading territories. The representatives of this area in Russia are A. Bykova [12], M. Islamova, R. Bakhitova, R. Kireeva [13], V. Moskovkina, I. Krymskii [14], P. Rastvortseva, M. Larionova [15], S. Chervyakova [16], and D. Krasnosel'skaya [17]. The representatives of this area in Western contries are N. Groenendijk [18], L. Iurcovich [19], S. Koellreuter [20].

All these authors use a method based on the choice of "best examples" by comparing individual criteria of socio-economic and innovative development of a territory (its size, population density, economic structure,

innovation level, geographical location and other specific features). This method is called benchmarking and the method of the benchmarking procedure was initially developed to improve business processes in various areas of commercial activity: marketing, product portfolio policy, HR management, logistics, pricing policy, etc. Later this tool became widely used in relation to the objects at the meso-level –territorial units. The term "regional benchmarking" refers to "inter-regional comparisons of activities, processes, practices, policies and use of this information to promote regional development" [20, p. 14].

It is important to note that the majority of domestic research in regional benchmarking compare Russia's constituent entities under analysis with those showing the best indicators of social and economic development, regardless of whether they have similar characteristics or not.

At the same time, recent developments of foreign regional researchers have identified objective shortcomings of this approach which they call "simplified benchmarking" [21, 22, 23]. They consist in lack of preliminary analysis of causes and prerequisites for achieving leadership by best regions. Indeed, the initial conditions for territories' development are determined by formal and informal institutions that have developed historically and are essential for innovation [24]. Simply put, for objective reasons not all development indicators of leading regions can be practically achieved by outsider regions in the near future. Therefore, the results of "simplified benchmarking" are nothing but regional rankings and therefore cannot be an acceptable basis for the development of an effective strategy for territories' development.

We note that the advantages of using another type of benchmarking called "smart/system benchmarking" were described in detail in 2001 [25]. The point of applying this type of benchmarking is based on preliminary analysis of initial conditions for the development of subjects to compare. Thus, "smart" benchmarking of regional systems involves the elaboration of the development strategy based on comparison with territories with similar institutional conditions and development indicators.

The need to correctly adapt benchmarking tools to regional socio-economic systems, as well as insufficient information on the possibilities and prospects of using the results of the benchmarking technology by domestic researchers mainstream the methodological issues of its development and testing in Russia's constituent entities in order to determine the effective system of priorities for territories' development.

Research methods

The methodological framework of the benchmarking procedure is the methodology developed by the Basque Institute of Competitiveness [26] and adapted to Russian conditions taking into account the features of spatial planning of the domestic economy. The elaboration of the regional development strategy based on "smart" benchmarking is expected to be carried out in two successive stages. The first stage is preparatory and consists of collection, systematization and processing of statistics. The second stage involves analysis and identification of priorities for the development of a particular region chosen for the study. Let us focus on the content of these stages.

Stage 1. Construction of a global distance matrix by region.

The importance of this stage is due to the conceptual feature of "smart" benchmarking which implies the need to compare areas with similar institutional conditions. The comparison is based on the correlation of regional development indicators reflected in

the distance matrix. To build a global distance matrix by region preliminary selection and normalization of quantitative data is carried out first (step 1) and , second, structural distance indices are calculated (step 2).

Step 1. Collection and normalization of quantitative data.

Statistics database for determining the similarity of territories includes, first, criteria for comparative analysis; second, the factors detailing them; and third, quantitative statistical indicators. During the process of criteria selection the following conditions are met: informational value (i.e., they should characterize the mapping objects), quantitative evaluation (for objective comparison), incorrelability (independence). Each criterion includes factors that detail it. The detailing factors for comparing regions are, firstly, those that best reveal the strengths and weaknesses of a territory, and second, do not tend to change in the short term. Further, for each factor appropriate statistical indicators are selected.

During the first step, asymmetry of indicator distribution is evaluated and, if necessary, their transformation (formula 1) is carried out, the values are levelled to a single scale (formula 2).

The asymmetry value characterizes the degree of distribution dissymmetry of a statistical indicator relative to the average indicator value in the country. If the asymmetry value is over 0.5, each indicator value is transformed according to formula (1) in order to fit the outlying data (extreme values):

$$x_{ij} = \sqrt[k]{x_{ij\_0}}, \qquad (1)$$

where x_{ij} transformed value of *j-index* of the *i-th* epregion;

x_{ij_0} – initial value of *j*-index of *i-th* region;

k – degree of asymmetry (takes values from 2 to 4 depending on the value of asymmetry coefficient).

Indicators expressed in percentage remain unchanged, the rest are converted to percentage terms relative to the sum of values of variable of the corresponding indicator (2):

$$\overline{x_{ij}} = \frac{x_{ij}}{\sum_j x_{ij}} \cdot 100\%, \qquad (2)$$

where $\overline{x_{ij}}$ – the normalized value of the *j*-index of the *i*-region.

Step 2. Calculation of structural distance indices.

The importance of this step is that it determines the regions' similarity characterized by the values of structural distance indices. Regions with the structural distance index less than the threshold value are considered **identical**. To determine the threshold value of the structural distance index we carried out preliminary analysis based on the assumption that the optimal number of regions for comparison ranges from 7 to 10. This number of regions is formed when the structural distance index is less than 1. Therefore, the threshold value of the index is 1.

The structural distance index which constructs the distance matrix is calculated according to formula (3):

$$d(i,i') = \sum_{j=1}^{k} m_j \left(\overline{x_{ij}} - \overline{x_{i'j}}\right)^2, \qquad (3)$$

where $d(i,i')$ – structural distance index of the *i-th* region;

$\overline{x_{ij}}$ – value of *j*-index of *i*-initial region;

$\overline{x_{i'j}}$ – value of j-index of *i*-"another" region;

m_j – weighting factor.

Weighting factor is calculated according to formula (4):

$$m_j = \frac{1}{a}/j, \qquad (4)$$

where a – number of criteria for comparing regions;

j – number of statistical indicators haracterizing the criterion.

Formula 3 indicates that each criteria for comparing regions is assigned an equal weight equally distributed between its constituent variables. This decision is based on the research results [22], which proved that the use of different weights does not produce significant changes in final results and significantly increases the subjectivity of the method as a whole.

The result of the first stage is the construction of the distance matrix with its elements being structural distance indices. In turn, the distance matrix serves as the basis for implementing the second elaboration stage of the regional development strategy based on "smart" benchmarking.

Stage 2. Identification of regional development priorities.

The importance of this stage lies in that it identifies priority development areas of a region under analysis. According to the methodology of "smart" benchmarking developed by the Basque Institute of Competitiveness, development priorities are determined by identifying the weaknesses of the analyzed region in the process of its comparison with identical regions. The indicators of the analyzed region, which have low values compared to average indicators of identical regions, are selected as the primary areas of development.

At the same time, this methodology should be supplemented by comparison of indicators of a region under analysis with the national average. The choice of average values for analysis is associated with inefficient comparison of indicators of the region under analysis with maximum values of the leading regions due to specific features of Russia's constituent entities due to their high differentiation. At the same time, comparison with the average values will help identify the weaknesses of the region under study. The efficiency of such analysis is confirmed by a number of similar studies where the average value was used as the minimum acceptable value of the estimated index [12, 27].

In addition, the novelty if the author's approach lies in the hypothetical assumption that comparing the analyzed region with only identical ones can lead to the loss of important development priorities. For example, if the indicator is low in both region under analysis and in all regions identical to it, it will not be identified in analysis according to the Basque Institute of Competitiveness. As a result, measures to improve it will not be taken.

Thus, the methodology of "smart" benchmarking developed by the Basque Institute of Competitiveness has been improved by the authors in terms of adding the procedure of comparing the indicators of the analyzed region with the national average.

Research results

The procedure of "smart" benchmarking was tested within the main stages of the regional development strategy implementation based on statistical data of Russian regions for 2015 published by the Federal State Statistics Service. The Republic of Crimea and the city of Sevastopol were not engaged in regional benchmarking due to lack of data for comparison. We have built a complete distance matrix for the rest of Russian regions. The resulting matrix is symmetrical to the main diagonal.

We have chose Perm Krai as the region to analyze. The region leads in terms of innovative development and implementation of the cluster policy. It is in Perm Krai where, in addition to two innovative territorial clusters, operate two industrial and one strategically important inter-regional cluster uniting enterprises and research institutions from different Russian regions (Perm Krai, the Sverdlovsk Oblast and

Udmurt Republic) – the "Photonics" cluster of fiber-optic technology.

At the same time, the proposed benchmarking procedure is universal and can be applied to any territorial unit at both regional and municipal level.

Stage 1. Construction of a global distance matrix by region.

Because of the need to select data that do not tend to change in the short term, and taking into account the availability of information from the sources of the Federal State Statistics Service of Russia, we have identified seven criteria for regional development: geodemography, education, innovation, sectoral structure, investment climate, transparency, and social values. The criteria we have selected include 12 detailed factors and 34 statistical quantitative indicators (*Tab. 1*).

Let us look closer at the reasons for the selection of criteria of primary importance when identifying similar regions. The first criterion is geodemographic. The basic indicators are *the region's territory size* and *population*. The population directly affects the processes of production concentration. In turn, *the population of the working age* determines efficient functioning of regional economies. To identify the settlement structure of the region it is necessary to determine the *degree of urbanization*. Thus, regions with a high degree of urbanization have a smaller share of agricultural and a greater share of industrial functions. At the same time, the number of service institutions is increasing, as well as the diversity of occupations and the population's territorial mobility. Therefore, a special role in the formation of economic and social space belongs to the *territory's transport availability*. The developed transport infrastructure provides and simplifies commercial activities, leads to increased housing costs, and is a key factor in the integration of regional markets.

The second criterion is *education*. In recent years, the structure of factors determining territories' competitiveness has undergone certain changes. For example, the importance factors such as affordable raw materials and cheap labor has decreased, and the educational factor has become more significant. Since *the level of education* is one of the most important factors determining the formation and development of intellectual capital and its rational use [28, p. 58], this criterion is important to consider when identifying similar regions. At the same time, the high level of education does not guarantee a high level of innovation in the region. Therefore, when contrasting the level of innovative development of the compared regions it is necessary to take into account separately components such as the amount of patent research and the share of innovative goods, works and services in the total volume of region's shipped goods, works and services.

The next aspect determining the difference between the regions is *the sectoral structure of the region* characterized by the distribution of the average annual number of employed population by economic activity. Relying on the employment rate when studying economic activities and industries in the domestic environment is the most reasonable since it helps avoid the possible inaccuracies when using other indicators related to insufficient or imperfect information, in particular – the inconsistency between the income center and the center of economic activity. It is obvious that when developing the regional economic policy it is irrational to compare regions with different sectoral specialization.

The favorability of the regional policy for *business* development is characterized by the number of enterprises and organizations in the region. This indicator determines the investment climate of the territory – the

Table 1. System of criteria determining regions' similarity*

Criterion	Factor	Statistical indicator		Unit of measurement
Geodemography	Size of the region	x1 x2	- territory size; - population	thousand km^2 thousand people
	Population age structure	x3 x4	- people under working age; - people over working age	% of the total population
	Urbanization	x5 x6	- share of urban population in the total population; - share of rural population in the total population	%
	Transport availability	x7 x8 x9	- number of public buses per 100,000 people; - bus passenger transportation; - density of general-purpose hard-surface highways	units mln people km of roadway per 1000 km^2 of territory
Education	Level of education	x10	- people with above-average education aged 15 and over per 1,000 people who specified their level of education	people
Innovation	Patent research	x11 x12	- provisional patents granted; - utility patents granted	units
	Share of innovative goods, works, services	x13	- share of innovative goods, works, services in the total volume of goods shipped, works performed, service provided	%
Sectoral structure	Distribution of average annual number of employees by economic activity	x14 – x26	- agriculture, hunting and forestry, fisheries and fish farming; mining; manufacturing; production and distribution of electricity, gas, water; constructions; wholesale and retail trade; repair of motor vehicles, motorcycles, household and personal goods; hotels and restaurants; transport and communications; real estate, renting and business services; education; healthcare and social services; other community, social and personal services; other activities	% of the total number of the employed
Investment climate	Enterprises and organizations	x27	- number of enterprises and organizations per 1,000 people	units
Transparency	Foreign economic activity	x28 x29	- exports to far-abroad countries; - exports to CIS countries in current prices	mln U.S. dollars
Social values	Culture and tourism	x30 x31 x32 x33	- number of theatregoers per 1,000 people; - number of visits to museums per 1,000 people; - number of Russian tourists sent by travel agencies on tours in Russia, per 1,000 people; - number of Russian tourists sent by travel agencies to foreign tours, per 1,000 people	people
	Crime rate	x34	- number of reported crimes per 100,000 people	units

* Compiled from: *Russian regions. Socio-economic indicators. 2016: statistics book*. Rosstat. Moscow, 2016.

efficiency of the entrepreneurship support and regulation system operating in the region.

Moreover, it is important to take into account the degree of *openness* of the region's economy expressed through its export potential. Active export activity helps solve problems such as inefficient natural resource use, high unemployment rate, non-competitiveness of agricultural industries, low level of investment inflow, balance of payments deficit, which improves the population's quality of life [29, p. 42].

In conclusion, an important criterion from the point of view of identifying similar regions is *social values*. The main indicators of this criterion are culture and tourism and crime rate. Combining such incompatible indicators is based on the well-known "circle of backwardness" in territory's development (the term by D.S. L'vov). It implies a distorted system of population's preferences and values leading to an increased amount of social diseases and a rise in crime rate. In the future, all this leads to labor outflow and the stagnation of the territory.

Further, according to the previously described research methodology, all indicators are tested for distribution asymmetry and are transformed. Note that 25 out of 34 statistical indicators were transformed, which is explained by high differentiation of regional development. Then all the indicators are brought to a single scale. Finally, a global distance matrix is constructed based on the calculated structural distance indices.

Stage 2. Identification of regional development priorities.

As mentioned above, Perm Krai was chosen as a region for analysis. Therefore, in the framework of the second stage of the regional development strategy elaboration based on "smart" benchmarking we have consistently compared the indicators of Perm Krai with the values of identical regions and with the national average values.

On order to determine the regions identical to Perm Krai we used the values of the global distance matrix for Russian regions. *Table 2* presents a fragment of the matrix sorted structural distance index ascending order, where Perm Krai acts as a region under analysis (see column 2 of the matrix). As can be seen, 8 regions are identical to Perm Krai.

According to the table, the Kaluga Oblast has the lowest index of structural distance along with the Perm region.

However, all regions identical to Perm Krai have a number of similar characteristics. Firstly, it is a high level of urbanization – the share of urban population in the total population is about 74%. Secondly – a highly pronounced specialization in manufacturing, as well as in wholesale and retail trade (*Fig. 1*).

Then we determine the characteristics of Perm Krai development, which have low values compared to the average values of identical regions. First, this is the indicator of transport availability of the region. The low value of this indicator demonstrates the density of hard-surface public roads (*Fig. 2*).

Second, the indicator of the level of education in Perm Krai (*Fig. 3*).

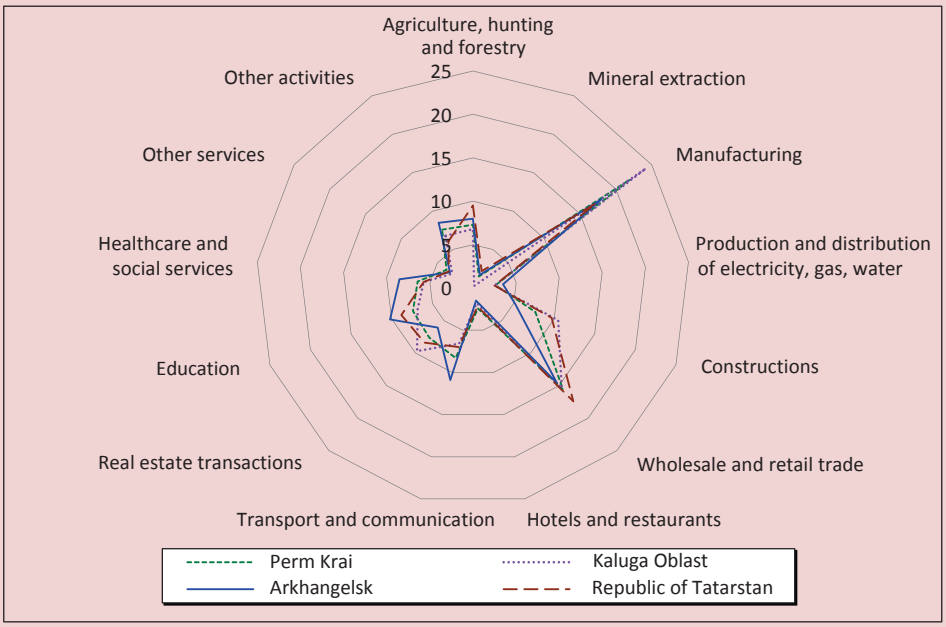
The low number of educated people in Perm Krai is largely due to the outflow of intellectual capital to more attractive regions and abroad. Thus, according to the research conducted by Perm State National Research University

Table 2. Distance matrix of regions identical to Perm Krai

Region	Perm Krai	Kaluga Oblast	Arkhangelsk Oblast	Republic of Tatarstan	Ulyanovsk Oblast	Kirov Oblast	Vologda Oblast	Vladimir Oblast	Tver Oblast
Perm Krai		0.436	0.480	0.582	0.634	0.713	0.832	0.868	0.944
Kaluga Oblast	0.436		0.657	1.504	0.597	0.658	1.444	0.312	0.852
Arkhangelsk Oblast	0.480	0.657		0.837	0.999	0.517	1.470	1.210	0.630
Republic of Tatarstan	0.582	1.504	0.837		1.134	0.853	0.911	1.874	0.993
Ulyanovsk Oblast	0.634	0.597	0.999	1.134		0.621	0.669	0.775	0.688
Kirov Oblast	0.713	0.658	0.517	0.853	0.621		1.022	1.205	0.076
Vologda Oblast	0.832	1.444	1.470	0.911	0.669	1.022		2.152	1.017
Vladimir Oblast	0.868	0.312	1.210	1.874	0.775	1.205	2.152		1.503
Tver Oblast	0.944	0.852	0.630	0.993	0.688	0.076	1.017	1.503	

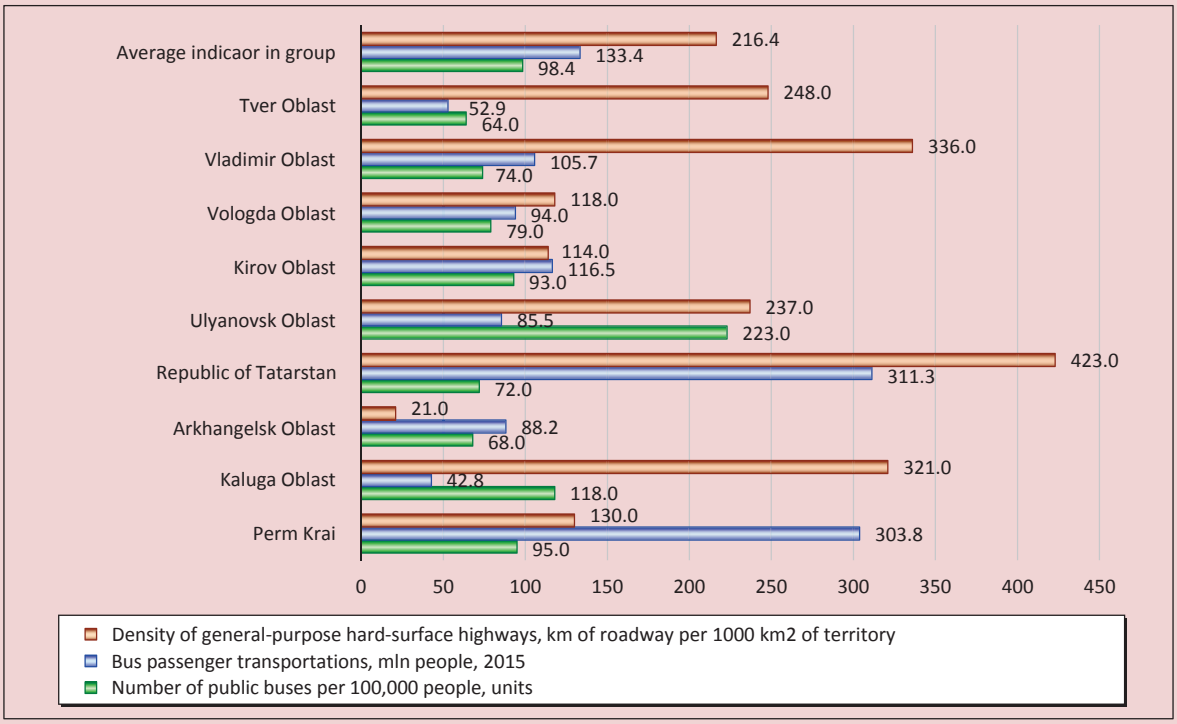
Calculations are based on the method developed by the authors.

Figure 1. Distribution of average annual number of the employed by economic activity, 2015 as % of the total number of the employed



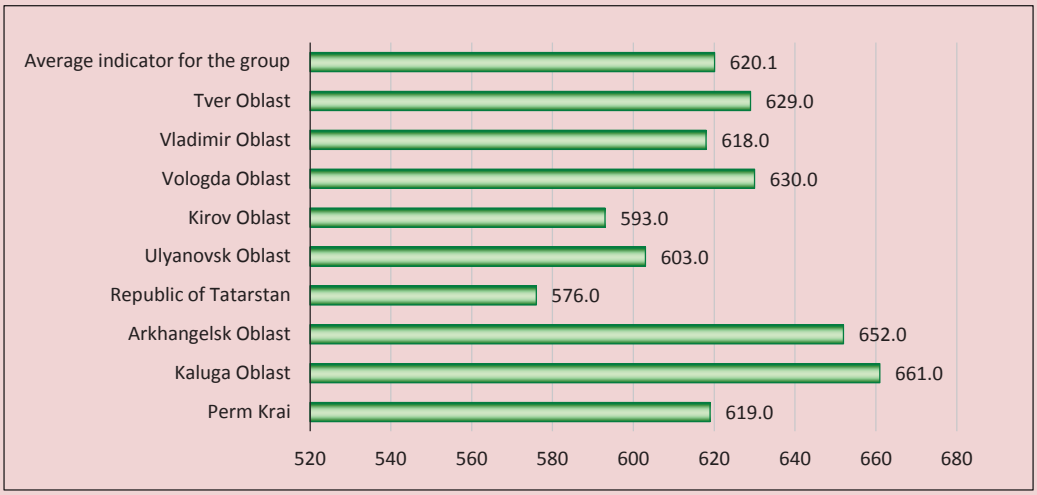
Source: compiled by the authors based on: Russian regions. Socio-economic indicators. 2016: statistics book. Rosstat. Moscow, 2016. Pp. 140–167.

Figure 2. Indicators of transport availability of identical regions, 2015



Source: compiled by the authors based on: Russian regions. Socio-economic indicators. 2016: statistics. Rosstat. Moscow, 2016. Pp. 849–856.

Figure 3. Number of people with above-average education aged 15 and over (per 1,000 people who specified their level of education), 2014

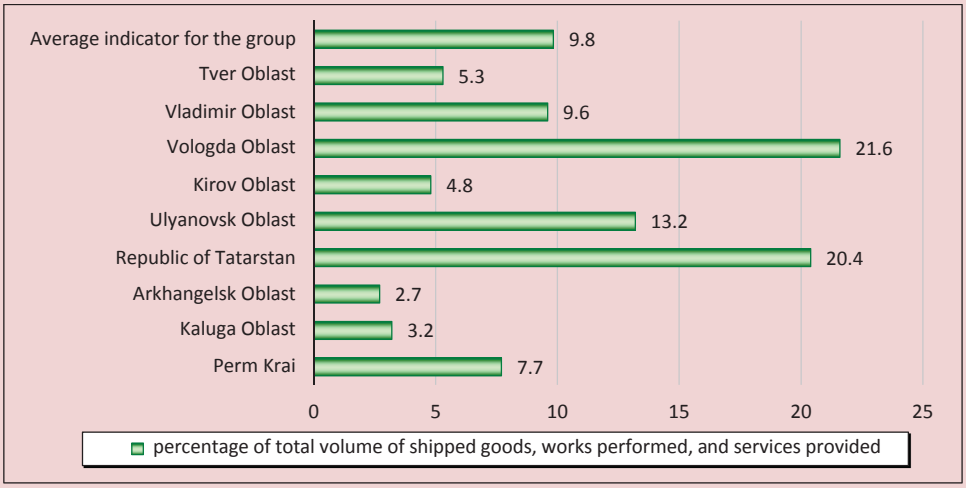


Source: compiled by the authors based on: Education in Russia: 2014: statistics book. Higher School of Economics. Moscow, 2014. Pp. 34–35.

[30], more than 70% of young people plan to leave the territory of Perm Krai. The reasons for possible migration of respondents are: low salaries, lack of employment opportunities, expensive housing and poorly developed social and transport infrastructure.

Third is the volume of innovative products, works and services in Perm Krai. This figure is 2% lower than the average for a group of identical regions (*Fig. 4*), and almost 3 times lower than the maximum indicator of the group (Vologda Oblast).

Figure 4. Volume of innovative goods, works and services, 2015



Source: compiled by the authors based on: Russian regions. Socio-economic indicators. 2016: statistics book. Rosstat. Moscow, 2016. Pp. 1048–1049.

Figure 5. Number of reported crimes per 100,000 people in identical regions, 2015

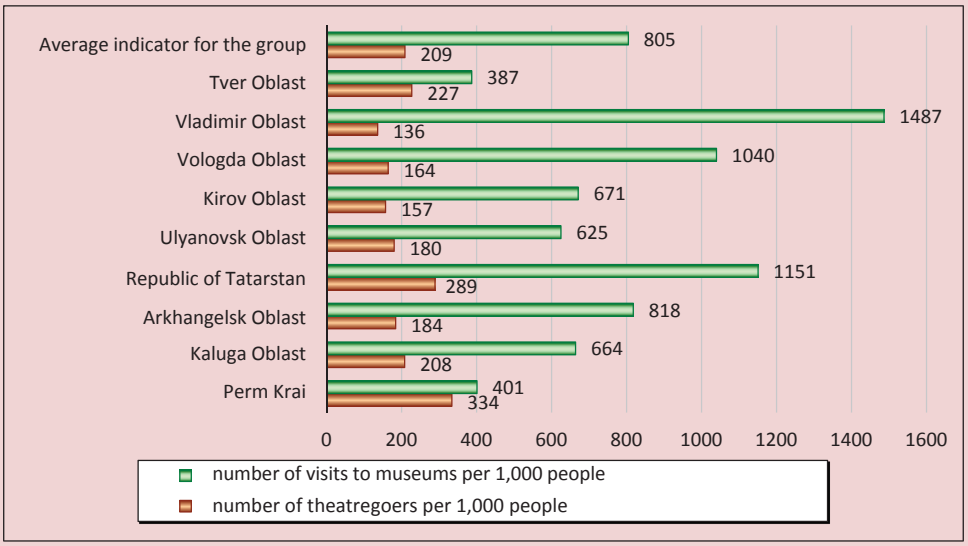
Source: compiled by the authors based on: Russian regions. Socio-economic indicators. 2016: statistics book. Rosstat. Moscow, 2016. Pp. 511–514.

Fourth is high crime rate in Perm Krai. Thus, the crime rate exceeds the average value for identical regions by 22%, or by 393 reported crimes per 100,000 people (*Fig. 5*).

Fifth, the development indicators in culture, where Perm Krai remains an outsider (*Fig. 6*).

Thus, the weak points of Perm Krai revealed in comparative analysis help determine five priorities of its development: increasing transport availability, level of education, volume of innovative goods, works and services, reducing crime rate, improving the level of culture and leisure variety.

Figure 6. Indicators of cultural progress in identical regions, 2015



Source: compiled by the authors based on: Russian regions. Socio-economic indicators. 2016: statistics book. Rosstat. Moscow, 2016. Pp. 472–473.

Then the authors compared statistical indicators of Perm Krai development with the national average values. Analysis identified the weak points of Perm Krai. Some of the identified indicators coincided with those identified in the course of comparison with identical regions (*low level of transport availability, low level of education, high crime rate*); the second part united the weaknesses that were not manifested when comparing with identical regions (*age structure, urbanization, exports with CIS countries*). The emergence of the second group of indicators is due to the fact that in most regions identical to Perm Krai they have values below the average or close to the national average. This conclusion serves as empirical evidence that comparative analysis of the region under study only with identical ones, as provided by the Basque Institute methodology, would not help identify them.

Moreover, we also note an indicator such as "the volume of innovative goods and services". The value of this indicator in Perm Krai is higher than the average Russian level, but much lower than in most identical regions. Therefore, the second conclusion states that that comparative analysis of the studied region only with the country's leading regions, as in most studies of domestic authors, would not help identify the indicator "the volume of innovative goods, works and services" as a priority area of Perm Krai development.

Based on the above, we can say that the hypothesis about the need to identify priority areas of territory's development by means of ***consistent double comparison of the average national indicators and indicators of identical regions*** has been confirmed.

During the systematization of priorities of Perm Krai development we selected six most promising ones from the point of view of success and achievability of optimization areas: all five priorities identified through comparing with the indicators of identical regions, and one priority out of three identified during analysis of the average national indicator values – the indicator of "urbanization" expressed in the share of urban and rural population in the total population of the region.

The settlement system is important for economic and social development. The most important problem of the settlement system in Perm Krai is the high population concentration in the City of Perm. The dominant type of distribution reflects the index of primacy of the largest city, equaling 5.8 for Perm (to compare: Moscow – 2.2) [31, p. 52]. This phenomenon is primarily the result of unemployment in the periphery, which occurs against the background of a constant decrease in the number of penitentiary facilities, aggravating environmental problems in rural areas, as well as the decline in profitability in a number of sectors of the regional economy in recent years. Therefore, in order to solve the problem of settlement optimization resulting from the high level of urbanization in Perm Krai it is necessary to take certain government measures and implement programs.

The systematization of development priorities in Perm Krai is presented in *Table 3*.

According to Table 3, the Republic of Tatarstan is the leader in transport development. There, the density of hard-surface public roads is 423 km per 1,000 km^2. The Kaluga Oblast ranks first in the level of education. Here, 661 people per 1,000 people aged 15 and over who specified their level of education have education above average. Innovative goods and services in the Vologda Oblast make up 21.6% of the total volume of shipped goods, works and services

Table 3. Development priorities of Perm Krai*

Development priorities	Development benchmarks, *units of measurement*	Statistical indicators				Leading regions among identical ones
		Perm Krai	Average indicator in identical regions	Best indicator in identical regions	National average	
1. Increasing transport availability	Density of general-purpose hard-surface highways, *km of roadway per 1,000 km² of territory*	130.0	216.4	423.0	274.6	Republic of Tatarstan, Vladimir Oblast
2. Increasing level of education	People with above-average education aged 15 and over per 1000 people who specified their level of education, *people*	619.0	620.1	661.0	624.6	Kaluga Oblast, Arkhangelsk Oblast
3. Increasing the volume of innovative goods and services	Share of innovative goods, works, services in the total volume of goods shipped, works performed, service provided, *%*	7.7	9.8	21.6	6.0	Vologda Oblast, Republic of Tatarstan
4. Increasing the culture level	Number of visits to museums per 1,000 people, *people*	401.0	804.9	1487.0	601.3	Republic of Tatarstan, Vladimir Oblast
5. Reducing crime rate	Number of reported crimes per 100,000 people, *units*	2209.0	1816.6	1019.0	1673.7	Kaluga Oblast, Tver Oblast
6. Optimizing the settlement system	Share of rural population in the total population, *%*	24.4	24.3	28.0	29.8	Vologda Oblast, Ulyanovsk Oblast
* Compiled from: Russian regions. Socio-economic indicators. 2016: statistics book. Rosstat. Moscow, 2016.						

– this is the highest figure among identical regions. In turn, the best indicators of the culture level are demonstrated by the Vladimir Oblast. The number of visits to museums per 1,000 people in the region is 1,487 people. The lowest crime rate among identical regions is registered in the Kaluga Oblast (1,019 crimes per 100,000 people). Special attention should be paid to determining the possibilities of reducing this indicator in Perm Krai. The share of rural population in the total population of Perm Krai is close to the average indicator value for identical regions, 24.3%. The leading region in optimization of the settlement system is the Vologda Oblast, where the share of rural population in the total population comprises 28% of the region's total population.

Successful implementation of the proposed areas of Perm Krai development requires a careful study of the state programs of the leading regions among the identical ones in order to further adapt them to the activities of the regional authorities.

Conclusion

In conclusion, here are the main conclusions and results of the study.

First, we have proved that the benchmarking technology is a successful solution for improving the efficiency of economic entities at different hierarchical levels. The purpose of using the concept of benchmarking at the level of territorial entities is to inform regional authorities about the main areas, conditions and opportunities for further development of the territory. At the same time, the key objectives of benchmarking remain: choosing the leading region for comparison in a certain development area, identifying the differences

between it and the region under analysis, and analyzing the key success factors in the leading region.

Second, it has been found that the most efficient type of benchmarking, taking into account the prerequisites and reasons for achieving leadership by best economic actors, is "smart" benchmarking. "Smart" benchmarking of regional systems involves the elaboration of a development strategy based on comparing with territories with similar institutional conditions and development indicators. This aspect is the most important condition for achieving target indicators of any state development programs.

Third, it has been empirically proved that identifying territorial development priorities should be carried out through consistent double comparison of the region under analysis with the average national indicators and indicators of identical regions. This conclusion has been confirmed by the results obtained during the development of development priorities for Perm Krai.

The presented method of the benchmarking procedure can make a significant contribution to the process of development, implementation and monitoring of innovative strategies for territories' development through identifying the weak points and competitive advantages of the region.

We believe that the development and improvement of the regional benchmarking procedure in relation to Russia's constituent entities requires further research and is of scientific interest in terms of creating an interactive tool that would combine regions' statistical data and identify structurally similar Russian regions in order to develop an innovative national economy.

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The Organizational and Economic Mechanism of Managing Inter-Regional Interaction between Russia's Constituent Entities (Case Study of the Northwestern Federal District)*

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Abstract. According to some researchers, in recent years there has been an upward trend in predominant stagnating regions in Russia. The reasons for this include low innovation activity of the periphery, deindustrialization, predominant extractive industries, capital exports, growing social and property stratification and other equally important reasons. The current economic and political crisis in our country is both a threat, an opportunity and an impetus to restructuring the regional economy. In these conditions it becomes extremely necessary to search for new growth points in the regional economy, support for the most promising industries, and efficient resource allocation. Inter-regional cooperation is the most important area of the regional policy, ensuring progressive balanced socio-economic development of regions based on establishing long-term, equal and mutually beneficial relations between them. The importance of inter-regional cooperation for the development of modern Russia's constituent entities is determined by the fact that it strengthens economic ties between them, optimizes the location of infrastructure facilities based on cooperation of their activities, eliminates inefficient financial costs associated with the creation of duplicate economic structures in Russia's constituent entities and unjustified inter-regional competition, combines the regions' economic potential for implementing the most large-scale investment projects, spreads innovative experience in innovation development. The implementation

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of these measures is complicated by lack of sound socio-economic regional public policy. In this regard, problems such as systematization of best domestic and foreign practices in interregional cooperation, research and generalization of theoretical concepts presented in domestic and foreign publications, and development of an organizational and economic mechanism of managing inter-regional cooperation and methodological aspects for evaluating the efficiency of this process become relevant. The developed proposals can be used by public administration entities to improve the efficiency of applying the inter-regional cooperation factor as a driver of regional economic growth in the development of legal, strategic and program-planning documents at the regional level.

Key words: inter-regional cooperation, regional development factors, types of inter-regional interaction, forms of inter-regional cooperation, organizational and economic mechanism, inter-regional cooperation efficiency.

Introduction. In modern conditions the restrictions on export and import operations, declined foreign investment, decreased demand and increased competition on traditional markets within the country, and reduced resources for regional development in the form of state programs and subsidies the regions are forced to look at growth drivers and factors in their development differently. One of the key factors in the development of regions in current conditions is intensified inter-regional cooperation aimed to expand markets, attract investment and share resources.

Currently, the federal center creates favorable conditions for the development of inter-regional cooperation, in particular, in order to support import substitution and modernize industrial production. However, regional authorities consider other constituent entities in Russia as competitors for attracting resources of the federal center or foreign investors and are often not ready to administer this process. This is reflected in the absence of agreed development areas and priorities with potential partner regions, as well as in duplication of efforts to create and modernize the infrastructure. As a result, the inter-regional cooperation factor, whose role is manifested in increased competitiveness of the regional economy, support for innovative development, and stimulated economic growth, is not used as an accelerator for developing regional socio-economic systems.

The issues of socio-economic development in the regions at the present stage are considered in the work by A.V. Babkin and E.M. Bukhwald [1]. The authors note that "a successive transition from "planning indicators" to planning institutional change" is required [1, p. 27]. Z.B. Dugarzhapov also believes that "the alignment of regions must be started with changing and developing the institutional environment, rather than smoothing the GRP indicators" [2, p. 88].

S.V. Dokholyan, A.M. Sadykov and A.S. Dokholyan define sustainable socio-economic development of the region as its "ability to provide positive dynamics of the population's quality of life and standard of living and use new factors and conditions to achieve this goal" [3, p. 61]. S.V. Kuznetsov considers that the contradictory factors in regional development are globalization [4, p. 125], degradation of innovative potential in peripheral areas [4, p. 129], innovative inertness of domestic enterprises [4, p. 130], the increasing role of human capital in socio-economic development, and exhausted sources of export resource-based type of development [4, p. 131]. V.S. Zharov believes that the main problem of socio-

economic development of regions is the quality of strategic planning, which results in the fact that "system inputs (incoming resources to the region's economy) are separated from its outputs (the system results)" [5, p.100].

One of the founders of the theory of inter-regional cooperation – Michael Porter emphasized in his works [6] the fact that the level of region's competitiveness in the foreign market is determined, as a rule, by the intensity of competition in the domestic (national) market. In addition, a number of authors indicate that the degree of region's involvement in inter-regional relations largely determines its economic growth [7, p. 2]. L.V. Ivanovskii writes that "common needs and objectives create economic ties that can unite a set of loosely affiliated regions into a single socio-economic system" [8, p. 140].

V.G. Belomestnov views inter-regional interaction as a tool for long-term development of socio-economic systems – "the process of creating a common regional system formed on the basis of uniting regions' socio-economic subsystems (business entities) interacting with each other in the socio-economic, political and other spheres, in which common objectives are solved, a strategy and joint development programs are developed" [9, p. 123]. The role of inter-regional cooperation in the development of regional socio-economic systems is manifested in:

– strengthening the regions' innovative activity [10, 11, 12];

– improving the efficiency of regional policy implementation [13];

– development of region's international relations [13].

However, according to T.V. Uskova, "regional authorities do not pay proper attention to the process and do not efficiently apply the mechanisms of influencing economic entities" [14, p. 61].

The relevance of intensifying inter-regional cooperation in the Northwestern federal district is substantiated in the work by S.V. Kuznetsov, N.M. Mezhevich and S.S. Lachiniskii [15]. The paper emphasizes the fact that "the reduced size of the economic space involved in economic activities decreases the country's rate of economic development and poses a threat to territorial integrity" [15, p.27].

L.V. Ivanovskii highlights the absence of a management system for implementing inter-regional cooperation in the Northwestern federal district [8, p. 136]. The author also writes that the relations of the regions in the district do not develop, these regions have no common purpose and motivation to "form certain integrity" [8, p. 137]. The author confirms the thesis with the results of analysis of strategies of socio-economic development in such regions: "regional strategies do not provide for inter-regional cooperation for implementation of common needs" [8, p. 140].

Despite extensive research on inter-regional cooperation as a factor in the development of regional socio-economic systems, the issues of methodological support for managing inter-regional interaction remained largely unexplored, which determines the choice of **the purpose** for the article: to build a model of organizational and economic mechanism of inter-regional interaction management at the macro-region level.

The research novelty of the study is to determine the nature and criteria for assessing the types of inter-regional interaction, classification of forms of inter-regional interaction, systematization of tools for developing inter-regional interaction according to the objectives of such interaction and levels of management, and development of methods for assessing inter-regional interaction in Russia.

Methods of research. The methodological framework of the research is both general scientific methods and those focused on addressing specific scientific problems: content analysis of regulatory and planning documents, systematization, comparison, logical analysis and synthesis, statistical information processing, and performance evaluation. The informational framework consists of legal documents at all levels of government, documents of socio-economic development of Russia's constituent entities, Internet resources, official statistics, economic research data, forecast and analytical materials.

Research results. Domestic science sees inter-regional cooperation primarily through maintaining the relations between regions [16, p. 128], [17]; in foreign approaches, the emphasis is put on the form of building such relations [10, 13, 18]. By **inter-regional interaction** (hereinafter referred to as IRI) we understand a set of exchanges of resource flows carried out within the framework of agreements between authorities, legal entities and individuals in different regions, adopted de jure or de facto, with the aim of representing common interests in the national and global economic space and increasing the level of sustainable development of these regions. The peculiarity of the proposed definition is that it accounts for all types of interaction (horizontal, cross) between target groups (authorities, business structures, budget organizations, population) in various forms (formal and informal).

The organizational and economic mechanism of inter-regional cooperation management is a set of objectives of the system of inter-regional interaction and the system of forms and tools for addressing these objectives. The model of organizational and economic mechanism of inter-regional interaction management at the level of a macro-region (*Fig. 1*) includes the following elements: management subjects and objects, factors in external and internal environment of regional development, and attributes of strategic management of socio-economic development of the region.

One of the most significant modern Russian approaches to the formation of the mechanism of IRI management is the approach of T.V. Uskova and E.V. Lukin, which concerns the regulation of economic relations in the region [14, p. 68]. A distinctive feature of the approach proposed in the study is its complex nature since all types of inter-regional interaction are considered as the object of management, and both integrated structures and organizations of the partnership infrastructure and the authorities are included in the management subject.

The subjects of IRI management at the level of a macro-region are:

1. *Public authorities* – regional executive authorities, the executive office of the Presidential Plenipotentiary Envoy to the federal district.

2. *Partnership infrastructure organizations* – a set of institutions engaged in forming partnerships between target groups of regional development. Examples: Chamber of Commerce, business development support centers, Russian Export Center and export support centers in regions, inter-regional associations of economic cooperation. In the Northwestern federal district, this is primarily the North-West Strategic Partnership established in 2012. The partnership is designed to ensure the interaction of public authorities, business and public organizations in the development and implementation of the socio-economic policy in the Northwestern federal district; guide inter-regional PPP-based investment projects implemented. In 2016, the partnership

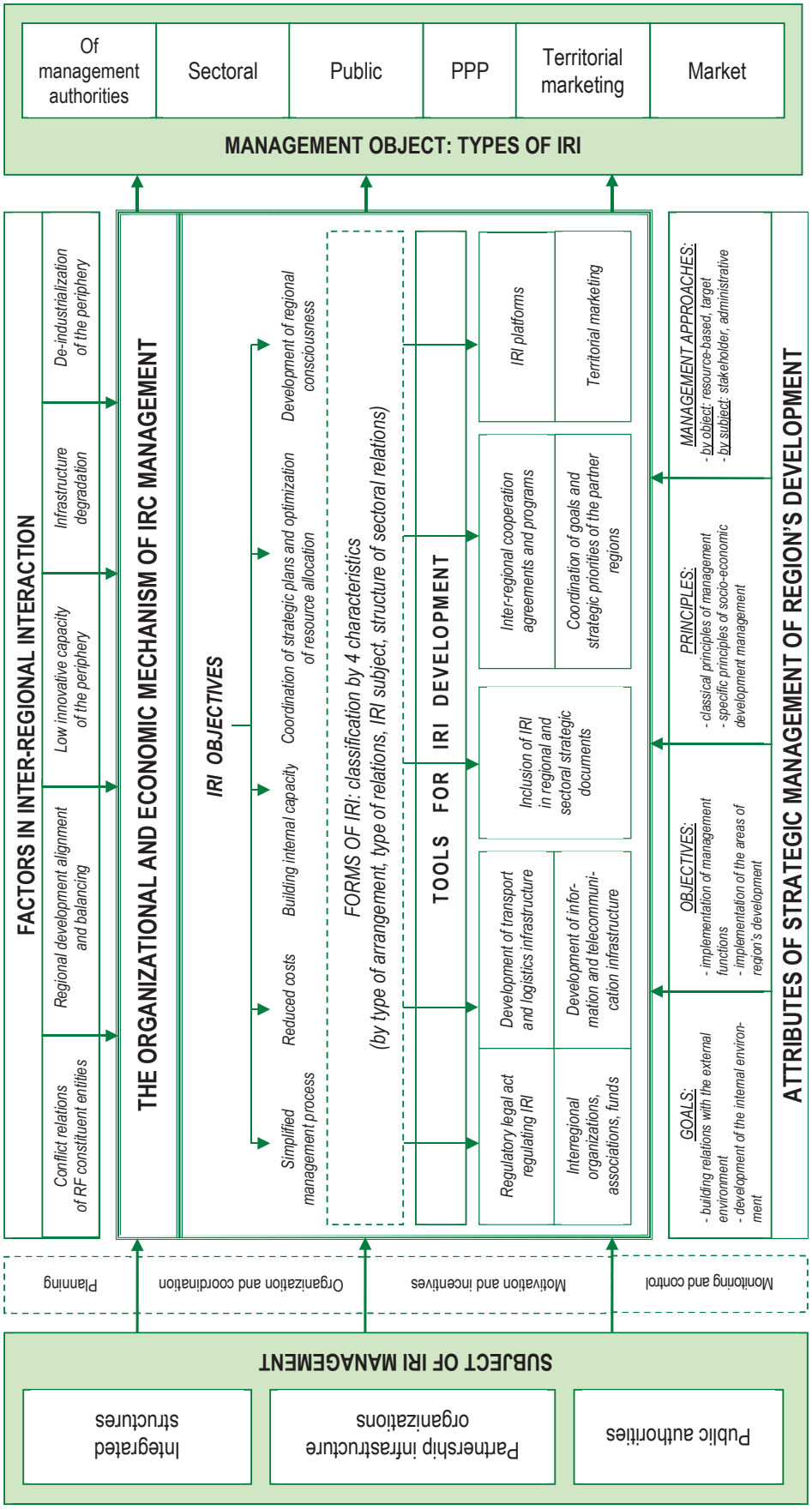


Figure 1. Model of organizational and economic mechanism of IRI management at the level of a macro-region

Table 1. Nature and criteria for assessing types of inter-regional interaction [20]

Type of IRI	Nature	Assessment criteria
Of public authorities	Cooperation based on contractual relations between regional authorities to solve common problems and develop infrastructure	Number of agreements and cooperation programs between regional authorities
Sectoral	Interaction of regional business structures to solve common problems, create production and technological chains, clusters, associations	Number of cooperation agreements, established integrated structures and strategic partnerships
Public	Interaction of public organizations (educational, scientific, law enforcement, cultural and other institutions) and NGOs in the field of network structures, implementation of common projects, exchange of experience	Number of cooperation agreements between public organizations and/or NGOs, agreements on the implementation of certain functions of state management
PPP-based	Interaction of public authorities of Region 1 and business structures of Region 2 to create favorable conditions for management and investment	Number of PPP-based agreements, investment agreements between authorities and business structures, industry agreements
Territorial marketing	Informational impact on the population of Region 1 carried out on the initiative of public authorities of Region 2, to form a positive image of Region 2 in Region 1	Number of information messages broadcast in Region 1 initiated by authorities or state institutions in Region 2
Market	Formal and informal interaction of business structures of Region 1 and the population and public sector of Region 2 in markets of goods and services, labor market	Inter-regional flows of goods and services, correlation of GRP changes in interacting regions
Source: compiled by the author.		

coordinated 45 investment projects, the vast majority being intra-regional[1]. One of the partnership objectives is to develop inter-regional sectoral cooperation in constructions, forestry, power engineering, fuel and energy, and mining, which is practically manifested in exchange of experience, finding solutions to common problems, arranging sectoral weeks.

3. *Inter-regional integrated structures* – associations of target groups of regional development in two main variants:

– integrated business structures (diversified industrial groups, integrated business groups, business networks) with the main purpose to improve competitiveness;

– integrated structures of public-private partnership (technology platforms, inter-regional financial and industrial groups, industrial (sectoral) clusters), whose objectives are to improve communications efficiency, develop innovation, and raise competitiveness [19].

The object of management within the developed organizational and economic mechanism is types of inter-regional cooperation whose nature and evaluation criteria are presented in *Table 1.*

As a result of analyzing the strategies of socio-economic development of constituent entities of the Northwestern federal district (NWFD) (see *Appendix*) revealed that most regions use sectoral interaction and territorial marketing (*Tab. 2*); the interaction of governing bodies is reflected in inter-regional cooperation agreements.

Factors in external and internal environment of regional development directly influence the process of IRI management.

The weakening inter-regional interaction of NWFD constituent entities after the collapse of the USSR is due to the following main factors (internal environment):

1. *The gap between the companies for supply of raw materials, finished products, operating in controlled economy managed by Regional Economic Soviets (sovnarkhozes).* For example, in the 1950–s, many enterprises in Pskov

[1] North-West Strategic Partnership. 2016 progress report. Available at: http://www.n-west.ru/wp-content/uploads/2014/03/Otchet-o-deyatelnosti-2016_pechat.pdf

Table 2. Types of IRI in the strategies of socio-economic development of NWFD constituent entities

Region	Type of IRI					
	Sectoral	Public	PPP	Territorial marketing	Market	Total
Novgorod Oblast	+	-	+	-	-	**2**
Leningrad Oblast	+	-	-	+	-	**2**
Vologda Oblast	-	+	-	+	+	**3**
Pskov Oblast	+	-	-	+	-	**2**
Republic of Karelia	-	-	-	-	+	**1**
Komi Republic	+	+	+	+	+	**5**
Nenets Autonomous Okrug	+	+	-	+	+	**4**
Murmansk Oblast	-	-	-	+	-	**1**
Arkhangelsk Oblast	+	-	-	-	-	**1**
Total:	**6**	**3**	**2**	**6**	**4**	

Source: developed by the author as a result of analysis of socio-economic development strategies in the Northwestern federal district (Appendix).

were established as branches of Leningrad enterprises, while the center was in charge of product development. Before perestroika, intense economic relations of the Leningrad Oblast with Novgorod, Velikiye Luki, and Pskov took place [4, p. 125].

2. *Deteriorating transport infrastructure*. The rayonnant-radial structure of the road transport infrastructure in Russia with the center in Moscow weakens the interaction opportunities between peripheral regions. For example, only 5% of Russian imports and 10% of Russian exports currently transit the territory of the Pskov Oblast.

3. *Focus of district's economy on foreign trade*. The Northwestern federal district is the largest foreign operator in Russia: 93% of investment projects of the Northwestern FD up to 2030 are related to the implementation of foreign economic functions [4, p. 127].

4. *Deindustrialization* which is manifested in deterioration of industrial potential, reduced production, substitution of industrial platforms with commercial, office platforms and "spots" for housing development, and deteriorating innovative capacity in peripheral areas.

The factors in the **external environment** influencing IRI development in Russia's constituent entities at the federal level include: alignment and balancing of regional development, strengthening economic disparities in regions, focus on import substitution, restriction of foreign economic activity, absence of a fundamental legal act in inter-regional interaction.

The intensification of inter-regional cooperation among Russian constituent entities is possible only if its role is recognized and it is applied in strategic management of regional development. The study of **attributes of strategic management of development in NWFD regions** (goals and objectives of socio-economic development, management principles and approaches) presented in their policy documents (Appendix) shows that the goals of socio-economic development are more focused on the development of the internal environment, rather than on developing the relations with the external environment; the vast majority of regions set the goals of social and economic and human capital development, less than half –the goals aimed at integration and cooperation development; the principles of partnership and organizing the relations of management subjects and influence subjects are not noted by the regions;

the regions prefer administrative and target management approach due to the low level of social responsibility and lack of competence of authorities in strategic management. Thus, it is revealed that significant opportunities for the development of cooperation between the NWFD constituent entities specified in the 2020 Development Strategy of the district[2] are not fully accounted for in strategic management of NWFD regions.

Below there are some examples of mismatches in perceptions of potential partners in strategic documents of NWFD constituent entities:

1. The priority partners in the Vologda Oblast are: the Arkhangelsk and Leningrad oblasts, republics of Karelia and Komi. However, the Arkhangelsk Oblast and the Komi Republic do not view the Vologda Oblast as a strategic partner.

2. The Novgorod Oblast considers the Pskov, Leningrad and Vologda oblasts as the main partners. These regions do not consider the Novgorod Oblast a partner.

3. The Leningrad Oblast and the Republic of Karelia choose the market type of IRI as the main one (product supplies to Moscow and Saint Petersburg).

As for the reasons for the revealed contradictions, we see the main one in lack of coordination of goals and objectives of socio-economic development ion the country at the level of a macro-region. Thus, the only strategic goal within the 2020 Strategy[3] of socio-economic development of the Northwestern federal district, which requires consolidation of efforts of NFWD regions, is the development of the continental shelf in Russia's Arctic zone. The regional strategies of socio-economic development of the Northwestern FD provide for inter-regional cooperation for implementing the common needs.

Examples of common needs for NWFD constituent entities may be the need for large infrastructure facilities for economic development (territorial corridors, logistics centers, databases and other facilities promoting the movement of resources, goods, information and population) and social sector (large facilities of collective use in healthcare, education, culture, etc.); projects related to the establishment of inter-regional scientific-industrial innovation clusters; projects on resource development in the Russian Arctic zone; development of the Northern Passage as a transnational transport communication.

Forms, objectives and tools for building such interaction constitute **the core of the organizational and economic mechanism of IRI management**.

The classification of forms of IRI (*Tab. 3*) can be used in planning the development of a region as a socio-economic system.

By using the introduced characteristic of classification "by structure of sectoral relations" it is possible to assess the intensity of inter-regional interaction in Russia's constituent entities by comparing the forms of its implementation and sectoral development priorities. The assessment of the structure of sectoral relations between NWFD constituent entities indicates that it would be appropriate for the district's regions to cooperate in various sectors (tourism, forestry and agro-industrial complex, machine-building and power engineering) between several regions

[2] Order of The Government of The Russian Federation no. 2074-p "On the approval of the Strategy of Socio-Economic Development of the Northwestern federal district up to 2020", dated 18.11.2011. Available at: http://www.n-west.ru/strategicheskoe-planirovanie/strategiya-szfo-2020/

[3] Order of The Government of The Russian Federation no. 2074-p "On the approval of the Strategy of Socio-Economic Development of the Northwestern federal district up to 2020", dated 18.11.2011. Available at: http://www.n-west.ru/strategicheskoe-planirovanie/strategiya-szfo-2020/

Table 3. Classification of forms of inter-regional interaction

Characteristic	Forms of inter-regional interaction
1. By type of IRI arrangement [7, p. 4], [21, pp. 38–39]	1.1. Forman integration (naturally formed; artificially organized) 1.2. Non-formal interactions
2. By type of relations [2, p. 85]	2.1. Competitive (autarchy) 2.2. Cooperation (cooperation; integration) 2.3. Conflict (separatism)
3. By IRI subject [17]	3.1. International and cross-border 3.2. Macro-level (regions) 3.3. Meso-level (economic entities) 3.4. Micro-level (individuals)
4. By structure of sectoral relations	4.1. Interaction within 1 sector between 2 regions 4.2. Interaction within various sectors between 2 regions 4.3. Interaction within 1 sector between several regions 4.4. Interaction within various sectors between several regions
Source: compiled by the author based on generalization of existing approaches.	

Table 4. Systematization of tools for developing IRI by objective and level of administration

IRI objective	Level	
	Federal	Sub-federal
Simplified management process	Inter-regional clusters	Regulatory legal act regulating specific IRI aspects
	Interaction networks (network universities, research teams etc.)	Inter-regional organizations, associations, funds
Reduced costs	Market infrastructure development	Development of transport and logistics infrastructure
		Development of information and telecommunication infrastructure
Building internal capacity	IRI strategic support and monitoring	Inclusion of IRI in regional and sectoral strategic documents
Coordination of strategic plans and optimization of resource allocation	IRI strategy	Inter-regional cooperation agreements and programs
		Coordination of goals and strategic priorities of the partner regions
Development of regional consciousness	Implementation of inter-regional projects	Platforms of IRI development
		Territorial marketing
Source: compiled by the author based on generalization of authors' approaches: [7, 8, 16, 21, 22].		

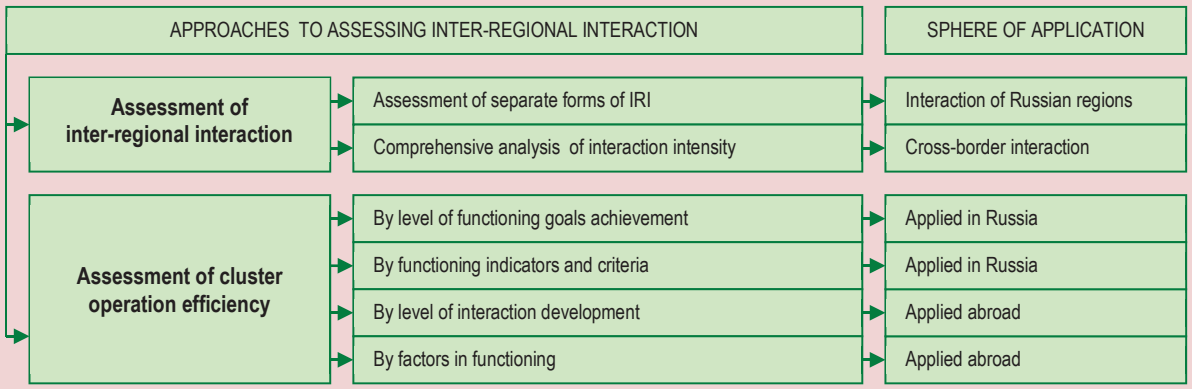
(except the Komi Republic and the Nenets Autonomous Okrug), which is explained by their similar strategic priorities.

Table 4 presents the systematization of tools for developing inter-regional interaction by objectives of such interaction and levels of public administration. At the federal level of public administration, we consider it appropriate to create inter-regional clusters, support network structures, and develop the inter-regional infrastructure. At the sub-federal level – to agree on the regions' goals and strategic priorities and the platform for IRI development.

The implementation of **the control function** within the organizational and economic mechanism of IRI management is ensured by assessing certain types of inter-regional interaction and the degree of implementation of objectives of managing such interaction.

The generalization of results of domestic and foreign studies indicates that approaches to IRI assessment include: a comprehensive analysis of interaction intensity between regions, assessment of certain forms of IRI and efficiency of inter-regional clusters (*Fig. 2*). Complex approaches to analyzing cooperation intensity between regions in our country have been developed and tested for border regions with foreign economic focus [23, 24]. The evaluation of inter-regional interaction within

Figure 2. Systematization of approaches to IRI assessment



the country is practically carried out either through analysis of implementation of its individual forms (for example, inter-regional flows of goods and services) [25], or through assessment of cluster efficiency [26, 27, 28].

The author has developed a comprehensive approach to IRI assessment by studying the practice of implementing certain types of interaction in Russia's constituent entities (*Tab. 5*).

At the first stage, the strengths and weaknesses of the region's socio-economic development are assessed using statistical indicators. Further, factor analysis of IRI conditions is carried out in order to determine the threats and opportunities for the environment. SWOT-analysis identifies priority types of IRI and strategic partners. At the fourth stage, the practice of implementing certain types of regional cooperation is evaluated. In conclusion, recommendations on using the cumulative effect of inter-regional interaction in the region's socio-economic development are made. The developed technique was tested in the case of interaction of the Pskov Oblast with NWFD regions. As a result of testing, strategic partners and priority types of IRI were identified: the development of inter-regional market interaction with the Vologda Oblast and the Republic of Karelia; creation

Table 5. Methods of assessing IRI in Russia's constituent entities

Stage	Stage description	Methods	Data
1. Analysis of internal environment	Assessment of conditions of socio-economic development of a region (development goals and objectives, management principles and approaches)	Analytical (analysis of achievement of strategic goals)	Data from the Federal State Statistics Service
2. Analysis of external environment	Analysis of the impact of the IRI factor on the development of the regional economy in areas of socio-economic development	Factor analysis, expert evaluation	Expert survey data
3. SWOT-analysis	Identifying priority types of IRI and strategic partners	Expert evaluation	Results of stages 1, 2
4. Assessment of identified priority types of IRI	Assessment of types of IRI according to certain criteria	Analytical method (evaluation of indicators)	Legal and contractual database, statistics
5. Recommendations on intensification of using the IRI factor in the development of a region as a socio-economic system	Recommendations: - on the development of priority IRI types; - on the development of strategic partnerships with other regions; - on improving the efficiency of IRI tools application	Expert evaluation	Results of stages of analysis and evaluation
Source: compiled by the author.			

of production and innovation systems, clusters with the Leningrad and Novgorod oblasts; development of inter-regional sectoral interaction: with the Novgorod Oblast in tourism and forestry cluster; with the Vologda Oblast in constructions; with the Leningrad and Arkhangelsk oblasts in transport and logistics; with the Leningrad, Novgorod and Arkhangelsk oblasts in mechanical engineering; with the Leningrad and Novgorod oblasts in power engineering.

The application of the developed technique for assessing the inter-regional interaction of other Russia's constituent entities is possible in case of improving the IRI information support and methodological support for assessing its individual types.

Discussion of research results. The relevance of the proposed organizational and economic mechanism of IRI management in NWFD is determined by the following factors:

– a vast majority of inter-regional interactions in NWFD occur between the center (Saint Petersburg) and the periphery; in this regard, activating interactions between peripheral regions is relevant;

– the peripheral NWFD regions demonstrate a small-scale territorial system in comparison with the national; the Leningrad Oblast and the Komi Republic are the leaders in terms of the scale of economy among all regions in the target group (*Tab. 6*);

– all NWFD regions, except for the Leningrad Oblast, have a low (compared to the national average) number of employees in the economy due to low total population in such regions (Tab. 6);

– in terms of economic efficiency 4 regions of the target group exceed the average values: the Komi Republic, the Novgorod, Leningrad and Murmansk oblasts. In our opinion, these indicators are explained by a small number of employees in the economy (with the exception of the Leningrad Oblast) (*Tab. 7*);

– in terms of the share of profitable enterprises, none of the regions in the target group exceeded the national average, which confirms the thesis about the impact of the number of employees in the economy on the overall economic performance;

– despite the rather low level of unemployment, the regions in the target group have social indicators below the national average (including the ratio of population's money income to the cost of fixed volume of goods and services and life expectancy at birth) (*Tab. 8*).

Table 6. Indicators of the scale of the economy of peripheral NWFD regions in 2015 (compared to the national average), %

Region	Production of goods and services	Consolidated budget revenues	Number of people employed in the economy
Novgorod Oblast	0.0005	3.7250	0.4304
Vologda Oblast	**0.0010**	7.2259	0.7869
Komi Republic	**0.0010**	**8.3908**	0.6132
Arkhangelsk Oblast	0.0005	**9.7586**	0.7575
Leningrad Oblast	**0.0018**	**16.4916**	**1.2682**
Pskov Oblast	0.0002	3.3404	0.4307
Murmansk Oblast	0.0006	**8.2838**	0.5802
Republic of Karelia	0.0003	4.3311	0.4129
Nenets Autonomous Okrug	0.0003	2.2987	0.0291

Source: compiled by the author based on data from the official website of the Federal State Statistics Service: http://www.gks.ru/ and OOO RIA Rating ranking agency: http://vid1.rian.ru/ig/ratings/rating_regions_2017.pdf

Table 7. Economic performance indicators in NWFD peripheral regions in 2015 (comparison with the national average), %

Region	Production of goods and services per 1 resident	Capital investment per 1 resident	Share of profitable enterprises
Novgorod Oblast	**120.66**	**119.30**	91.52
Vologda Oblast	**124.34**	71.36	93.74
Komi Republic	**169.40**	**204.64**	92.63
Arkhangelsk Oblast	62.76	44.60	89.71
Leningrad Oblast	**151.74**	**113.02**	99.03
Pskov Oblast	52.35	41.17	89.71
Murmansk Oblast	**120.78**	**132.98**	84.84
Republic of Karelia	66.34	51.59	79.55
Nenets Autonomous Okrug	1072.38	2610.48	86.51
Source: compiled by the author based on data from the official website of the Federal State Statistics Service: http://www.gks.ru/ and OOO RIA Rating ranking agency: http://vid1.rian.ru/ig/ratings/rating_regions_2017.pdf			

Table 8. Indicators of the social sphere in NWFD peripheral regions in 2015 (comparison with the national average), %

Region	Ratio of money income to cost of a fixed set of consumer goods and services	Unemployment rate	Life expectancy at birth
Novgorod Oblast	93.97	82.14	95.25
Vologda Oblast	84.05	**121.43**	98.05
Komi Republic	**100.00**	**125.00**	96.65
Arkhangelsk Oblast	92.24	**121.43**	98.05
Leningrad Oblast	77.16	91.07	98.05
Pskov Oblast	70.26	**123.21**	95.25
Murmansk Oblast	97.85	**139.29**	98.05
Republic of Karelia	79.74	**157.14**	96.65
Nenets Autonomous Okrug	**165.95**	**141.07**	99.45
Source: compiled by the author based on data from the official website of the Federal State Statistics Service: http://www.gks.ru/ and OOO RIA Rating ranking agency: http://vid1.rian.ru/ig/ratings/rating_regions_2017.pdf			

Modern realia of socio-economic development of NWFD regions are associated with a forced change of usual development priorities based on foreign economic openness and the search for new growth drivers. One of the ways to enhance regional development is to intensify inter-regional cooperation to both share resources and expand markets. The existing model of relations between the center and the periphery determines the competition of regional authorities for resources of the federal center. Moreover, the regions compete in the foreign market, seeking to attract resources of foreign investors. As a result, the potential synergy of inter-regional cooperation, both resource and system, is not used by the regions as a driver of growth and development.

Inter-regional interaction as a tool for developing strategic priorities of Russia's constituent entities strengthens their economic ties, optimizes the location of infrastructure facilities based on cooperation of their activity, eliminate inefficient financial costs associated with creating duplicate economic structures in the regions and unjustified inter-regional competition, combines the economic potential of Russia's constituent entities to address the most large-scale investment projects, and disseminates progressive experience in regions' innovative development.

The studies in progress are characterized by lack of a common point of view on the choice of the best IRI model. The overall conclusion that can be drawn based on generalization of the existing scientific publications related to this scientific problem is that it is necessary to ensure the transition from regional strategies of competition for resources to strategies of mutually beneficial cooperation of Russia's constituent entities. In this regard, it can be stated that the improvement of scientific and methodological provisions of inter-regional interaction as a key factor in the development of regional socio-economic systems is an urgent economic problem both in theory and in practice. As a result of the present study, scientific and methodological provisions of inter-regional interaction, including the organizational and economic management mechanism and evaluation methods have been improves. Their application for managing the development of regional socio-economic systems will help use the cumulative effect of inter-regional cooperation of Russia's constituent entities as an accelerator of regional economic development.

Appendix

Strategic documents of socio-economic development of NWFD regions

Region	Document	Access
1. Novgorod Oblast	Law of the Novgorod Oblast no 100-OZ "On the strategy of socio-economic development of the Novgorod Oblast up to 2030 (as amended on 04.05.2016)", dated 09.07.2012	http://docs.cntd.ru/document/439047200
2. Vologda Oblast	Resolution of the Government of the Vologda Oblast no. 739 "On the Strategy of socio-economic development of the Vologda Oblast up to 2020 (as amended on 14.12.2015)", dated 28.06.2010	http://docs.cntd.ru/document/424083385
3. Komi Republic	Resolution of the Government of the Komi Republic no. 88 "On amendments to the Decree of the Government of the Komi Republic no. 45 "On the Strategy of economic and social development of Komi Republic up to 2020, dated 27.03.2006", dated 22.03.2013	http://docs.cntd.ru/document/430606073
4. Arkhangelsk Oblast	Strategy of socio-economic development of the Arkhangelsk Oblast up to 2030 (project)	http://sp.lifttothefuture.ru/uploads/priority/files/b03dde66987b741e5048fd583b7505ce1c1d5ef6.pdf
5. Leningrad Oblast	Law of the Leningrad Oblast no. 76-oz "On the Strategy of socio-economic development of the Leningrad Oblast up to 2030 and the recognition of the regional law "On the Concept of socio-economic development of the Leningrad Oblast up to 2025" as invalid", dated 08.08.2016	http://docs.cntd.ru/document/456011417
6. Pskov Oblast	Order of The Administration of the Pskov Oblast no. 193-p "On approval of the Strategy of socio-economic development of the Pskov Oblast up to 2020 (as amended on December 24, 2012)", dated 16.07.2010	http://docs.cntd.ru/document/924021554
7. Murmansk Oblast	Resolution of the Government of the Murmansk Oblast no. 768-PP/20 "On the Strategy of socio-economic development of the Murmansk Oblast up to 2020 and for the period up to 2025", dated 25.12.2013	http://docs.cntd.ru/document/465602093
8. Republic of Karelia	Order of the Government of the Republic of Karelia no. 129r-P "On the Strategy of socio-economic development of the Republic of Karelia up to 2020", dated 10.04.2007	http://docs.cntd.ru/document/919323898
9. Nenets Autonomous Okrug	Resolution of the Chamber of Deputies of the Nenets Autonomous Okrug no. 134-SD "On approval of the Strategy of socio-economic development of the Nenets Autonomous Okrug up to 2030", dated 22.06.2010	http://docs.cntd.ru/document/441760904

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Inter-Municipal Cooperation as an Institution of Strategic Development of Territories*

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Abstract. The purpose for the article is to substantiate the ways of developing the institution of inter-municipal cooperation in the context of strategic planning at the local level. Most municipal units do not have the necessary resources to develop and implement plans and programs for social and economic development aimed at the integrated solution of all local issues. At the same time, the analysis of projects on strategic socio-economic development of some municipal units in the Sverdlovsk Oblast demonstrates the territories' disinterest in resource integration for implementing development projects to solve common problems on mutually beneficial terms. The present study is the result of the need to seek mechanisms to increase the efficiency of socio-economic development of municipal units amid limited resources.

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The authors propose a methodical basis of the multicomponent analysis of strategic development factors based on sectoral and territorial cooperation of municipal units. The assessment of the potential of inter-municipal cooperation is carried out on the example of a specific municipal unit in the Sverdlovsk Oblast taking into account the strategic projects of neighboring territories of both internal subordination and territories administratively subordinated to other constituent entities in Russia. The problems and possibilities of integrative interaction of municipal units in the context of socio-economic development strategy are shown. The presented results provide a systematic framework for theoretical and empirical studies of factors in socio-economic development of municipal units. According to the research results, the current level of socio-economic development determines the need for inter-municipal cooperation in priority areas such as territorial and strategic planning, implementation of joint infrastructures and investment projects.

Key words: inter-municipal cooperation, territorial development, strategic planning, quality of life.

Introduction

Relatively low rates and negative trends in the socio-economic development of certain municipal units are often associated with limited resources of various kinds absent in these territories and present in others. One of the solutions to this problem may be joint use of resources by several municipal units on a contractual basis and consideration of this type of interaction when elaborating the strategy of socio-economic development of the territory.

Despite much literature devoted to cooperation between municipal units, the elaboration of socio-economic development strategies that would identify joint solutions to social, economic, and environmental problems of municipal development based on voluntary inter-municipal cooperation is not sufficiently implemented in Russia. Thus, the purpose of this article is to justify the ways to develop the institution of inter-municipal cooperation in the context of strategic planning at the local level.

Theory and methodology

Strategic planning applied to municipal units refers to the process through which local communities "form an image of their future and determine the stages of its achievement based on local resources" [1].

At the same time, the strategy itself does not guarantee that the goal will be achieved, unless effective mechanisms for its implementation are involved. When developing a strategy for municipal unit development it is necessary to take into account many factors, including the interests of the population and business, as well as relations, existing or still emerging: vertical – with regional, federal authorities, and horizontal – with nearby municipal units [2]. Thus, in order to avoid territorial differences it is necessary to view strategic objectives of the municipal unit development in their correlation with other municipal plans. Moreover, numerous problems of municipal units' daily life due to the functions assigned to local authorities cannot be effectively solved in terms of resource scarcity, which objectively indicates the need for developing various types of territorial interaction. In this regard, inter-municipal cooperation as an institution of territorial cooperation involves building close relations between spatial organization and socio-economic development

of municipal units. In our opinion, analysis and consideration of its two aspects (internal and external environment; *Fig. 1*) is an important part of elaborating the socio-economic development strategy.

Analysis of the internal environment is associated with defining factors in the strategic areas of territory's socio-economic development, indirectly affecting the interests of the neighboring municipal units. At this stage of strategy development, an effective type of development is determined based on the territory's own natural, capital, labor, and other resources.

Analysis of the external environment is associated with defining objective cooperation factors and finding forms of interaction with the neighboring areas, which makes it possible to jointly solve problems of mutual interest and leading to:

– to the development of all spheres of economy, increased quality of life in interacting territories;

– an opportunity to prevent the possible negative consequences associated with resource constraints of municipal units;

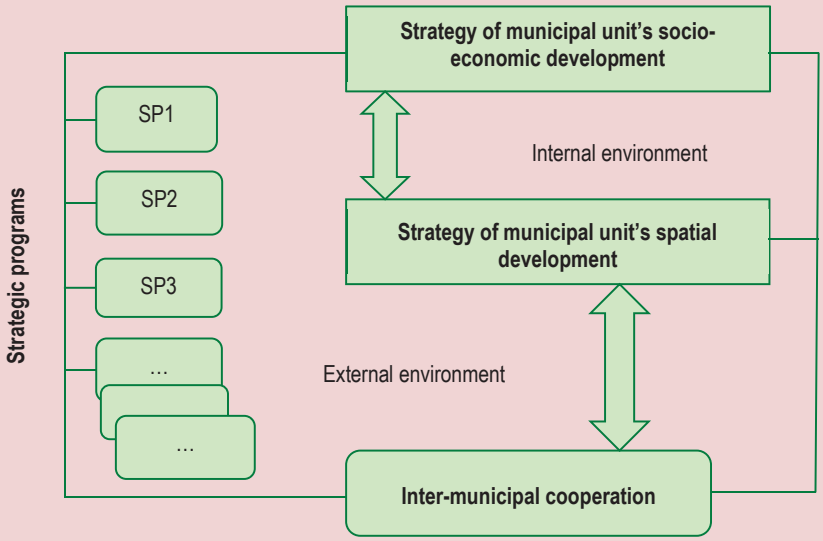
– an opportunity to find compensating measures to implement the socio-economic policy.

Many problems related to increasing the efficiency of the institution of inter-municipal cooperation are analyzed in terms of the development of strategic spatial planning documents. This research aspect is very relevant for domestic territorial planning since the plan content will largely depend on the involvement of municipal units in inter-municipal cooperation.

The right of local communities to cooperate is enshrined in Article 10 of the European Charter of Local Self-Government (ratified in Russia by Federal law "On ratification of the European Charter of Local Self-Government" no. 55-FZ, dated 11.04.1998).

Establishing and developing the institution of inter-municipal cooperation in Russia is

Figure 1. Correlation between inter-municipal cooperation and development strategies of municipal units



defined in Federal Law "On general principles of local self-government in the Russian Federation" no. 131-FZ, dated 06.10.2003, which establishes its basic organizational forms (unified all-Russian association of municipal units, the council of municipal units of the Russian Federation, inter-municipal organizations, non-profit organizations of municipal units); the legal status of forms of inter-municipal interaction is identifies, including agreements and contracts concluded for the purpose to combine resources to address local issues, which is becoming very important in modern conditions.

The aim of the institution of inter-municipal cooperation in Russia is to increase the sustainability of territories' development by addressing local problems and reducing dependence on external socio-economic threats. Among the existing areas of cooperation the most effective are: transfer of experience of municipal government; advocacy of interests of local communities at the regional level; optimization of resources of local communities to address socio-economic and environmental challenges of municipal units [3].

In socio-economic terms the mechanisms of inter-municipal cooperation ensure a more pronounced effect through resource saving, which can be achieved through addressing socio-economic problems of several settlements. However, some Russian and foreign authors note that the development of inter-municipal cooperation causes certain problems: increased transaction costs, issues of competence and responsibility in solving specific problems; in some cases, it is possible to limit the freedom of action of subjects involved in cooperation [4].

In territorial terms, inter-municipal cooperation is designed to stimulate joint solution of socio-economic development objectives locally, improving the efficiency of using local resources, land resources in particular [5], and the efficiency of decision-making [6]. It is possible to defend the interests of the territory at the regional and national level more reasonably [7].

In terms of regional interests, inter-municipal cooperation, on the one hand, is aimed at overcoming the fragmentation of local self-government and promoting joint solutions of individual tasks on a contractual basis, as well as at the development of the middle, intermediate level of local government able to provide the necessary services to small territorial units, especially located in rural areas. On the other hand, it is an instrument of regional economic development and implementation of the local federal policy through providing appropriate organizational and financial support [8]. The key principles of inter-municipal cooperation are preserving the independence of municipal member-units of cooperation, political and socio-economic feasibility, as well as voluntary participation (although not always[1]).

V.L. Tambovets distinguishes between four types of municipal cooperation: (1) competition, (2) cooperation, (3) co-competition (combination of competition and cooperation), as well as a "marginal" form of interaction such as (4) merger (association) of municipal units [9]. Analyzing the possible forms of municipal cooperation, the author concludes that the most promising area of inter-municipal cooperation is co-competition, where municipal units closely cooperate to provide services to the local population on mutually beneficial terms, and compete for grants from regional and central governments.

[1] In Italy, for example, all communes (municipal units) located in mountainous areas must be part of mountain communities whose boundaries are established by regional authorities [8].

In Russia, the organizational forms of inter-municipal cooperation are dominated by contractual (joint services to the population and a possibility of transferring powers to another municipal unit or inter-municipal association) and associative forms (primarily representative, coordination and advisory functions). The Coordination Board on Regional Councils Promotion and Unified all-Russian Association of Municipal Units established in 2005 developed model documents (memorandum and articles of association) and recommendations on methods, terms, and forms of municipal councils establishment. Thus, an institutional design of the system of inter-municipal cooperation at the state level took place [10].

At present, there are a number of inter-municipal associations in Russia, including the Association of Siberian and Far Eastern cities, the Association of municipal units "Goroda Urala" (Ural Cities), the Association of cities of the Volga Region and others. Moreover, in most of Russia's constituent entities municipal councils are established. It would seem that the development of these institutions shows the prospects for inter-municipal cooperation in areas such as territorial and strategic planning, implementation of joint infrastructure and investment projects, territory development, etc., but in general their functioning is informative rather than practical [7].

At the same time, the real use of organizational and economic forms of cooperation can enable municipal units to implement ambitious investment and infrastructure projects aimed to implement the strategies of socio-economic development of cooperating municipal units.

As noted in a number of studies, the development of inter-municipal economic cooperation in the form of economic societies in Russia is hampered by contradictions between legislative provisions on local self-government and the civil legislation standards, as well as lack of special legal regulation of forms of such cooperation [11; 12]. Moreover, one of the reasons complicating the formation and development of organizational and economic forms of inter-municipal cooperation is insufficient funds and experience of municipal employees in this area [9; 13].

In European countries, the institution of inter-municipal cooperation is actively developing in two main areas. On the one hand, horizontal ties are developing (most European countries), on the other hand, vertical cooperation between different levels of territorial administration (for example, Spain, Australia) is being built [6]. There are examples of developing network forms of inter-municipal cooperation involving both local authorities, regional and national government, as well as various social structures. A common form of cooperation is joint administration which integrates the actions of individual municipal units in a new organization which they jointly manage [14].

Public law and target agreements are relevant for Germany [15]. The main scope of their application is operation of public facilities – cultural facilities, sports, utilities. In Denmark, several small municipal units may enter agreements with one large municipal unit, which enables them to purchase the necessary services at a better price. Another type of inter-municipal cooperation is presented in the form of companies (cooperative societies, partnerships, limited liability companies, etc.). As in Germany, cooperation is particularly preferable in the sphere of public services [16].

The results of foreign studies of inter-municipal cooperation, its advantages and disadvantages show that the use of this

institution in municipal administration has certain limitations, first of all due to the effect of administrative resources, reluctance of management personnel to deal with the issues of building cooperative relations, as well as incompetence in this area [9], secondly, due to the scope of its application characterized, as a rule, by significant financial investment and fall into the influence zone of several municipal units. In this regard, joint companies engaged in public and road infrastructure, projects related to tourism development, spatial planning of territories, as well as the implementation of regional projects have been mostly developed. The advantages of cooperation include the expansion of opportunities to receive funding from the region, cost savings and joint representation of municipal interests in higher administrative bodies [17]. Along with the advantages, there are also the disadvantages associated with lack of effective mechanisms for coordinating financing of joint strategic projects, which is constrained by many factors (insufficient legislative framework, financial incentives for the representatives of different levels of administration, human resources, time and ideas, etc.).

At the same time, much attention is paid to the search for ways of further development of inter-municipal cooperation. For example, some publications note that despite the existing solutions in the local environmental policy and sustainable development at the regional level, there are significant challenges in voluntary inter-municipal cooperation on environmental issues [18]. In this regard, studying the development of a conceptual framework for analyzing the factors determining territorial interactions, primarily through forming human-oriented institutions, is very relevant. Other research results in voluntary formation of inter-municipal coalitions conducted between 1995 and 2002 based on data from 1056 municipal units in the French Brittany leads to a conclusion that the decision of a municipal unit to cooperate in provision of local public goods depends on the decisions taken by its neighbors [19].

In our view, the authors conclude that cooperation with the neighboring municipal units is much more likely if the latter are already engaged in provision of any shared public goods at the local level. This fact may indicate that functional cooperation is more likely to arise because of the so-called simulation motivation and will be poorly motivated at the same time by administrative levelling of the socio-economic situation in municipal units, i.e. this type of interaction should be initiated by the municipal units themselves, rather than by higher authorities.

Methodological tools

To substantiate the ways of inter-municipal cooperation development in the context of strategic planning at the local level, texts of strategies for socio-economic development of a number of municipal units of the Sverdlovsk Oblast have been used. Assessment of inter-municipal cooperation potential is carried out through using the methods of multi-component analysis of factors in strategic development taking into account sectoral and territorial interaction of municipal units. For this purpose, methods of comparative analysis, content analysis of socio-economic development documents, methods of socio-economic space localization, as well as elements of foresight are used. The case study of the city of Krasnoufimsk in the Sverdlovsk Oblast substantiates the prospects of formation of the institution of inter-municipal cooperation taking into account the strategic projects of the neighboring territories not only of internal subordination, but also of territories administratively subordinated to other Russia's constituent entities.

Results and discussion

In the framework of expert evaluation of draft strategies of socio-economic and spatial development of twenty municipal units in the Sverdlovsk Oblast, which involved the authors of this article in February 2018, a number of problems were identified in their development. In most cases, draft strategic documents indicate that municipal authorities have little idea of the goals and objectives of spatial development. Only two out of 20 municipal units (Krasnoufimsk and Malyshevskoye urban districts) presented their vision of development in the context of implementation of transport projects in the future, which will ensure the development of these territories. For example, in the development strategy of Krasnoufimsk takes into account the prospect of building a high–speed highway connecting Ekaterinburg and Kazan, the implementation of which will form the socio-economic space of Krasnoufimsk as a "transport and logistics gate of the Sverdlovsk Oblast".

In many strategies the goal does not reflect the essence of spatial development and repeats the goal of socio-economic development of a municipal unit. But, most importantly, absolutely all draft strategies do not take into account the opportunities and threats related to the development prospects of the neighboring territories with a common settlement frame; there is no understanding of the need to analyze legal documents for territorial and sectoral planning with the information about territories' development plans, potential projects at the level of neighboring municipal units and at the regional level. The mechanisms of spatial development are disclosed formally and do not reflect the characteristics of the municipal units' development. In all the analyzed strategy projects there is no such institution of development as inter-municipal cooperation.

In order to determine the methodological framework for assessing the prospects of municipal unit development based on building relations between the neighboring municipal units, we use Krasnoufimsk urban district (UD) in the Sverdlovsk Oblast as an example: it has the most successful draft strategy of spatial development.

The city district has common administrative boundaries not only with intra-regional municipal units, but is also located in immediate vicinity to other regions (Perm Krai and the Republic of Bashkortostan).

The economic space of Krasnoufimsk UD consists of municipal units located within the limits of possible daily circular migration. Their brief description is presented in *Table 1*.

Taking into account the opportunities of inter-municipal cooperation when elaborating development strategies is due to the need to level the negative effects of labor circular migration on the socio-economic condition of certain municipal units.

The degree of circular migration between territories is primarily determined by transport availability. When taking into account the time spent on moving from one point to another, three zones of transport availability are usually distinguished [20, pp. 63–68]. Based on the criterion of time spent on the trip, the economic space of Krasnoufimsk has the following zone distribution of municipal units.

The first belt (30 min or 50–55 km) includes three municipal units: Krasnoufimsky okrug MD, Achit UD in the Sverdlovsk Oblast and Oktyabrsky MD in Perm Krai. These municipal units have smaller population compared to Krasnoufimsky MD, lower income and a higher level of registered unemployment (*Fig. 2 and 3*). The economic structure in these territories is dominated by agriculture. Analysis of investment passports of municipal units

Table 1. Economic space of Krasnoufimsk UD in the Sverdlovsk Oblast*

Name of municipal unit, central residential area, region	Distance to Krasnoufimsk, *km*	Population in municipal unit in 2016, *thousand people*	Economic specialization field of municipal unit
Krasnoufimsk UD, City of Krasnoufimsk, Sverdlovsk Oblast	0	39.3	Social sphere, food processing, transport, manufacturing
Krasnoufimsk okrug, Natal'insk, Sverdlovsk Oblast	20	26.0	Agriculture
Achit UD, Achit, Sverdlovsk Oblast	26	16.0	Agriculture, manufacturing, trade
Oktyabrsky MD, Oktyabrsky, Perm Krai	54	28.1	Constructions, agriculture
Arti UD, Arti, Sverdlovsk Oblast	59	27.9	Agriculture, manufacturing
Suksun MD, Suksun, Perm Krai	78	19.6	Manufacturing, healthcare, agriculture
Mechetlinsky MD, Bolsheustyikinskoye, Republic of Bashkortostan	91	23.0	Agriculture, food processing, energy
Bisert UD, Bisert, Sverdlovsk Oblast	103	10.0	Agriculture, manufacturing
Kungur MD, Perm Krai	127	42.1	Agriculture, mineral extraction, tourism
UD City of Kungur, Perm Krai	127	66.2	Food processing, plasterwork manufacture, constructions, transport and communication
Duvansky MD, Mesyagutovo, Republic of Bashkortostan	140	30.9	Food processing, agriculture, energy, crude oil production, forestry
Askino MD, Askino, Republic of Bashkortostan	149	18.9	Energy, food processing, constructions, agriculture
Nizhniye Sergi MD, Nizhniye Sergi, Sverdlovsk Oblast	149	40.5	Steelmaking, manufacture of machine and equipment
MD City of Ekaterinburg, Sverdlovsk Oblast	202	1455.9	Industry; social sphere; management and administration; finance; real estate; trade, constructions, energy
City of Perm, Perm Krai	208	1048.0	Manufacturing, energy, transport and communication, real estate, constructions, trade, IT, social sphere
City of Ufa, Republic of Bashkortostan	369	1126.1	Manufacturing, energy, transport, constructions

* UD – urban district, MD – municipal district.

indicates that in the near future in these areas none of major investment projects involving the creation of new jobs (see Table 2) is planned. Thus, municipal units in the first zone serve as suppliers of labor resources for Krasnoufimsk, and are active consumers of social services provided by the city organizations.

The second zone (1 hour or 100–110 km) includes four municipal units: Arti and Bisertsk UDs in the Sverdlovsk Oblast, Suksun UD in Perm Krai, and Mechetlinsky MD in the Republic of Bashkortostan. These territories have lower population, lower income levels and higher (Arti and Suksun MDs) or comparable (Mechetlinskiy MD, Biserts UD) unemployment rates (see Figure 2 and 3). The economy of these territories is prevailed not only by agriculture, but also by manufacturing, resort and sanatorium services (Suksun MD) and energy (Mechetlinsky MD) spheres.

Thus, municipal units in the second zone are suppliers of labor resources for Krasnoufimsk. At the same time, a wide range of investment projects is expected to be implemented in these municipal units, which will give an opportunity to create new jobs

Figure 2. Characteristics of labor markets of municipal units included in the economic space of Krasnoufimsk UD

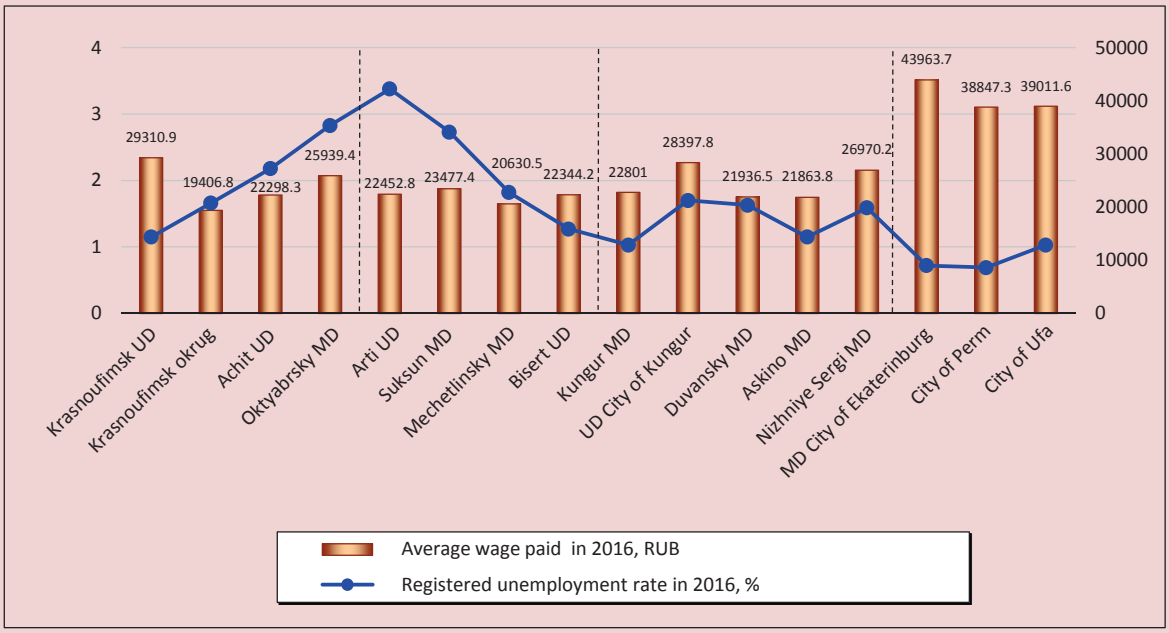
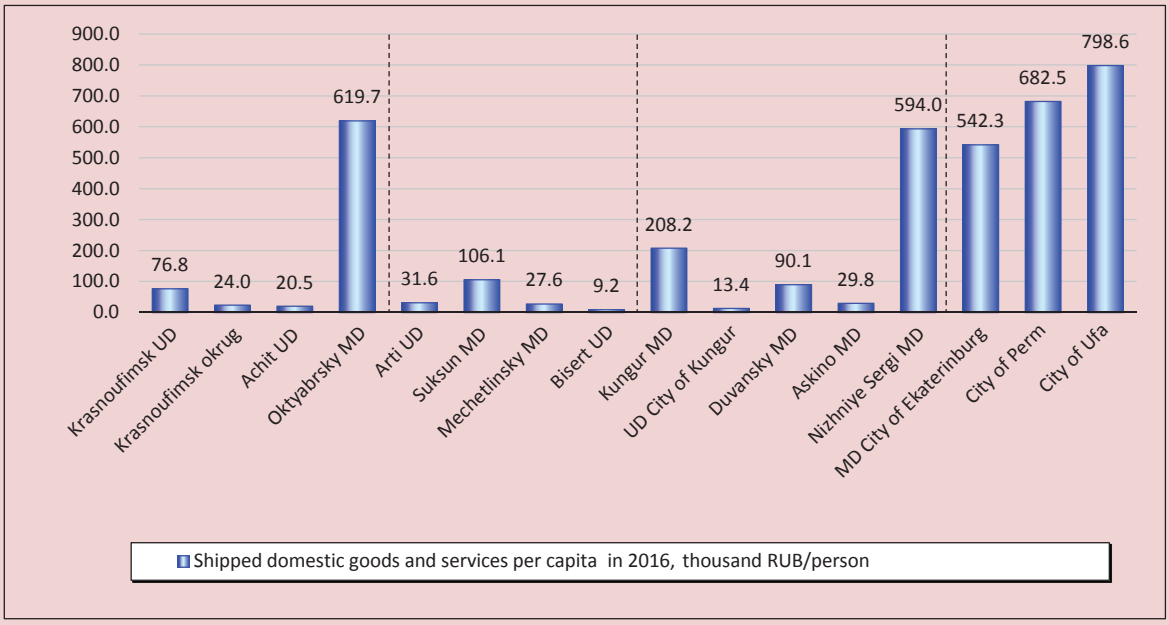


Figure 3. Characteristics of economic development of municipal units included in economic space of Krasnoufimsk UD



in these territories (*Tab. 2*), which is very likely to pose a threat of labor outflow from Krasnoufimsk to actively developing territories.

The population of municipal units in the second zone is a potential consumer of social services presented in Krasnoufimsk. However,

Table 2. Promising investment projects in the economic space of Krasnoufimsk UD*

Name of municipal unit, region	Distance from City of Krasnoufimsk, km	Promising investment projects
Suksun MD, Perm Krai	78	Therapeutic tourism (Kacha sanatorium)
Bisert UD, Sverdlovsk Oblast	103	Building fitness and health complexes, transport and logistics center; brickworks; woodworks; agricultural products refinery; gas well
UD City of Kungur, Perm Krai	127	Nebesnaya Derevnya theme park , tea-packing factory; tourist cluster
Askino MD, Republic of Bashkortostan	149	A full wood processing production cycle; construction of a ski complex in Kubiyazovskii rural council
Nizhniye Sergi MD, Sverdlovsk Oblast	149	Cement plant construction; launch of a gas engine power plant; construction of Triumph fitness and health complex
MD City of Ekaterinburg, Sverdlovsk Oblast	202	Construction of a zoo, water sports palace, Hermitage-Ural cultural and educational center, casting and heat treatment center; establishment of a multi-profile tourist and recreational complex Yekaterinburg-Europe-Asia
City of Perm, Perm Krai	208	"Development of innovative territorial cluster of rocket engine-building project ""New Star" Technopolis"; Photonics cluster (development and production of individual devices based on photonic integrated circuits)
City of Ufa, Republic of Bashkortostan	369	Serial production of helicopter engines such as VK-2500; Belaya Reka sports complex, three swimming complexes, several shopping and business centers; cable production plant; hemodialysis center; scientific and technological park at Institute of Petrochemical Processing of the Republic of Bashkortostan, etc.

* SO – Sverdlovsk Oblast, PK – Perm Krai, RB – Republic of Bashkortostan, UD – urban district, MD – municipal district.

regional centers (Yekaterinburg and Perm) located at the same distance from these municipal units are in a much more favorable position than Krasnoufimsk in terms of attractiveness for consumers for various types of services.

The third zone (1.5 hours or 150 km) includes 5 municipal units: Kungur MD, Kungur UD, Askino MD (Perm Krai), Duvansky MD (Republic of Bashkortostan), and Nizhniye Sergi MD (Sverdlovsk Oblast). Three of them have comparable population, the population in one of them is much smaller, the population in the other is much higher than that of Krasnoufimsk UD (see Table 1). In all territories, income levels are comparable or slightly lower than in Krasnoufimsk UD, the registered unemployment rate is approximately at the same level (see Figure 2). It is also worth noting that three out of five municipal units in the third zone have significantly higher economic development results (see Figure 3).

The economy in these territories is represented by agriculture, various industries, manufacturing, mining, energy, transport, constructions, and tourism (see Table 1). In the future, several major investment projects are planned: they are aimed to create new jobs; they are related to creation of a tourist cluster, construction of a ski resort, a cement plant, etc. (see Table 2) Thus, the third zone of the economic space in the City of Krasnoufimsk has a significant potential of attracting labor resources from the city.

In our opinion, to understand the whole image of the socio-economic space formation of the City of Krasnoufimsk it is advisable to distinguish the fourth zone (over 200 km) which is represented by millionaire cities – regional centers on the border of which the district is located (Sverdlovsk Oblast, Perm Krai, Republic of Bashkortostan). Due to significantly higher wages and a more capacious labor market these cities are significant

attraction points in the economic space of Krasnoufimsk for its labor resources and for consumers in the sphere of social services, shopping and entertainment. In the future, this trend will remain due to the implementation of a large number of investment projects which ensure active economic and social development of millionaire cities in the fourth zone of Krasnoufimsk economic space.

The analysis has indicated the need for developing municipal strategies to take into account many factors affecting the processes of formation and development of Krasnoufimsk economic space. Its boundaries depend both on time and transport costs of traveling to the nearby municipal units, and on the possible shift of the functional role of Krasnoufimsk towards *a recipient*, *a competitor* or *a donor* of labor, investment, social or trade services (*Figure 4*).

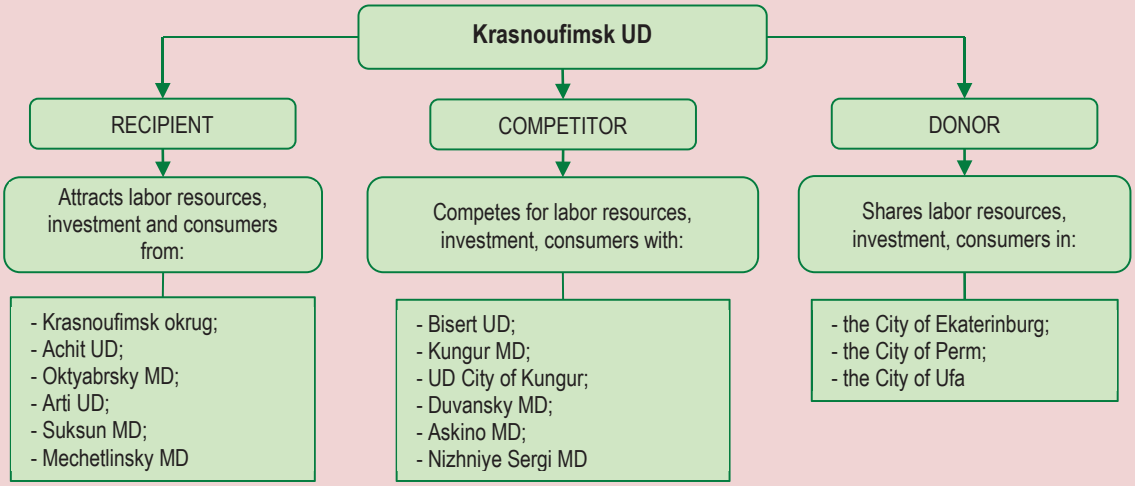
Taking into account the role functions of a municipal unit highlighted in the case study Krasnoufimsk in the Sverdlovsk Oblast will, in our opinion, develop a better strategic document of territorial planning based on the institution of inter-municipal cooperation which is beneficial to all subjects of the socio-economic space.

Today the draft strategy of socio-economic development of the City of Krasnoufimsk claims to implement two spatial development projects. Firstly, as mentioned above, it is the participation in construction of Ekaterinburg–Kazan high–speed highway, which will solve the infrastructure problems of the territory and form another industry specialization – transport and logistics services. Secondly – the formation of the Krasnoufimsk agglomeration which would provide the synergistic effect from joint solution of socio-economic problems of a group of municipal units. However, the implementation of these projects requires careful study of inter-municipal cooperation models, as well as conclusion of relevant contracts and agreements currently absent.

Conclusion

In conclusion, we emphasize that the proposed methodological approach to factor analysis of prospects for municipal units' development based on strategic projects

Figure 4. Classification of Krasnoufimsk UD interactions with municipal units included in its economic space



of the neighboring territories expands the opportunities of their socio-economic development, increasing the coherence of socio-economic and territorial spaces, provides an objective assessment of inter-municipal cooperation potential. Further research into building effective integrative schemes of interaction between municipal units in the context of socio-economic and spatial development needs to become a significant part on the agenda for formulating the methodology of an integrated system of strategic planning of municipal and regional development.

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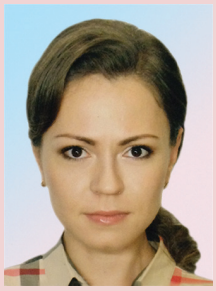
Building a Conceptual Model of Sector Development and Assessment of the System-Building Effect



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Abstract. The article is devoted to forming a strategic vision of rabbit breeding sector taking into account the state priorities. The relevance of the topic is caused by the growing shortage of dietary meat consumption in Russia, which leads to deteriorating quality of food and reduces the quality of life. According to analysis of domestic research on the current problem, more attention is paid to studying the Soviet experience of planning, production and resource analysis of the sector and the need for its development. Lack of experience in strategic planning in rabbit breeding in domestic science has become the cause of vulnerability during the perestroika (reformation) period, resulting in a dramatic decline in production. In this regard, there is a need to improve the mechanisms of integrated development of the sector taking into account the general theory of strategizing. The purpose for the study is to develop a model of sustainable development of the rabbit breeding sector taking into account the assessment of the system-building effect of related activities.

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The research novelty of the study lies in building a conceptual model for improving business processes in the Russian rabbit breeding sector, providing for the implementation of resource-reproduction processes and the formation of autonomous resource security for fully sustainable development of the sector. The model systematizes approaches to the development of the market of related products and necessitates the establishment of the farming institution in rabbit breeding. The paper evaluates the system-building effect of the sector development. With the help of plotting the impulse response function using the vector autoregression model it is shown that with the development of rabbit breeding the sectors determining the resource base and related activities (crop production, consumer industry) will also develop. Moreover, partial implementation of state priorities in terms of increasing tax revenues and reducing population outflow from rural to urban areas has been established. In this study, attention is paid to developing the demand for rabbit breeding products. The main constraint of studying the demand for these products is lack of statistics on their retail prices and retail sales. To address the mentioned problem it is necessary to conduct sociological surveys devoted to studying consumer preferences in consumption of meat products, which will be the further research area.

Key words: rabbit breeding development, conceptual model, system-building effect, vector autoregression model, strategic development of industry.

Introduction. Rabbit breeding in Russia is currently still at the stage of formation despite its active development in European countries and China. Being among the underdeveloped sectors of Russia, rabbit breeding has a great potential for development. The products of rabbit breeding belong are dietary, their consumption rate in Russia is extremely low (1.3 kilos per person a year). According to the World Health Organization, the consumption rate of dietary meat is 4–5 kilos a year. The consumption rate of rabbit meat in meat intake of the population of the leading European countries reaches 7–9 kilos a year. Moreover, amid complex geopolitical situation, aggravation of economic and trade relations between Russia and most European countries and the U.S. poses a threat to food security of Russia. The development of this sector as one of the most productive and profitable among other livestock industries can help implement the two major state priorities being: improving food security and the quality of life.

The purpose of the research is to elaborate a model of sustainable development of rabbit breeding taking into account the assessment of the system-forming effect of related activities.

To achieve this goal, the following objectives are defined:

1) identify the features of the strategy for rabbit breeding development in developed and developing countries;

2) study the historical experience of rabbit breeding in the USSR, determine what caused the recession in this sector;

3) develop a conceptual model of rabbit breeding sustainable development in Russia taking into account the peculiarities of agro-industrial functioning and the general theory of strategy;

4) explore the applied opportunities of using the vector autoregressive model to assess the impact of rabbit breeding development in related activities;

5) calculate the system-forming effect of the sector taking into account the plotted impulse response function.

The research novelty of the study is to develop a conceptual model for improving business processes of rabbit breeding in Russia, which would ensure the implementation of resource-reproduction processes and the formation of autonomous resource security for full sustainable sector development. The model systematizes the approaches to developing the market of related products, and necessitates the establishment of the farming institution in rabbit breeding.

The potential opportunities of this sector in ensuring food security were defined more than four decades ago. Many poverty alleviation programs in developing countries give priority to rabbit breeding as an effective tool as it requires little investment with a short payback period.

In the framework of World Rabbit Science Association (WRSA) international conferences on rabbit breeding zoologists in their reports announce the beneficial effects of implementing rabbit breeding development projects related to:

1) poverty alleviation [1];
2) development of agricultural areas [2];
3) reducing rural-urban migration [3];
4) development of population's entrepreneurial skills [4];
5) empowerment of women through active participation in rabbit breeding and keeping [1].

Food and Agriculture Organization of the United Nations (FAO) provides support and assistance to the development of rabbit breeding in developing countries. Since 1978, international rabbit breeding seminars have been held in various countries in Africa (Tanzania, Sudan, Mozambique, Togo, Ghana, Zambia, Cameroon, and Mauritius).

During the past 4 decades several successful examples of implementation of national programs to promote rabbit breeding development have been registered in Africa [5].

Similar programs were implemented in Latin America: Brazil, Argentina, and Uruguay. In Brazil, for example, the support of farmers involved in rabbit breeding has been provided since 1960–s. Since 2010, this sector has demonstrated significant success: the rabbit population and investment attractiveness increased, rural residents began to show more interest. In the same year, rabbit breeding was strongly stimulated by various advertising campaigns, mainly through TV. Currently, a group of rabbit breeding farmers in Brasilia region of complex development together with the federal government sell rabbit meat to schools and kindergartens as an excellent dietary and healthy product for children [6].

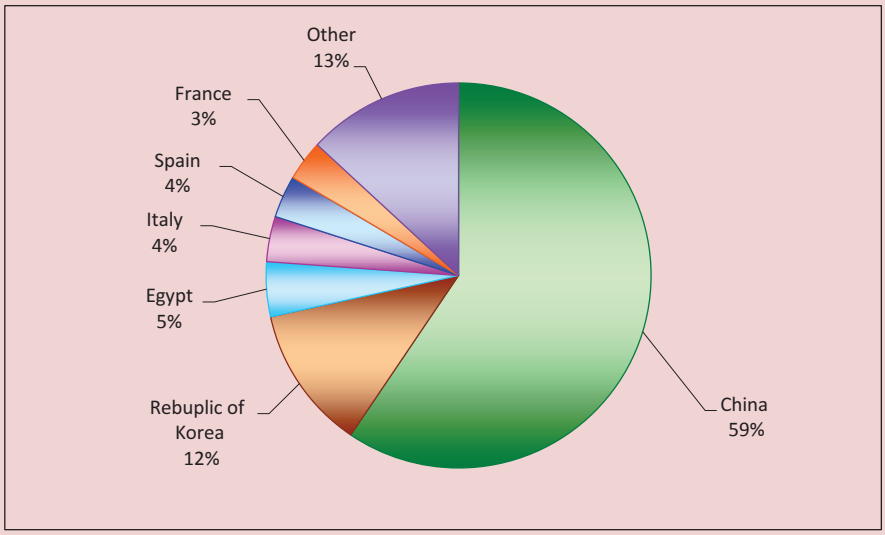
Certain countries in the global market space (GMS) have some experience in strategic development and increasing rabbit breeding efficiency. The study of international experience of rabbit breeding strategy represents a very important stage according to the basic principles of strategy [7]. V.L. Kvint recommends using the experience of successfully implemented strategies and analyzing advantageous strategic ideas with previously unsuccessful attempts to implement.

A review of the main practices and experience of rabbit breeding strategy in developed and developing countries leads to the following main conclusions.

1. On a global scale, there is a zone development of rabbit breeding, which is largely due to the traditions of nutrition, and the countries' general economic and culture level.

According to FAO statistics, the amount of rabbit products has increased annually by 3.1% since 2000 and in 2016 amounted to 1428.1 thousand tons. The world producers of rabbit products are China (59%), the Republic of Korea (12%), Egypt (4.5%), while Russia's share in world production in 2016 comprised 1.3% (*Fig. 1*).

Figure 1. Structure of world production of rabbit meat in 2016, %



Source: Food and Agriculture Organization of the United Nations. Available at: http://www.fao.org/

2. Rabbit breeding development strategies in developed and developing countries differ significantly due to different strategic objectives [8]. In developing countries (China, Argentina, Mexico, African countries) rabbit breeding is represented in the form of small multi-purpose farms for family consumption, established to improve the quality of families' own diets [9; 10]. National programs for rabbit farming development implemented in developing countries solve the problems of poverty, unemployment, agricultural areas development [11; 12; 13; 14].

International organizations are directly involved in the development of rabbit breeding and related projects and strategies in these countries. The emergence and development of rabbit breeding in developing countries is impossible without the participation of public authorities as it is associated with economic and business risks [15]. Assistance at the state level in breeding rabbits, for example, in China is carried out in various forms: financial support (micro-finance), provision of land for breeding, cooperative fund, research projects, and legal support. However, one of the most significant projects is the publication of professional rules for breeding rabbits for farmers [15]. The peculiarity of rabbit breeding in developing countries is its small-scale form and organization in the form of rabbit-farming associations – farmer cooperatives. The advantages of small-scale production include the small size of farms and therefore minimal exposure to economic and business risks, as well as the low cost of management – factors that are more adaptable to changes in the economic environment. However, a characteristic feature of organization and promotion of the sector in developing countries is an impetus from the government, i.e., the impulse for implementing projects related to rabbit breeding development in developing countries is a top-to-bottom initiative.

3. In developed countries with a historically high demand for rabbit products (Spain, Italy,

France, Hungary, etc.), the main goal of its development is to meet the mass demand in national and international markets [16]. In these countries, rabbit breeding is developing on an industrial scale. The initiators of implementing projects on rabbit breeding development are not only public authorities, but also private investors. In developed countries, the rules of rabbit farming are strictly regulated. Due to this, even lower-rank personnel are highly professional, providing uniform quality production standards [17].

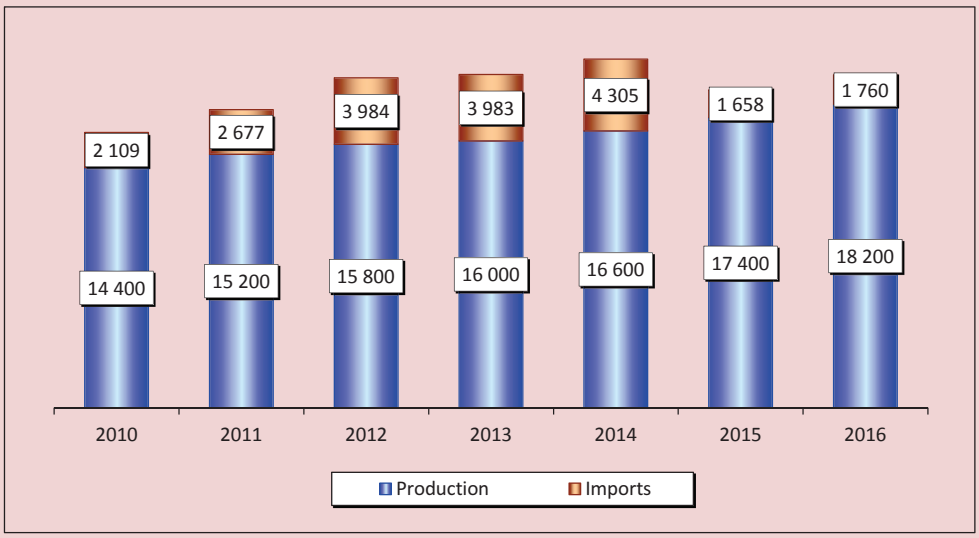
4. In Russia, during the period of command economy rabbit breeding development took place according to five-year plans which were based on final output indicators. At the same time, insufficient attention was paid to selection and genetic work, breeding meat rabbits, which made the sector less profitable [18; 19; 20]. More than 90% of rabbit products was supplied by rabbit farms which were poorly equipped and without any common standards of product quality. Lack of experience in strategy development of the sector made it vulnerable during the perestroika period, resulting in a dramatic decline in production volumes.

In Russia, the volume of rabbit products in 2016 amounted to 18.2 thousand tons (*Fig. 2*); since 2010, the average annual growth rate of own production comprised 104%, which is higher than the growth rate of meat production in the country as a whole.

Own production in 2016 reached 91.6% of the total market volume, which corresponds to the standard values specified in the Food Security Doctrine. According to the Federal Sate Statistics Service, own production of rabbit meat is concentrated in the Central (28%) and Volga (22%) federal districts, which is largely due to the high population density and high disposable per capita income (*Fig. 3*).

In addition to domestic producers, according to the Federal Customs Service, the market presents products from China (68.9%), Hungary (28.8%) and the Czech Republic (2.3%) (*Fig. 4*). The total volume of imported products in the domestic market in 2016 amounted to 8.4%.

Figure 2. Structure of Russian market of rabbit meat in 2010–2016 in real terms, tons



Source: Federal State Statistics Service. Available at: http://www.gks.ru/

Figure 3. Rabbit meat production in federal districts (FD) in 2016, %

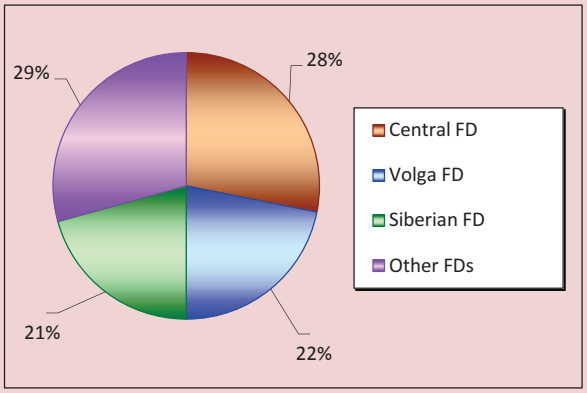
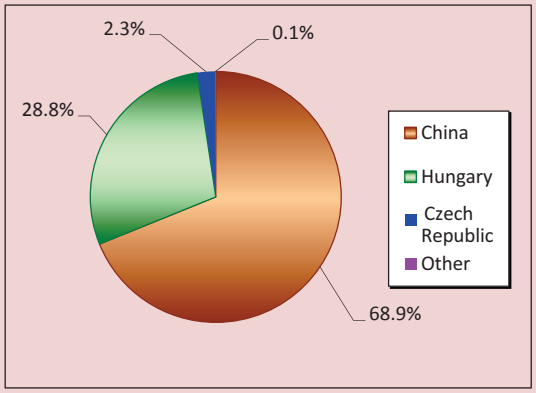


Figure 4. Structure of main suppliers to Russia, %



Source: Federal State Statistics Service. Available at: http://www.gks.ru/).

Some works of foreign researchers show the positive effect of rabbit industry breeding on improving food security, food quality and, as a result, the quality of life. At the same time, domestic studies present rabbit breeding statically, characterizing production technology, quality of the resource base, features of sector development in modern market situation. These works lack strategic vision of the future in this sector taking into account the state priorities. In this regard, there is a need to improve the mechanisms of integrated development of rabbit breeding taking into account the general theory of strategy.

Research methodology. The study is based on the general theory of strategy proposed by Professor V.L. Kvint [7]. In the modern world strategic thinking is often not given much importance despite the fact that it has always been applied, primarily in military practice. The very phenomenon of *strategy* is misunderstood and misinterpreted. Some use the term *strategy* as a synonym to *forecasting*, while others identify *strategy* as *planning*. Due to lack of in-depth research into the theory of strategy and the fact that strategy as a science is relatively young, the importance and strength of the theory and practice of strategy remains underestimated. However, recommendations derived from country's sectoral analysis using strategic methodology will be particularly useful for implementштп strategic priorities in the national market space.

One of the basic laws of the general theory of strategy is optimization of available limited resources using the time factor as a determinant. Therefore, when forming a conceptual model of optimization and improving the efficiency of the sector it is necessary to solve optimization problems.

The conceptual model of competitive environment development formation and regulation is being developed with the help of a systematic approach to improving the business process of a sector and forming the resource-reproduction processes.

The econometric model of vector (VAR-model) autoregression is presented as a justification for the system-forming effect of rabbit breeding. In this study, the VAR-model

is used to analyze the dynamic impact of disturbances in rabbit breeding on related areas associated with its development. A distinctive feature of the VAR-model is that it obtains empirical evidence of the reaction of economic and social variables to shocks in the sector's development.

Vector autoregression (VAR) is a system of simultaneous equations which consists of one-dimensional ARMA models. The main VAR advantage is the efficiency of the model due to fewer lags (compared to traditional ARMA). The model does not require dividing dependent and independent variables. The model can be estimated by simple OLS, the estimates will be consistent. A relatively simple tool provides an excellent opportunity to systematically and internally coherently capture a positive performance of multivariable time series. The disadvantage of the VAR-model is a large number of parameters which can adversely affect the quality of the model.

The popularization of these models began in the 1980–s from the work by C. Sims [21] who later won the Nobel Prize in Economic Sciences (2011). However, according to 22….. Christiano L., VAR-models currently play an important role [22]. In most cases, such models are used to simulate the impact of the monetary policy on macro-economic variables [23; 24; 25; 26; 27; 28; 29]. However, the universal nature of the model makes it applicable to other scientific spheres: capital market [30], financial analysis of enterprises [31], public finance [32], etc.

The two-dimensional VAR-model may look as follows:

$$\begin{cases} Y_{1t} = a_{11} + b_{11}Y_{t-1} + b_{12}X_{t-1} + \varepsilon_{1t}, \\ X_{2t} = a_{21} + b_{21}Y_{t-1} + b_{22}X_{t-1} + \varepsilon_{2t}, \end{cases} \quad (1)$$

where Y_{1t}, X_{2t} are variables;

a_{11}, a_{21} are constants of the first and second equations in the system, respectively;

b_{11}, b_{12},b_{21}, b_{22} are coefficients in system equations;

ε_{1t}, ε_{2t} is white noise that can be correlated.

Each system equation is an autoregressive model of distributed lags. According to the structure of equations, the interpretation of VAR parameters is determined. For example, a non-zero value of b_{11} indicates autocorrelation in the Y_{1t} series, and a non-zero value of b_{12} indicates that the previous values of X_{t-1} affect the current Y_{1t} process.

The matrix form of the two-dimensional VAR-model looks as follows. Consider system (1) in matrix form.

Suppose

$$Y_t = \begin{pmatrix} Y_t \\ X_t \end{pmatrix}; \alpha = \begin{pmatrix} \alpha_1 \\ \alpha_2 \end{pmatrix}; \quad B = \begin{pmatrix} b_{11} & b_{12} \\ b_{21} & b_{22} \end{pmatrix}; \quad Y_{t-1} = \begin{pmatrix} Y_{t-1} \\ X_t - 1 \end{pmatrix}; \varepsilon_t = \begin{pmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{pmatrix}, \quad (2)$$

then system (1) will take the following form:

$$Y_t = a + B_1 Y_{t-1} + \varepsilon_t . \quad (3)$$

Exogenous variables are often included in this model to improve the overall quality of the model. Studying the effect of exogenous variables on endogenous variables is not included in the objectives of the research. The algorithm for constructing a VAR-model is similar to that used for ARIMA model. At the first stage, time series are tested for stationarity using, for example, the extended Dickey–Fuller test. The informational framework of the research is data from the Unified interdepartmental information and analytical system (EMISS).

The following socio-economic indicators (*Table*) serve as model variables.

VAR-model variables

Code	Variable
PROD	Volume of rabbit meat production, thousand tons
LABOR	Average number of employees in the full range of organizations in animal breeding
INVEST	Fixed capital investment in agriculture, mln RUB
GDP	Per capita GDP in fixed prices of 2010, bln RUB
X_1	Rabbit mixed fodder production, thousand tons
X_2	Rural migration gain, thousand people
X_3	Wool production in animal breeding, tons
X_4	Organic fertilizer treatment for cultivation, thousand tons
X_5	Number of researchers in Agriculture, people
X_6	Tax imputation and collection in agriculture

As a result, several VAR-model systems were obtained. The variables common in all models are: fixed capital investment in agriculture, volume of rabbit meat production, average number of employees in the full range of organizations in animal breeding, per capita GDP in fixed prices of 2010. During the modeling process the hypothesis of influence of rabbit breeding in Russia on related areas of socio-economic development is tested. In this regard, the constructed systems of VAR-models differ in one factor characterizing the development of related activities or socio-economic areas. Let us present all the estimated VAR systems:

$$\begin{pmatrix} PROD_t \\ LABOR_t \\ INVEST_t \\ X\_i_t \end{pmatrix} = A \times \begin{pmatrix} PROD_{t-1} \\ LABOR_{t-1} \\ INVEST_{t-1} \\ X\_i_{t-1} \end{pmatrix} + c \times GDP_t + \varepsilon_t, \quad (4)$$

where $i \in [1; 6]$.

Note that exogenous factor of the model is per capita GDP which accumulates a set of macro-factors that affect rabbit breeding development in Russia.

Main stages of VAR modeling.

1. Estimate the stationarity of time series of variables under study. For convenience of interpretation and approximation of time series to a stationary form, initial time series were taken as growth rates, rather than levels. For example, we take rabbit meat production growth rates measured in percent as an indicator, rather than the volume of rabbit meat production (Y), which is measured in thousand tons:

$$R_{growth} = \left(\frac{Y_t}{Y_{t-1}} - 1\right) \times 100\%. \quad (5)$$

The stationarity of time series is estimated through using the extended Dickey–Fuller test. The null hypothesis of the test – the time series is a non-stationary process. According to test results the 5% significance level rejects the hypothesis of non-stationarity of a single time series.

2. Determine the order of the VAR model. In practice, Akaike and Schwartz information criteria are commonly used to find an optimal lag of the model. However, due to short time series it is pointless to set the lag length over 2. In this regard, the lag length in the study does not exceed 1.

3. Check the roots of the model for stability. The task is to determine whether the roots of the corresponding characteristic equation lie outside the unit circle. The test showed that the constructed model is stable.

4. Check model residuals. Lagrange multiplier test helps check whether the residuals are white noise. The test shows that the null hypothesis about lack of serial correlation is not rejected at the 5% level of significance; therefore, the regression residuals in the model are white noise. In addition, residuals were estimated for compliance with the normal distribution law. Within this model we failed the residuals to be subject to the normal law.

The coefficients of the obtained models are not interpreted, so the functions of impulse responses are constructed. An impulse is a single disturbance given to one of the parameters [33]. The impulse response function is the reaction of a dynamic series in response to a single disturbance (shock) from the i-th variable. As a result, the impulse response function demonstrates the time of return of the endogenous variable to the equilibrium state at a single shock from another variable [34]. The response of an endogenous variable to a single shock of an exogenous variable is often called a multiplier. In our case, the response (multiplier) is understood as the response of the related activity to the impulse expressed in increased growth rates of "rabbit meat production" indicator.

Research results. Detailed strategic analysis of the external and internal environment, OTSW-analysis, the process of forming the general purpose of the sector and its main strategic priorities taking into account competitive advantages are presented in the previous works of the author [35; 36], so this study is based on the results already presented to the scientific community. One of the ways to implement the strategic priorities is to improve inefficient business processes of the sector under study. Therefore, we construct a conceptual model of rabbit breeding optimization in Russia (*Fig. 5*).

One of the problems of sector development is insufficient evaluation of the resource base. The developed measures of the state economic policy in agriculture aim to increase main production; the support for the resource-forming sector of the sector is insufficient. Thus, it is assumed that provision of financial and legislative resources in a certain amount should ensure the sector's sustainable development. However, this approach seems to be incorrect because the sector cannot fully operate under a limited number of resources. In this regard, the conceptual model of optimization and improvement of sector efficiency begins with the development of the resource base.

The main cost items in rabbit meat production are: mixed feed consumption, purchase of breeding samples for the breeding stock, veterinary drugs, and labor resources [19].

At the moment, due to lack of own breeding, selection and genetic centers agricultural organizations have to import breeding stock from France. The breeding stock is renewed once every three years. Thus, regular supplies of imported livestock for domestic production pose certain currency risks, which, due to exchange rate volatility, affect the price policy of producers. In addition, there is a risk of livestock mortality during the adaptive period, which also has a direct impact on profitability. The consequence is the low market share of farm enterprises (hereinafter – FE) because with the existing business process the profitability of FE production becomes negative.

Within the framework of the proposed model, the state should create domestic breeding and genetic centers in Russia taking into account the financial resources provided by the Strategy for meat farming development. Investment attractiveness at the initial stage of these organizations is low, so the entire investment load should be distributed to federal and regional budgets. The main objective of selection and genetic centers is to conduct selection and breeding activities to improve rabbit breeds using scientifically sound selection and biological tools.

The establishment of these centers will improve the efficiency and competitiveness of domestic rabbit breeding by improving

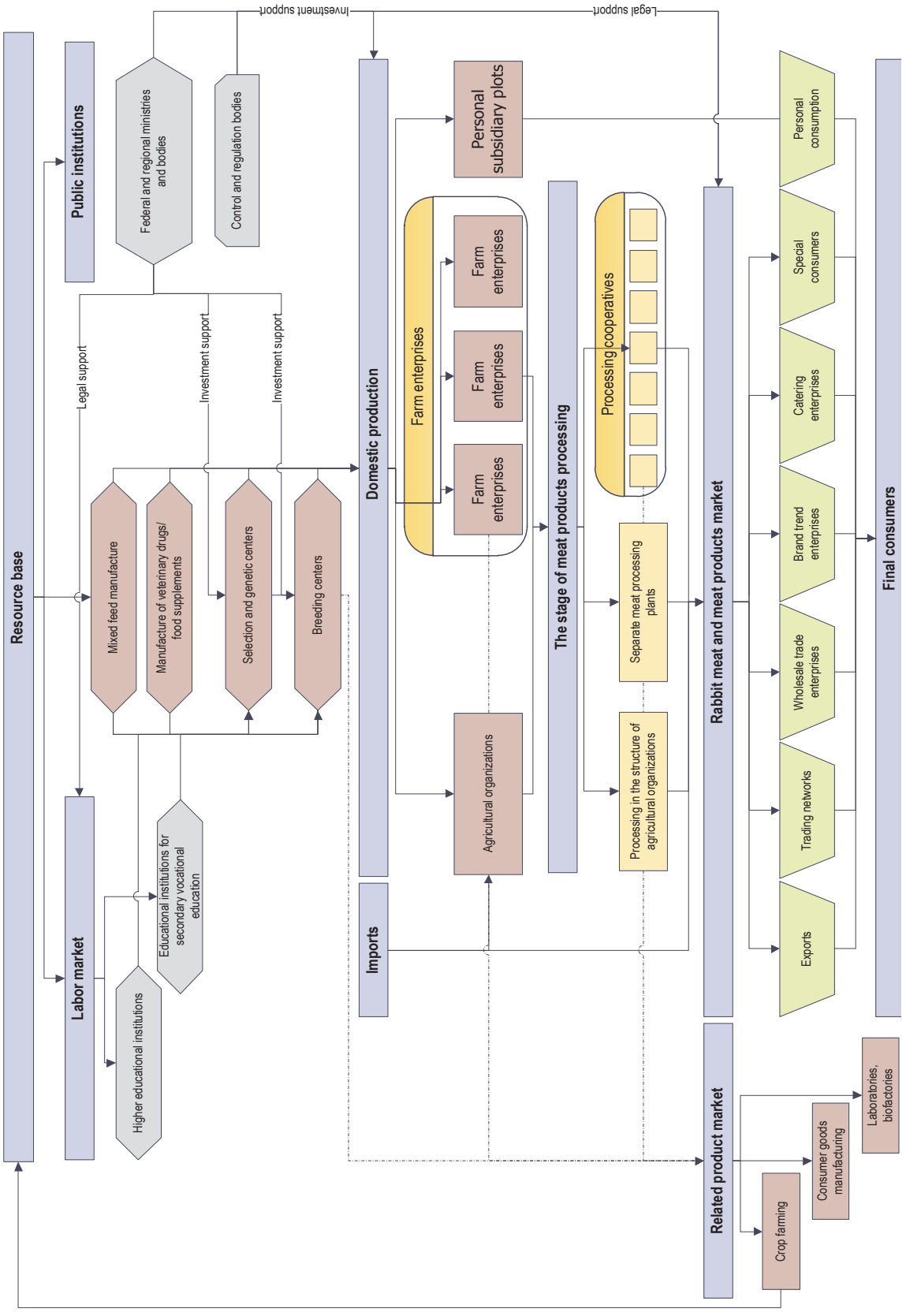


Figure 5. Conceptual model of rabbit breeding optimization in Russia

Source: compiled by the author.

productive qualities, address the needs of agricultural organizations in producing offspring with the specified characteristics.

In this regard, a new segment of the market is being created – market of breeding stock, lost after social and economic reforms in the late 20th century. Successful experience of introducing breeding and genetic centers in rabbit breeding can be retransmitted to other types of meat livestock in the future.

The next step in increasing value added is the formation of breeding stock from the already obtained highly productive breeding herd. To do this, the state needs to build breeding centers using financial resources provided by the Strategy for meat livestock development. The main objective of the breeding centers should be formation of feeder stock, as well as its commercial sale at further production stages. In addition, it is necessary to provide subsidiary types of commercial activities:

1) formation of the feeding formula for feeder livestock;

2) veterinary and phytosanitary surveillance and consulting of producers;

3) supply of rabbit species to the market of related products to laboratories and biofactories.

One of the main conclusions of analyzing the labor resources is that theere are trend that characterize the professional re-focus of specialists between animal breeding sectors. This approach has only a short-term effect as with professional re-focus of specialists a shortage of labor resources in certain animal breeding areas takes place. In this regard, the focus on long-term sustainable development of the sector is necessary to form own scientific and labor potential to provide the sector with qualified personnel. Human resources support for breeding and selection and genetic centers should be carried out at the expense of institutions of higher and secondary vocational education. In addition, retraining and advanced training should be carried out in already formed breeding, selection and genetic centers. However, both resource centers and agricultural organizations are in need of qualified specialists.

The next stage in value added formation for rabbit products is domestic production and imports. All domestic production can be divided into three forms: agricultural organizations, farm enterprises and personal subsidiary plots.

In some agricultural organizations, the existing business processes remain unchanged except for certain aspects. In particular, agricultural organizations due to lack of domestic breeding stock are forced to import it. The main importers in this area are France and China.

Regular livestock renewal in agricultural organizations increases the risk associated with exchange rate differences between purchasing and selling prices, assumed by the producer.

In addition, due to certain circumstances such as growth and livestock mortality agricultural organizations are faced with production risks where producers cannot provide uniform product supplies. Thus, if shortage of products takes place the manufacturer pays penalty fees; in case of commodity surplus in warehouses they suffer losses from reduced selling price. Due to uneven distribution of workload of production capacity direct production costs are increased.

Thus, all of these factors reduce production profitability of agricultural organizations and in the future – the investment attractiveness of this sector of livestock breeding. Agricultural organizations possessing greater financial resources than farm enterprises can take

certain risks and decrease profitability, while farm enterprises cannot afford that. Establishing domestic breeding, selection and genetic centers will help reduce these risks and increase the competitive advantages of domestic products over imported products, as well as over certain types of domestic meat products. As a result, the risks of uneven production process for producers will be reduced.

The category *agricultural organization* is aggregated and can be represented by producers whose product output differs more than 10 times. As a rule, agricultural organizations have their own breeding stock and only buy pedigree stock; they are self-managed and carry out veterinary and phytosanitary control. The authors' approach to optimization of business processes proposes to outsource the office for veterinary and phytosanitary control of medium and small agricultural organizations to breeding centers; this will subsequently ensure cost optimization, reduce risks for all participants of the production process, and therefore, ensures the development of farm enterprises.

At the moment, the dominant market share is formed in agricultural organizations, the institution of farming is poorly developed. The optimization of the sector's resource base accordance to the conceptual model provides opportunities for the development of the institute of farming. It is assumed that the breeding stock for FE will be purchased in domestic breeding centers rather than imported from France or China. Moreover, consulting services in feeding, rabbit breeding and veterinary and phytosanitary control will reduce direct costs of farm enterprises and transfer them to variable costs. Thus, the owners of FE only need to establish a production platform for feeding and managing rabbits. The main products at this stage are live weight rabbits and natural fertilizers.

The next production stage is slaughter and meat processing. In agricultural organizations, meat processing increases the production costs by 30%, in FE – 50–70%. FE do not withstand the price competition so they have to supply all their products in live weight to agricultural organizations thus not taking part in the formation of value added.

At this stage, it is possible to determine the following sub-sectors of meat processing:

1) meat processing in the structure of the agricultural organization;
2) separate meat processing;
3) meat processing cooperatives.

Meat processing in the structure of the agricultural organization is primarily focused on meat processing of local products which help maximize value added. If local production volume is lower than production capacity in meat processing it is possible to purchase rabbits live weight at FE for processing. However, if production volume of agricultural organizations is higher that production capacity in processing the producers have to supply their products to separate meat processing plants.

The authors propose to improve the existing business processes by creating meat processing cooperatives based on state financial resources provided by the Strategy for meat livestock development, as well as through involvement of FE investment funds in equal shares. This form of ownership is a public-private partnership with a private partnership formed from several FE owners. Such cooperation will reduce the costs by evenly distributing the fixed costs of meat processing among all cooperative members and thus ensure price competition with large agricultural organizations.

All products of the meat processing stage are presented in the form of main and related products. The main products – chilled and frozen meat products – are sent to final users

through main sales channels. Related products – rabbit skins and natural fertilizers – are sent to the market of related products to consumer goods manufacturing and crop production. At the same time, crop production produced with the use of natural fertilizers has high production characteristics and participates in the next stages of production of mixed feed for rabbit breeding. Thus, the iterative production process is provided, i.e. the closed-cycle process, which provides competitive advantages of the participants of the production process in this sector.

This conceptual model ensures the implementation of public interests:

1) in terms of ensuring food security and increasing the level of food supply with dietary meat products;

2) reduction of unemployment;

3) decreased level of urban migration;

4) increased wages in animal breeding;

5) increased production of related sectors;

6) supply of related products to markets for consumer goods and crop production.

To confirm this thesis we calculated the multiplicative effect of rabbit breeding development on all VAR-variables (see table) in accordance with the presented methodology. *Figure 6* presents the functions of impulse responses where the vertical axis shows changes in the corresponding variable in % and the horizontal axis – time period (year) after which after a certain time statistically significant changes will be observed.

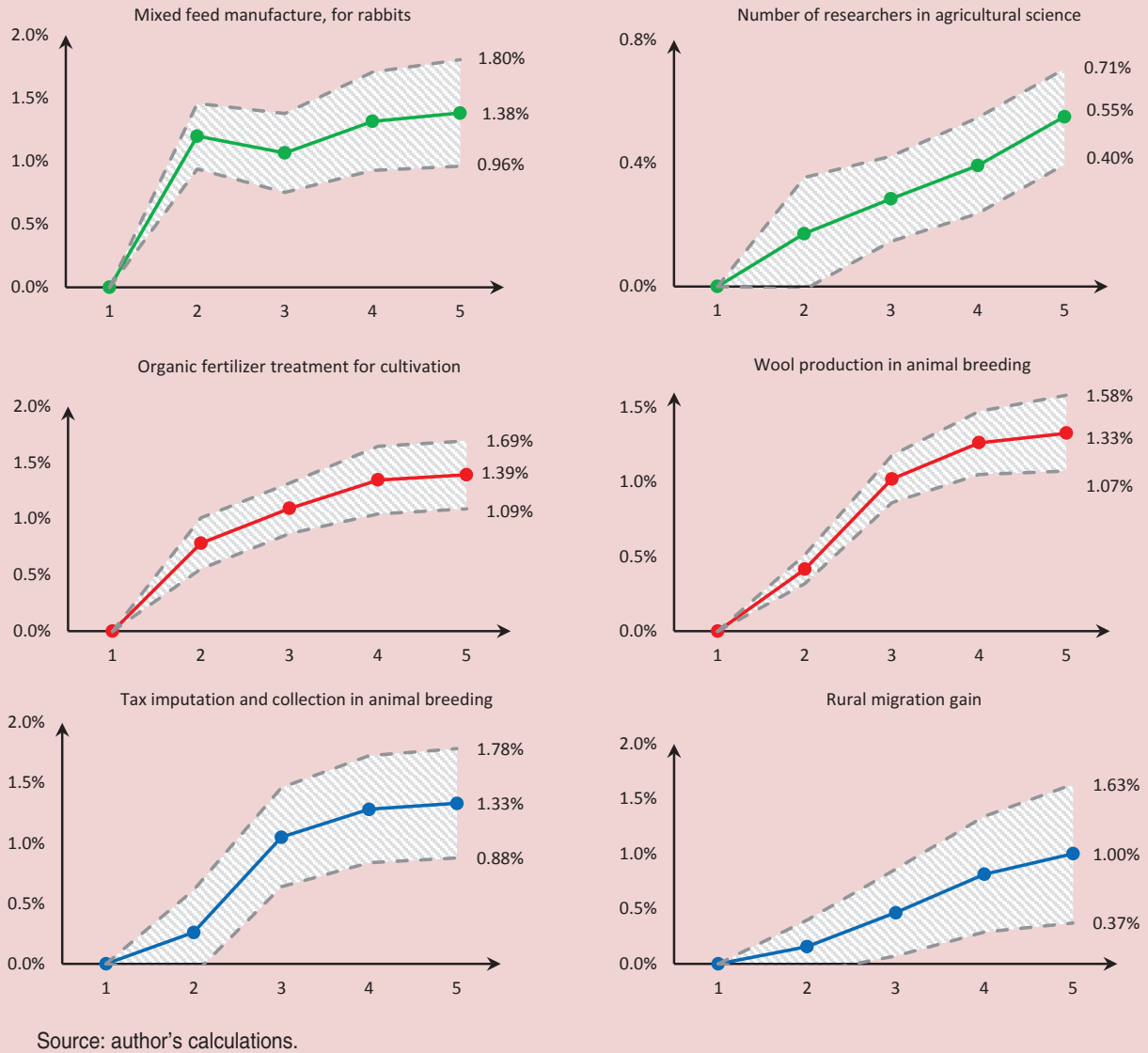
The impulse response functions are presented in the form of cumulative (accumulated) effect of related activities in response to changes in the volume of rabbit meat products (a one percentage point increase in sectoral growth rate). It is possible to note a significant positive effect from the development of rabbit mixed feed base, which will be observed two years later. There is also a statistically significant positive effect on the development of labor resources, which is more long-term. Five years later, the expected number of researchers on an optimistic scenario will increase to 0.71%. The involvement of researchers in agriculture requires time for preparation and retraining in zoo-engineering, genetics etc. Researchers will also provide training and retraining of personnel amid personnel shortage [35], which is necessary for establishing innovation-based production.

Related activities that will be developed include production of organic fertilizers which in five years can grow by 1.39%. The work by J.I. Mcnitt [16, p. 287] marks a high content of nitrogen, phosphorus and potassium in organic rabbit breeding products, which can later be used to enrich the cultivated soil.

In rabbit breeding there are two possible areas of development – fur and meat sector [18]. At the initial stages of rabbit breeding development it is appropriate breed rabbits not only for dietary meat, but also for skins to develop certain areas of consumer goods manufacturing. The results of simulation demonstrate a significant impulse response for the third year (+1%) from the activity "wool production in animal breeding".

However, the impulse response in rural migration gain and the volume of tax revenues is long-term. During the first years, the impulse response of these indicators is insignificant. This indicates that in the short term the development of farming in rural areas will not solve the problem of migration from rural to urban areas. In order to effectively reduce rural migration and ensure sustainable development of rural areas it is necessary to elaborate a comprehensive concept and program of rural development. But the development of rabbit breeding using the proposed way will already

Figure 6. Impulse response functions, %



Source: author's calculations.

contribute to rural population outflow. Within 5 years migration outflow will be reduced to 1.63% on an optimistic scenario.

Thus, based on the econometric methods we have proved and defined the system-forming effect of rabbit breeding development.

Discussion and conclusions. Analysis of experience of the rabbit breeding strategy in different countries shows that the strategy process is significantly different in developed and developing countries due to different strategic interests. It has been established that each stage of rabbit breeding development has a certain technological level. Countries that are being involved in the sector development require minimum level of technology in rabbit managing, development, vaccination, etc. due to the fact that innovation technology set high standards for labor and financial resources.

For the past 30 years, rabbit breeding industry has been one of the least developed livestock sectors in Russia, yet it has unique

competitive advantages and great development potential. Moreover, the studies of domestic researchers pay little attention to the concept of long-term sustainable development of the sector and do not cover the strategic vision of the future of rabbit breeding.

In this regard, the present paper proposes a conceptual model for improving business processes in rabbit breeding in Russia providing for the implementation of resource-reproduction processes and formation of autonomous resource security for fully sustainable development of the sector. The model systematizes approaches to the development of the market of related products, necessitates the establishment of the institution of farming in rabbit breeding. The proposed improvements in business processes will optimize the level of fixed costs for FE and thereby reduce production costs, and provide price competition with large agricultural organizations.

Analysis of works of foreign researchers marks the positive impact of rabbit breeding on related activities. To test this thesis for the domestic sector, as well as justify the system-forming effect of rabbit breeding, we have presented the econometric model of vector autoregression (VAR-model). According to the simulation results, the development of rabbit breeding will develop industries that determine its resource base. In the medium term, on an optimistic scenario, there is an increase in production volume of rabbit feed to 1.8% and an increase in the number of researchers in agricultural sciences by 0.71%. In addition to the resource-based sectors, the development of the market of related products (crop production – 1.69%, consumer goods manufacture – 1.58%) is also impacted, as well as tax revenues (1.78%) and rural migration gain (1.63%).

The theoretical significance of the study lies in building a conceptual model of rabbit breeding based on the provisions of the general theory of strategy through the implementation of strategic priorities, including the improvement of inefficient business processes in the sector.

The practical significance of the study lies in using the proposed approaches to developing rabbit breeding in elaborating state programs to improve the efficiency of domestic producers and subsequent updating the Strategy of meat livestock development. The elaborated conceptual model systematizes organizational and economic mechanisms of effective functioning of rabbit breeding. Its development will increase population's food supplies of high-quality dietary meat products, which will improve the quality of life.

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Environmental Assessment of Economic Growth in the Northern Region

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Abstract. The analysis is based on P. Victor model of green growth. From the point of view of conceptual applicability (to diagnose environmental sustainability of economic development) and availability of tools, it is the simplest, most illustrative and universal in the range of indicators. The key parameters of the presented research model are relative indicators of negative impacts on natural systems per unit of economic result. The research novelty lies in taking into account economic and environmental indicators to assess the quality of life and the degree of environmental economic development of Northern regions. Assessment results in the Komi Republic reveal a generally low level of environmental quality of the region's economic development for 2007–2016. Some progress towards "green" growth was observed in terms of discharge of contaminated wastewater into water surface bodies; stable economic situation in the "brown" growth zone is typical for atmospheric pollutant emissions, the features if "black" growth of economic results determined the volume of formation and disposal of toxic waste of industrial enterprises. To reduce the negative impacts on the environment it is necessary to introduce the best technology available for production facilities and waste processing; as well as ensure waste processing at the level of 40% of higher. The model is also used to study the processes of negative impacts on the environment in the context of typical regions of the Northwestern federal district. The research results presented significant differentiation of economic efficiency and eco-intensity in the resource-producing Northern regions of the Northwestern federal district. Analysis shows that a significant part of regions with high indicators of budget and economic efficiency also have better prospects in the

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context of "green" growth. The research prospect is to consider the situation from the point of view of the efficiency of environmental activities in the Northern regions in terms of environmental damage, investment activity related to environmental protection.

Key words: green economy, environmental indicators of quality of life, eco-intensity, environmental pollution.

Introduction

Economic growth today is often associated with increased pollution and environmental degradation, depletion of natural resources, which limits the opportunities for sustainable development. This means that the quality of life cannot be improved through traditional approaches [1–5]. A change in the development paradigm at the global level was realized at the turn of the third millennium as the objective to construct a post-crisis economy [6]. At present, foreign experience is the main source of studying the specific features of areas, indicators and measures for the implementation of green growth strategies [1, 2, 4, 5, 7, 8]. Russia, facing the problems of "dirty" economic growth, embeds itself into green economic development [3, 6, 9, 10, 11]. Thus, the issue of green economy is addressed to by Institute of Sustainable Development of the Public Chamber of the Russian Federation. The Ministry of Economic Development discusses the experience of OECD and Russian statistics on the measurement of green growth [12]. The Ministry of Foreign Affairs and the Ministry of Natural Resources of Russia participated in the development of the framework strategy for the development of green economy in the European region at the conference "Environment for Europe" on 8–10th July 2016 (in Batumi, Georgia). About a thousand scientific publi-cations are devoted to the implementation of green economic development in Russia. The development of assessment of green growth economy in the regions of Ural and Siberia is manifested in focus of methods and approaches [13–17].

The purpose for the study is to identify the most appropriate indicators for assessing the quality of life, as well as the main positions of green economy in the Northern region as a way of transition to a resource-efficient society. The novelty lies in the evaluation of modern research trends of Northern territories using the P. Victor model scheme. The main tools include relative indicators of negative impacts on natural systems per unit of economic result. The significance of the research lies in determining the methods and measurement algorithm; calculating the levels of environmentalization in order to substantiate the prospect areas of environmental modernization and improvement of population's quality of life.

The rationale for choice of technique

According to the definition in UNEP reports, green economy promotes human well-being and social justice while significantly reducing environmental risks [2]. The important features of such economy are: efficient use of natural resources; preservation and increase of natural capital; pollution reduction; minimization of carbon emissions; prevention of loss of ecosystem services and biodiversity; growth of income and employment [6]. Due to the fact that green economy is largely consistent with the principles of sustainable development, since the early 1990–s a number of mechanisms for assessing sustainable development has been introduced. They are structured in three categories: indices/indicators; integral/aggregate indicators; subjective measures of well-being. For the first category there are

Table 1. Assessment indicators and their functions

Indicators	Functions
Basic	Analysis of the environmental policy
Key (volume, relative and value indicators)*	Public information; reference point for making management decisions
Sectoral	Assessment of integration of environmental processes into sectoral strategies reflecting industry trends and interaction with the environment
Environmental accounting	Assessment of environmental costs; accounting for natural capital in national accounts
* Emissions from mobile and stationary sources, discharges of toxic waste into surface water bodies; relative volumes of emissions, discharges and wastes related to population; volume of payments for negative impact on atmospheric air, water bodies and land within standard values and payments for negative impact within the limits of excess values (total).	

several types of sets of indicators reflecting the environmental factor of quality of life (*Tab. 1*).

Reducing environmental pollution does not guarantee moving towards green economy and is not an indicator of green growth. The figures show the dynamics where the boundary of acceptable or limit values is invisible. Their advantage is that they are accessible, simple, and most common in a variety of reports and documents (state reports, indicators for development programs and strategies, etc.), as well as in decision-making for environmental management. An important point is an attempt to take into account pollution and natural resources depletion damage at the macroeconomic level, environmental adjustment of main economic indicators of development. The disadvantages include heterogeneity and eclecticism, and in most cases, lack of obvious cause-and-effect relations with sustainability [17]. Moreover, these indicators are not recognized abroad and are not sufficient to compare the eco-friendliness of economic processes or quality of life development.

The next methodological approach is related to aggregate indicators, with the main difficulty being in determining the weights of initial indicators. These groups are divided into socio-economic, eco-economic, socio-environmental, and environmental-socio-economic. Almost all of them are based on GDP adjustment by subtracting environmental damage, social costs, and taking into account the contribution to the citizens' welfare. A more detailed analysis of these parameters is conducted by E.M. Zomonova in the research report [17]. The advantage of aggregate indicators is the possibility of comprehensive assessment of dynamics and level of development of the society, ensuring the methodological unity of private indicators and variables which form the informational framework for the calculations [18–20]. Indicators are numerous and characterize the "distortions" or adjustments of economic result in relation to a social or environmental process, are used mainly to characterize the situation, but are not a "boundary" value. The limitations and disadvantages include the fact that the continued dynamic GDP growth does not always reflect the improvement in population's well-being; when assessing the environmental and economic characteristics a mix of estimates of current welfare and long-term sustainability takes place, which must be measured separately, as well as the subjective nature of financial assessment of various economic activities. Such aggregate indicators, due to average reliability of estimates, often serve as evidence to a negative situation and as an incentive to introduce eco-friendly forms of management. This also applies to the methodology for the evaluation of ecosystem services to account for the common well-being; assessing the recreational services, services of wetlands and boreal forests; monitoring of state based on these assessments of benefits and

development of accounting of benefits provided by ecosystems in the planning of economic activities [21–23]. Despite an attempt to take economic account of the benefits of the environment or environmental damage, many components cannot be brought to market, and thus the total value only hypothetically reflects the situation of population's quality of life.

The processes of economic development are impossible without any dynamics, monitoring and evaluation. As a result, the concept of "green growth" appeared almost simultaneously with green economy. The first set of green growth indicators was proposed in the book "Towards Green Growth. A Summary for Policy Makers. OECD indicators" [3], and a more detailed set of indicators is presented in "Green Growth Indicators 2014" [8]. The measurement methodology is based on the interaction of economy, natural assets, and policy instruments. It is possible to distinguish five groups and about 30 metrics, detailing the indicators. In the group "environmental aspects of the quality of life" indicators are health risk factors (usually parameters of environmental pollution) and access to environmental benefits (clean drinking water, air quality, preservation of ecosystem services/ biodiversity). The most progressive of CIS countries in terms of introducing indicators to measure "green growth" indicators of the economy is Kyrgyzstan. At the end of 2013, the final draft of the green growth materials package was formed, which included: green growth indicators matrix; a road map for monitoring and evaluation of green growth indicators; a guide to national indicators for green growth monitoring and evaluation. The matrix of national green growth indicators consists of 65 indicators grouped into five clusters (similar to the model groups proposed by OECD). Collection, processing, storage and distribution of a large part of the matrix of national green growth indicators is carried out by the National Statistics Committee of the Kyrgyz Republic which produces handbooks [24]. By 2015, analysis of the situation during 2010–2014 has been conducted according to the selected indicators. The block "Environmental quality of life" includes a set of 12 indicators: pollutant emissions into atmospheric air from stationary sources (per capita); respiratory diseases; share of people with sustainable access to drinking water and sewage; incidence of acute gastrointestinal infection; controlled collection of municipal solid waste in urban and rural areas; green area (per capita); share of per capita cost of electricity, heat, natural gas, and solid fuels. It should also be noted that the indicators are presented at the national, regional (oblast) and local (district) levels [25].

The seventeen Sustainable Development Goals (SDGs) cover three dimensions of sustainable development: social, economic and environmental, and institutional aspect. According to Bobylev S.N. and Solov'eva S.V., taking into account Russian realia and interests, one can define seven goals with the largest environmental focus: SDG 6 "Clean water and sanitation", SDG 7 "Affordable and clean energy", SDG 11 "Sustainable cities", SDG 12 , SDG 13 "Climate change", SDG 14 "Preservation of oceans", SDG 15 "Conservation of biodiversity" [9]. The indicators have been adapted to Russian conditions, but their application for assessing green economic development is not always possible due to their absence in statistics (*Tab. 2*).

There is an opinion among experts in environmental economics that growth is not a priority in OECD countries. The concept of degrowth is widely discussed in the foreign environmental and economic literature, assuming that economic growth is not necessary and in some cases it is even desirable to ensure

Table 2. Quality of life indicators

SDGs	Indicators adapted to Russia
SDG 6 "Clean water and sanitation"	The share of housing provided with water supply (city, village), %
	The share of housing provided with sewerage (city, village), %
	Fresh water intake as % ot renewable water resources – Water Exploitation Index
SDG 7 "Affordable and clean energy"	Share of renewable power sources in total power balance, %
	GDP energy intensity, toe/ RUB
SDG 11 "Sustainable cities"	Share of old and dilapidated housing stock, %
	Removal of waste from urban settlements
	Average annual concentration of suspended particles (including PM2.5) in the territories of urban settlements, mg/m^3
	Number of people living in special contaminated cities, % Population in severely polluted cities, %
SDG 12 "Responsible consumption and production"	Generation of production and consumption waste, including hazardous
	Use and neutralization of hazardous production and consumption waste
	Use and neutralization of production and consumption waste
SDG 13 "Climate change"	Introduction of the environmental safety program, prevention of natural disasters
	Introduction of a strategy/plan to adapt to adverse effects of climate change, develop resilience to climate change, and reduce greenhouse gas emissions
	Greenhouse gas emissions
SDG 14 "Preservation of oceans"	Establishment of catch quotas, %
	Marine and coastal special protected natural areas, million hectares
SDG 15 "Conservation of biodiversity"	Specially protected natural areas, million ha
	Area of desertified land, thousand ha
	Area of derelict land, thousand ha
	Area of exhausted land, thousand ha ra
	Area of remediated land, thousand ha

negative growth – an economic decline. It is believed that these countries have already achieved a high level of production of material values, and improving people's quality of life is mainly focused on the preservation of natural assets [26, 27]. For Russia, the path towards "green economy" may be called "green" growth only in the case of expanding economy [15]. From the point of view of conceptual applicability (for diagnosing environmental sustainability of economic development) and availability of tools, the simplest and clearest is the diagram of curves by P. Victor. The curves show the state of economic development in terms of environmental impact.

Research methods

Despite the fact that for Russia "green economy" remains a desirable, rather than the real area of development, the very path towards achieving even minor but important results can be called green growth [15]. Given the already existing excessive influence of the economy on the biosphere, we note that an economy with a growing GDP can become greener only if such growth entails an unconditional reduction in the number of factors (by one or more) which have an impact on the environment. This may involve reducing greenhouse gas emissions per GDP unit (intensity of greenhouse gas emissions) or other types of pollution. However, if the reduction in greenhouse gas emissions within a country/region per unit of GDP/GRP is achieved through changes in economic activity so that emissions occur in another country, this is not "green" growth we are talking about. These points reflect the concept of P. Victor, according to which green growth can be defined as economic growth that is slower than the rate of pollution intensity dissipation, because only in this case the

environmental impact will certainly decrease. *Green growth* cannot be green enough if only the negative environmental impacts are reduced; it does not imply (emissions) reduction, but it at least represents a movement in the right direction. Moreover, when economic growth rates exceed the rate of pollution intensity dissipation, then *brown growth* takes place; when both scale and intensity of pollution increase, we are talking about *black growth* [28].

Diagnosing the performance of "green" growth, P. Victor relied upon gross product growth ratio and pollution intensity. His graphical scheme defines the environmental and economic growth zones of two processes through the ratio of curves of interdependence of economy and its impact on the environment [28].

To assess the impact of economic growth on pollution we use two relative indicators of environmental intensity – value indicator per ruble of gross regional product (EI_{grp}) and natural – per capita (EI_p):

$$EI_{grp} = EL/GRP, \quad (1)$$

where EL – environmental load of three types (volume of wastewater discharge into water bodies; pollutant emissions from stationary and mobile sources into the atmosphere; volume of toxic industrial waste taking into account their treatment indicators), GRP – gross regional product characterizing the result of economic development.

$$EI_p = EL/P, \quad (2)$$

where EL – corresponding environmental load; P – population in the region.

The idea of charting is based on the comparison of indicators of negative human impact and economic results. Moreover, the level of negative load on the environment for calculations is given taking into account *its actual treatment* (for example, for wastewater – the volume of contaminated wastewater). In coordinate representation of main axis values of GDP (vertical) and EI_{grp}(horizontal) are plotted over the study period (2007–2016) in the form of points on graphs. To determine the vector of economic development (green, brown or black growth/decline) additional axes are used, indicating the starting values of GRP and environmental intensity. In our case, the additional horizontal axis corresponds to the level of environmental intensity in 2007 (EI_{grp} 2007), the additional vertical axis demonstrates the economic result – GRP 2007, the intersection of axes represents the initial correlation between environmental intensity and economic result.

To identify the situation, we construct a curve, which meets the condition: $EI_{grp} \times GRP = const$ (i.e. EI=const., for example, pollutant emissions into the atmosphere from stationary sources, taking into account their capture as of 2007). The purpose for this curve is that with the growth/decline of GRP, the level of pollution does not increase, and, therefore, it divides the space in such a way that the values lying in the "green" growth area become a positive moment of economic development in the region, and vice versa. Thus, additional axes (EI_{grp} 2007 and GRP 2007) and the curve divide the space into zones of green, brown and black growth/decline. The part on the left of the curve is the zone of green growth, while the values falling into this zone record positive processes in economic development from the point of view of its eco-friendliness. The space limited by the curve and the additional vertical axis (EI_{grp} 2007) is a brown zone of economic development, where economic growth is accompanied by an increase in the negative impact on the environment. The zone of black economic growth is located beyond the additional vertical axis 2007 and characterizes extremely negative processes of economic

Table 3. Environmental and economic zones in the concept of "green growth"

GRP performance	Environmental intensity performance	Quality of economic growth
Economic growth		
Growth	Simultaneous reduction of cost and natural indicators	Green
Growth	Decrease in only one of the indicators	Brown
Growth	The simultaneous growth of value and volume indicators	Black
Economic decline		
Decline	Simultaneous reduction of cost and natural indicators	Absolutely green
Decline	Decrease in only one of the indicators	Green
Decline	Simultaneous growth of value and volume indicators	Black

development with the growth of all indicators of environmental intensity.

GRP characterizes economic development. To adequately assess the growth/decline of gross product, the index of GRP physical volume in % to the previous year (for the entire study period) is used, which reduces the values to the price level of 2007 [29, 30]. The eco-friendliness of economic development in the region or the quality of economic growth determines the changes in environmental intensity. Natural indicators of pollution intensity per capita helps adjust the assessment of the nature of economic growth. In cases when the value of GRP_{corr} is reduced to its initial value during the study period, the situation is characterized by a decline in economic development. The conditions for the curves to belong to a particular economic development zone are presented in *Table 3*.

Similar studies have been carried out in forest resource use and environmental protection for the territory of Siberia [15, 16]. The assessment results characterize the negative impact on the atmospheric air (pollutant emissions from stationary sources, taking into account their volume of capture); on water bodies (discharges of contaminated wastewater) and on land (of toxic waste production, taking into account the volume of waste use) with GRP growth and decline (taking into account the deflation index) for 2007–2016.

Research results

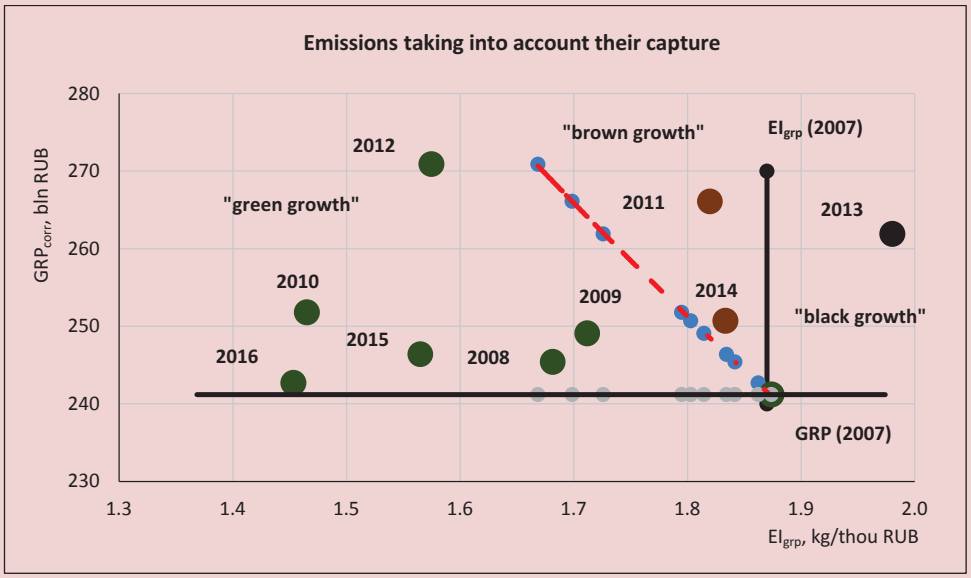
The analysis is presented for the Northern region – the Komi Republic. *Figures 1, 3, 4* show the intensity of air, water and land pollution. At the same time, the values that fall into the area beyond the dotted curve on the right side characterize the negative aspects of solving environmental problems. In 2007–2016 GRP_{corr} grew up to 2012 and further declined by 2016. In cases where the points are to the left of the dotted line, it is possible to record the positive nature of natural resource use. The color of the dots shows the involvement in the economic growth zones.

Natural indicators of pollution intensity per capita – volume of polluted wastewater discharges into water bodies; pollutant emissions from stationary sources into the atmosphere (taking into account their capture); generation of toxic industrial waste (taking into account their use) per capita – adjust the assessment of the economic growth vector. Changes in these indicators are given with respect to the axis of the zero series: positive values show an increased negative impact on the environment, and negative – a decrease in anthropogenic load (*Fig. 2*).

Data on air pollution showed that for a number of years, there has been mixed trends regarding EI_{grp} *(Fig. 1)*.

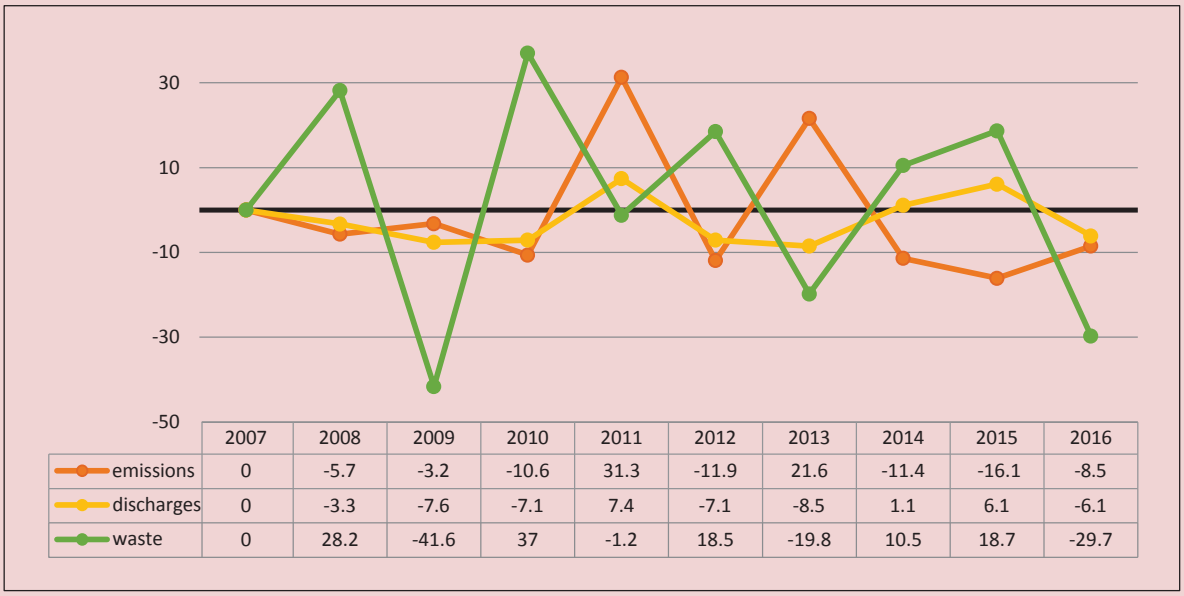
The initial phase of the research period (economic growth of GRP_{corr} for 2007–2010)

Figure 1. Environmental value intensity of air pollution



is accompanied by solving problems in the field of air protection against pollution: the use of new technology for cleaning air pollutant emissions, improving the efficiency of existing treatment plants and elimination of pollution sources at a number of large enterprises (OAO Mondi SLPK, OAO Vorkutaugol, Vorkuta cement plant). Then there is a decline in GRP_{corr} and a simultaneous growth of volume characteristics of atmospheric pollutant emissions, which shows in Figure 1 the entry into the zone of brown and black

Figure 2. Changes in natural indicators of environmental intensity



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
emissions	0	-5.7	-3.2	-10.6	31.3	-11.9	21.6	-11.4	-16.1	-8.5
discharges	0	-3.3	-7.6	-7.1	7.4	-7.1	-8.5	1.1	6.1	-6.1
waste	0	28.2	-41.6	37	-1.2	18.5	-19.8	10.5	18.7	-29.7

growth of economic development (2011–2014). The increase in the negative impact is due to the increase in emissions of sulfur dioxide, hydrocarbons and carbon monoxide at the enterprises of OOO LUKOIL-Komi, OOO RN-Severnaya Neft', OOO Gazprom pererabotka, and Pechora GRES. During 2015–2016, despite the decline in GRP_{corr}, due to environment protection measures (the use of associated petroleum gas more than 95%) at OO LUKOIL-Komi, OOO Yenisei, OOO RN-Severnaya Neft', ZAO Pechoraneftegaz, OOO Nobel' OIL and other industrial facilities in the region, the situation is improving again in terms of environmental sustainability of its economic development, and becoming "green".

The performance of the natural indicator EI_p (*Fig. 2*) is also ambiguous and yet indicative of a decline in negative impacts. The combination of two plots of indicators of cost and natural environmental intensity suggests that economic development by nature of the impact on the atmospheric air corresponds to the vector of "brown" growth.

The performance of contaminated wastewater discharge intensity EI_{grp} (*Fig. 3*) demonstrates almost complete entering the area of "green" growth (except 2011), as well as the values of physical indicators of pollution EI_p which have negative values and, hence, show a decline of negative impact *(Fig. 2)*. This suggests that the situation with wastewater treatment is quite stable and positive.

Treatment of toxic waste with regard to their use/processing in the study period represents an oscillating curve (of almost annual growth and decline) in contrast to the performance of GRP_{corr} which grew up to 2012, demonstrating economic growth; in 2012–2016, there was a decline in economic development. Due to lack of a clear trend in growth and reduction of the negative impact on the environment from toxic waste generation, there are only three years when there was a reduction in their generation. Moreover, a sharp volume decrease does not have any trend of holding events, introducing new technology, etc. (*Fig. 4)*.

The minor waste processing (0.8% of generation volume) takes place at extractive enterprises, which in turn produce maximum amount of toxic waste (77.6% of the total volume of industrial waste in the region). In

Figure 3. Value environmental intensity of wastewater discharge

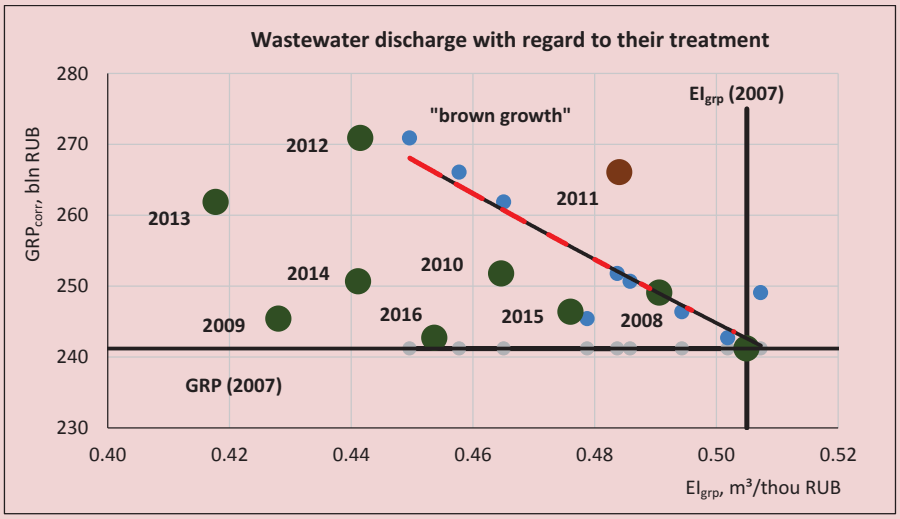
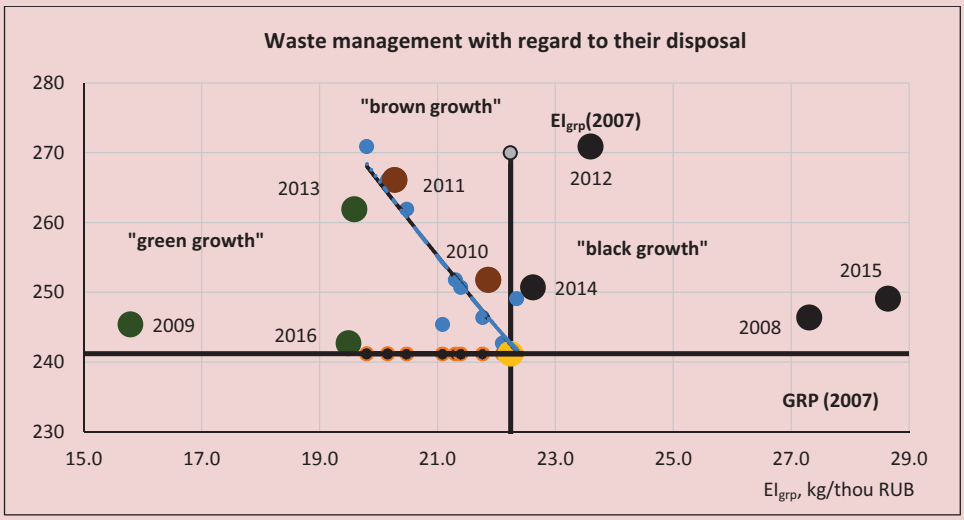


Figure 4. Value environmental intensity of waste management



this regard, even positive results of 2012–2016 in terms of waste processing in forestry (production of briquettes and pellets – 13 enterprises) and the use of wood waste as a source of heat (OOO Sevlespil, OOO Luzales, OOO Mondi SLPK, OOO SFZ) did not affect the situation. Figure 4 shows that, despite the decreases load, the situation with toxic waste treatment is still in the "black growth" zone of economic development. Although short-term improvements in waste management have been observed during the study period, sharply negative impacts on the environment prevail. Compared to the effects on air and water, the situation with waste management is the most unfavorable in the region. The assessment results revealed a generally low level of environmental quality of the economy in the Komi Republic during 2007–2016:

– according to discharge of polluted wastewater into water surface bodies, there was a decrease in relative indicators of environmental intensity, which suggests "green" economic growth;

– the performance of pollutant emissions into the atmosphere from stationary sources showed different directions of cost and natural indicators of eco-intensity, which suggests that the economy was in the zone of "brown" growth;

– the volume of toxic waste generated and disposed of by industrial enterprises caused specific indicators of eco-intensity to grow – this is a sign of "black" growth of economic results.

Analysis of results

At present, the volume of toxic waste use in the Komi Republic is extremely low (18–24% during the study period) and does not give any drastic improvements in the existing volume. The analysis of dependence on the level of waste disposal revealed a threshold value of 40% (*Fig. 5*). Its excess shifts the situation towards the zone of environmental improvement of economic development in relation to environmental protection.

Analysis of the "Forecast of socio-economic development of the region for the period up to 2020" shows that during 2007–2020, despite the actual GRP growth according to the index of physical GRP volume to the previous year (%), there was a decline in economic

development [31]. Despite plan indicators of waste use during 2015–2020, according to the state program of the Russian Federation "Environment Protection" for 2012–2020 in the Komi Republic (25–30% of the generation volume), the vector of region's economic development demonstrates its "absolutely green decline" [32]. Thus, even in the nearest future (2020) with the growing share of toxic waste (up to 30%), the situation will not change dramatically in terms of green course of economic development (*Fig. 6*). This means that improving the situation in terms of environmental measures solely is not enough for the implementation of an environmental course of economic development in the region.

Figure 5. Environmental intensity of waste generation taking into account their use in the amount of 40%

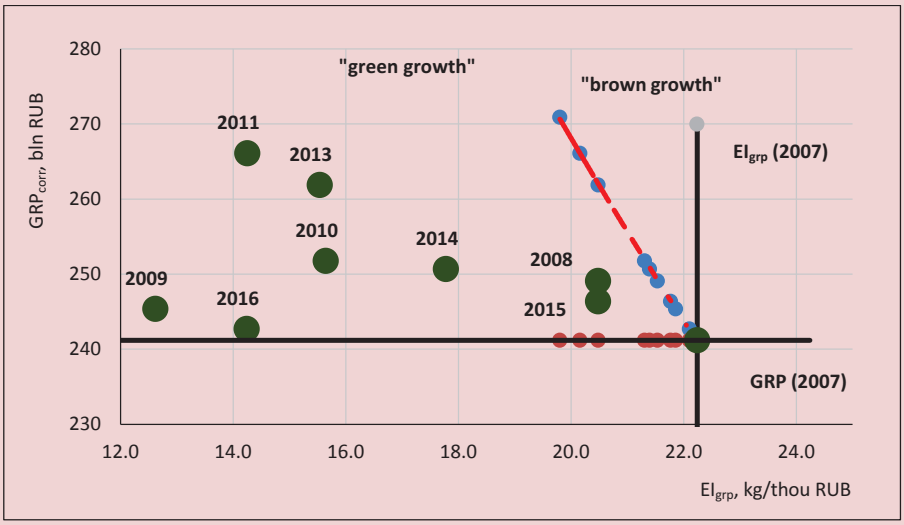
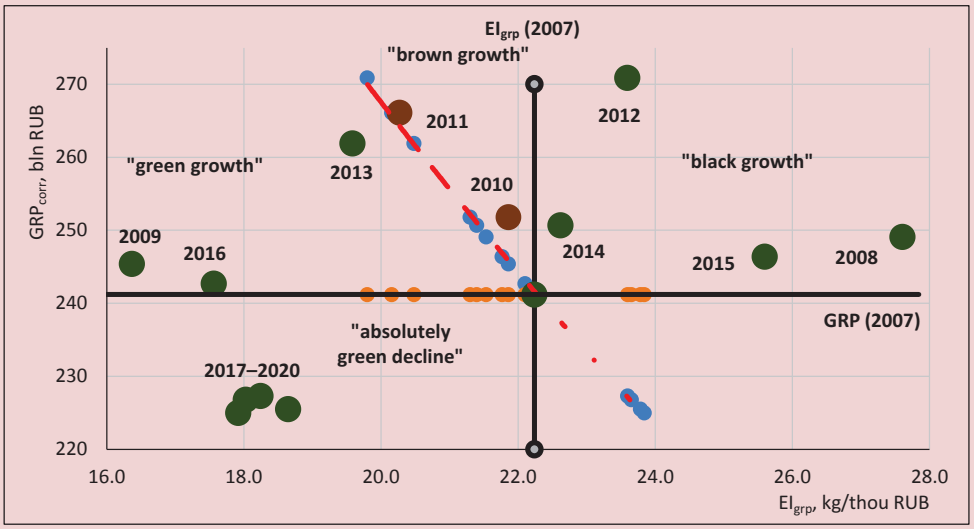


Figure 6. Environmental intensity of waste generation (Forecast of socio-economic development of the Komi Republic for the period up to 2020)



During the analysis the following conclusions have been made:

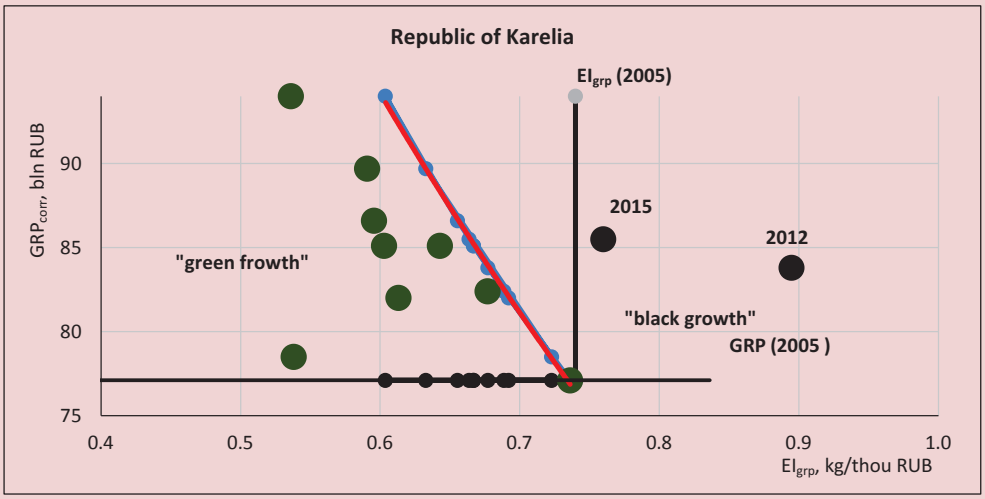
1. From the point of view of conceptual applicability (to diagnose environmental sustainability of economic development) and availability of tools the simplest and most illustrative is the diagram of curves by P. Victor. These curves show the state of economic development in terms of the environmental impact. The assessment results reveal a generally low level of environmental quality of the economy in the Komi Republic during 2007–2016. The situation with waste management is the most unfavorable in the region.

2. In order to reduce the negative impacts on the environment, the following measures can be implemented to address the existing problems: introduction of best available technology (BAT) at production facilities and for waste processing; ensuring waste processing at the level of at least 40%. Mining is the sphere which needs secondary use of waste production the most.

Discussion of the research results

The proposed model can also be used in assessing the relative state in terms of green growth targets for individual regions. We have chosen the regions in the Northwestern federal district, where the production and processing of forest and mineral resources (mineral and hydrocarbon) is predominant. The objective is to show the actual situation and determine which regions can be included in the "green" zones in relation to the average index of economic efficiency. To do this, we used pollutant emissions into the atmosphere from stationary sources, taking into account their capture as indicators of environmental load. The economic indicator presents GRP_{corr}; the research period – 2005–2015 [33, 34]. All the represented regions are not grouped according to their economic development in terms of environmental sustainability. Thus, in Karelia, there is an average degree of pollutant emissions (38–53% of the total amount of waste substances) and an increase in GRP_{corr} (i.e. a slight increase in the index of physical GRP volume), due to which the situation is characterized positively from the point of eco-friendliness of economic development (*Fig. 7*). However, at the end of the research period, the situation deteriorates due to the decline in the share of emission capture and

Figure 7. Environmental intensity of pollution in the Republic of Karelia



minor GRP growth, which explains the entry into the zone of "black" growth of economic development.

The territory of the Arkhangelsk Oblast is characterized by a high degree of pollutant emissions purification (56–73% of the total amount), as well as GRP growth with adjustment to its index. Therefore, the figure shows dynamic improvement in terms of environmental sustainability of economic development (*Fig. 8*).

The polar pattern is observed in the Nenets autonomous okrug (NAO) with the zero degree of emission utilization, with a high growth of GRP_{corr} (index of GRP physical volume to the previous year comprises 87–123%), which explains the penetration of the vector of economic development in the zone of "black" growth (*Fig. 9*).

In the Murmansk Oblast, there is a trend of improving degree of eco-friendliness and declining economic growth. Here the highest

Figure 8. Environmental intensity of atmospheric pollution in the Arkhangelsk Oblast

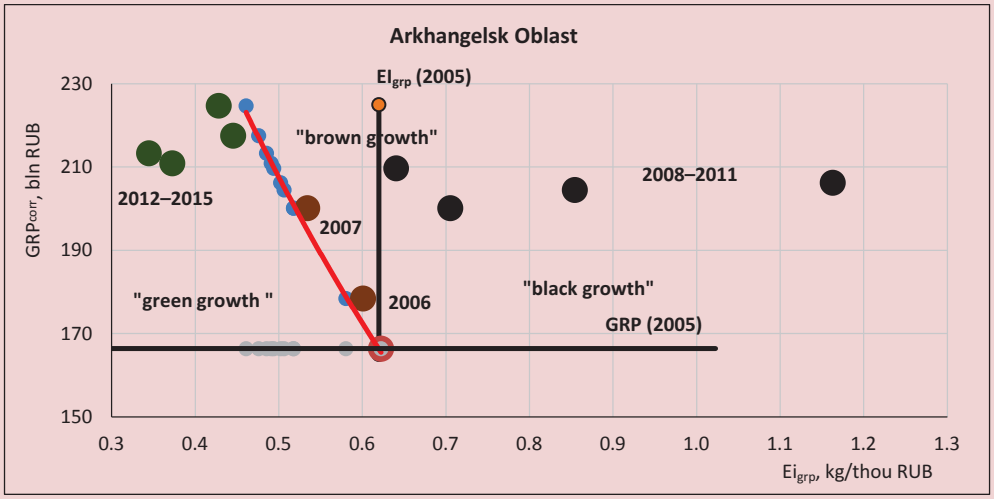
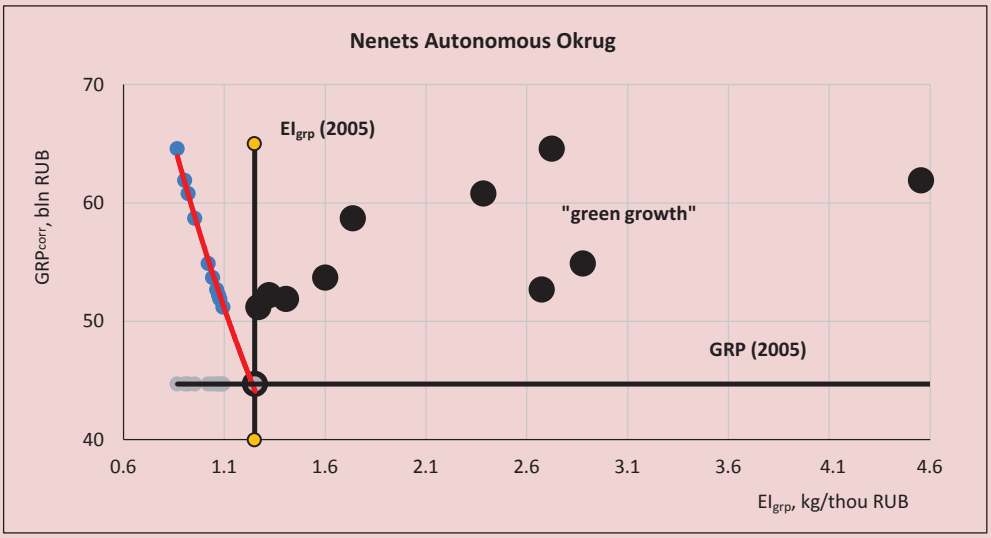


Figure 9. Environmental intensity of atmospheric pollution in NAO



and stable degree of atmospheric pollutant emissions capture (85–89%) is observed. This is a situation where there is a reduction of the negative impact of greater intensity than GRP growth in relation to deflation index (*Fig. 10*).

The comparison of regions by average economic efficiency ($GRP_{corr\ average}$) in 2015 demonstrated that the "dirtiest" economic development is characteristic of the Komi Republic (*Fig. 11*).

The most positive situation is observed in the Arkhangelsk and Murmansk oblasts (which is consistent with the degree of recycling emission and level/positive performance of GRP_{corr}). Despite the absence of any environmental activities (pollutant emissions purification) due to small amounts of anthropogenic load with respect to average amounts in the regions under study, NAO demonstrates the vector of "green decline" of its economic development.

Figure 10. Environmental intensity of atmospheric pollution in the Murmansk Oblast

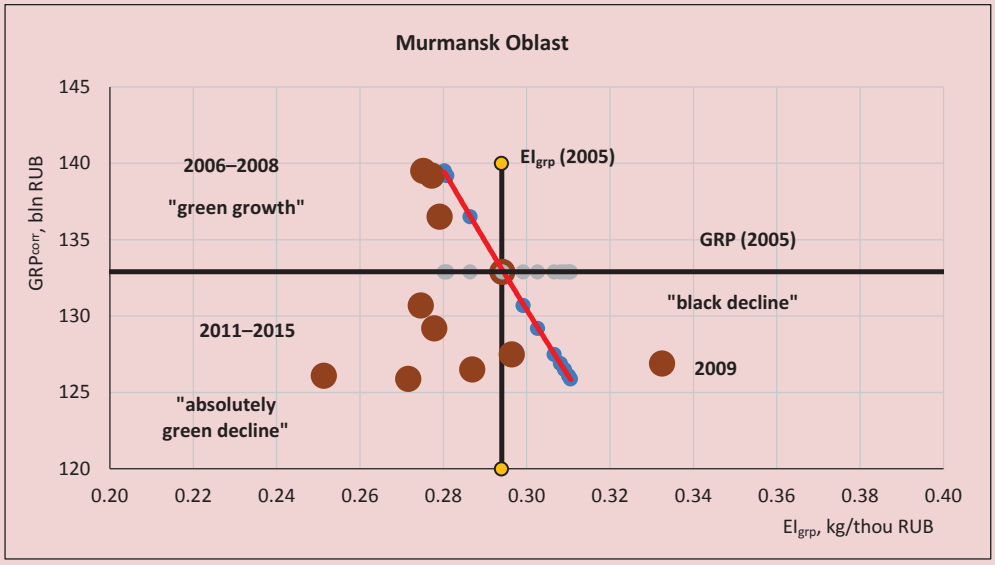
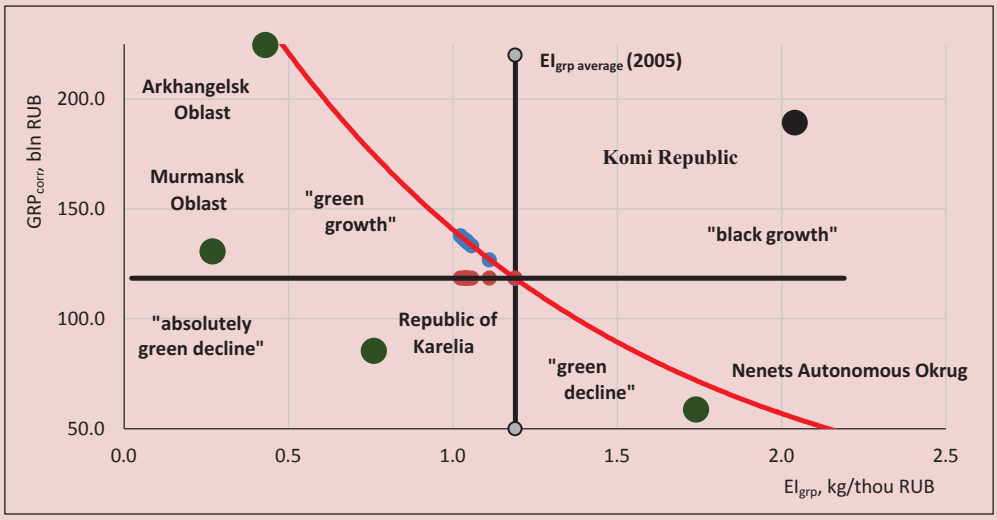


Figure 11. Distribution of regions by economic development zones in 2015 relative to air pollution intensity



The research results show a significant differentiation of economic efficiency and eco-intensity in the resource-producing regions of the Northwestern federal district. Regions with effective indices of pollutant purification also have better prospects in the context of green growth while increasing socio-economic indicators.

Conclusion

In Russia there is a need to develop a concept of transition to "green" economy and an appropriate action plan which would involve the creation of new levers of economic growth to improve the population's quality of life. Green growth is a strategy for transforming an economic system where investment in environmental resources and services is a driving force for economic development. One of the key measures could be the transformation of the tax system, in which the tax base shifts from traditional taxes based on labor taxation towards taxes of environmental significance. There is also a need to improve environmental statistics, increase the completeness and quality of accounting for environmental investment and other costs at the micro and macro levels; develop, supplement and adjust federal and departmental statistical observations.

The testing based on the use of P. Victor model of curves for assessing the degree of environmental sustainability of economic development can help making more adequate management decisions in environmental management. To improve environmental performance it is advisable:

– to assess the environmental performance using P. Victor curves, which is more correct than traditional methods, because it takes into account the relations between the region's economic activity and the load on the environment and helps reasonably judge the favorability of environment;

– to recognize that the reduction in natural indices of environmental impact, perceived as an improvement in the environmental situation in the region, is not entirely true: the scheme of P. Victor curves demonstrate the situation of economic development in terms of the degree of environmental impact.

The result of the author's assessment was the recognition of the low level of environmental quality of the economy of the Komi Republic during 2007–2016. The situation with waste management is the most unfavorable in the region. In order to reduce the negative impact on the environment, it is necessary to introduce best available technologies (BAT) at production facilities and for waste processing, as well as ensure waste processing at the level of 40% or higher.

The real reduction of negative impact on the environment will provide environmental modernization of production (starting with resource-intensive industries) based on the principles of BAT: rational consumption, high energy efficiency, low-waste processes, reducing emissions, etc., which is harmoniously inte-grated into sustainable development and "green" growth. For a full-scale transition to best available technology it is necessary to provide personnel training for implementing activities at the regional level, to create a permanent structure for consulting when preparing applications for integrated environmental permits and other activities; this will strengthen innovative activity of organizations and accelerate environmental modernization.

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The Impact Rating of Academic Journals in Economics: Ranking Criteria and Methodology

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Abstract. The rapid growth of the number of academic journals has brought to the fore the issue of choosing the leading ones among them. In this paper, we summarize current methodological approaches to the evaluation of scientific journals and substantiate the applicability of bibliometric indicators for assessing the impact of publications in the scientific community. The results of comparative assessment of economic journals affiliated with RAS institutions are presented in the form of impact rating based on the analysis of bibliometric data of the Russian Science Citation Index (RSCI) and reflecting the level of impact of publications included in the RSCI. We substantiate the composition of indicators that enable us to make a comprehensive assessment of journals and that are available to be used to verify the results. We prove that the composition of the criteria and the method of their aggregation are suitable for ranking scientific journals; this is confirmed by the fact that the results correlate with the data of other ratings. We rank the journals using multidimensional comparative analysis based on the distance method. We identify the core of ten leading scientific journals in economics that are affiliated with academic organizations. We prove that they are the scientific publications well-known among the academia and they have an impact on the development of economic science in the countr y. The prospects of the study are seen in the application of the described technique to the ranking of all economic journals. The results can be used by scientific organizations for determining strategic priorities in the development of scientific journals.

Key words: impact rating of scientific journals, economic journal, Russian Academy of Sciences, bibliometric index, journal impact factor, authority of the journal, Russian Science Citation Index (RSCI).

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Introduction

The quality of scientific journals and the problem of selecting those with the greatest impact are the issues that are gaining importance due to the rapidly increasing number of publications[1]. These issues came to the fore in January 2018, when the President of the Russian Academy of Sciences Aleksandr Sergeev said at a press conference that state assignments for academic institutions for 2018 will be extended; but when determining the volume of additional publications, not so much their number as the quality and impact of the papers will be welcomed[2]. In the subsequent recommendations on the adjustment of research plans and state assignments for 2018, it is proposed to take into account the requirement for quartiles of journals with regard to additional publications. Thus, we can say that the priorities of publication policy for scientific organizations are adjusted in favor of quality indicators.

Scientists are urged to publish their papers in high-rated journals. And if in the case of foreign publications it is clear that we are talking about those that are indexed in international scientometric databases and are ranked in them by quartiles according to the impact factor, then the situation with domestic publications is less clear. Obviously, the results of all the studies of Russian scientists cannot be published in foreign journals alone. In order to ensure the competitiveness of our country in the world, it is necessary to form the core of Russian scientific journals that can, along with the leaders of international scientific periodicals, influence the development of all scientific areas.

So far, there are no official lists of leading publications broken down by field of science. Unfortunately, Russia does not have a national database indexing leading scientific journals. It is clear that the Russian Science Citation Index (RSCI) does not solve this problem, because it includes journals on the declarative principle and does not set strict criteria for them so as to be able to select only high-quality publications. Thus, the task of evaluating scientific journals and finding the criteria for identifying those with the highest impact now rests with the academia. Experts try to find a solution by ranking the journals on various parameters. The recent ratings of economic journals have been widely discussed in the scientific community. Not only the criteria selected for evaluating publications in different ratings, but also the very idea of ranking the journals and the ability to approach the assessment of their quality have been subjected to critical reflection. The question of what should be the basis of ranking – bibliometric indicators or expert assessments – was a matter of heated debate.

The previous issue of the journal *Economic and Social Changes: Facts, Trends, Forecast* (Discussion Platform section) contains an article by E.V. Balatsky and N.A. Ekimova entitles "Opportunities for the consolidation of rating products in the Internet environment". Describing the experience of implementing a project on consolidation of rating products on a single information and analytical portal, the authors came to the conclusion that "there is currently a certain confrontation between the rating movement and the expert community, which extends to the confrontation between quantitative and qualitative ratings" [1]. The experts note the weaknesses of the radical manifestation of both approaches and believe that the mutual adjustment of these areas will continue for a long time, but at the same time "the growing practice of making ratings and

[1] The Scientific Electronic Library has more than 1,000 journals on the subject "Economics and economic sciences", of which 495 are indexed in the RSCI (SEL data as of April 2018).

[2] State assignment for scientists will change: what FANO and RAS have agreed on. *Official website of the Russian Academy of Sciences*. Available at: http://www.ras.ru/news/shownews.aspx?id=9420b33d-fb71-45b3-a997-88f2a7d79a64

the dialogue of rankers with the wider expert community will contribute to improving the quality of both the former and the latter" [1].

We certainly agree that expert evaluation has its strong points; still we share the view that quantitative factors may have an advantage in the methodology of assessing journal relevance and impact [2]. The use of quantitative indicators enables us to compare a large sample of publications, which is extremely difficult to do with the use of expert analysis. Moreover, despite the fact that quantitative indicators evaluate formal rather than substantive aspects of the journal, there is a list of formal requirements, the compliance with which is considered mandatory for a high-quality journal.

Earlier we have already made an attempt to make a rating of academic economic journals of RAS institutes based on the analysis of bibliometric indicators [3]. We got the results suitable for ranking and quite comparable with the data of other ratings. Nevertheless, the top list of journals contained the so-called outlying cases, i.e. the publications that were in the top part of the rating only on the basis of one indicator that turned out to be the best in the reference group.

While continuing the study of individual ranking criteria, we came to the conclusion that in order to assess the impact of scientific journals it is necessary to take into account such an important indicator as the number of highly cited articles. By this we determine not only the impact of the journals, but also identify those that publish breakthrough research findings among them.

Thus, the goal of our present work is to establish and substantiate the criteria for identifying high impact journals and use them for ranking. The results of the research are presented in the form of a rating of economic journals affiliated with organizations of the Russian Academy of Sciences.

In order to provide the conditions for proper use and correct interpretation of the ranking results, we have named the resulting list the **impact**[3] **rating**, which we define as a type of rating of academic journals that is based on the analysis of bibliometric indicators and that reflecting the impact of the academic journals it contains. We understand the impact of the journal as its influence on the scientific area, its ability to accumulate the results of breakthrough research, and the notion of how scientists themselves perceive the scientific authority and prestige of the publication.

It is necessary to explain that when comparing journals on bibliometric parameters we do not insist on the dominance of such an assessment, but admit that it often requires expert opinion to be considered along with the results obtained. But in this case, first of all there is a question of selecting the experts and excluding subjective factors from the assessment. Since the economists themselves note that the modern Russian expert community experiences a decline in the academic ethics index and is unable to evaluate its colleagues objectively [1], we believe that in order to ensure transparency of the final data, the preparation of expert ratings should be carried out by independent organizations that are not affiliated with the journals undergoing evaluation.

The results that we have obtained can be used not only to identify journals that have a high impact in their field of science and publish influential articles. They can also be taken into account by scientific organizations for determining the strategic priorities of their publication activities. Editors can adjust the development programs of their journals,

[3] Impact – the effect or influence that an event, situation etc. has on someone or something (Longman Dictionary of Contemporary English); the effect that a person, event, or situation has on someone or something (Cambridge Dictionary).

focusing on indicators that can be improved by increasing the requirements for the level of publications and the quality of their review, making the requirements for self-citation more strict, expanding the geography of authors, etc.

Theoretical basis for ranking academic journals

Due to the increase in the number of published scientific journals, the issue of their differentiation and choosing the leading ones among them comes to the fore.

In foreign practice, bibliometric traditions in ranking economic journals are quite strong [4], although one of the earliest ratings developed by R. Hawkins, L. Ritter and I. Walter was based on the analysis of expert opinions and did not take into account quantitative data [5]. The scientometric approach was developing alongside the expert opinion approach and was associated with the emergence of journal ratings developed on the basis of citation analysis [6; 7]. And if earlier ratings were based on the use of simple methods, for example, on the calculation of the ratio of citations to the number of printed characters published for a certain period [8], then later researchers attempted to introduce more complex methods of citation analysis in order to correct methodological limitations of the impact factor, which was used as the main bibliometric parameter [4; 9]. Modern research has also introduced new approaches to measuring the potential impact of journals not only in the academia, but also in the wider community. For example, the core of economic journals was formed on the basis of their citation in major textbooks on economics [10]. We should point out that foreign scientists, when using citation analysis data in the ranking process, consider citations as an indicator of quality, which reflects at least the impact [11] and apply these data to obtain the quality index for academic journals [6]. Speaking about the purpose of citation analysis techniques in general, foreign experts believe that they can be used primarily to assess the importance and impact of individual journals and their role and position in the system of scientific communication; in addition, they can help understand how scientists themselves perceive the quality and impact of publications [12].

The first attempts to identify the leading economic journals in Russia that were made in the early 2000s were based on expert opinions. In this way, the composition of the list of top journals in economics was determined, a comparative analysis of which is presented in an article by S. Aukutsionek and G. Churkina, published in 2002 in the journal *Voprosy Ekonomiki* [13]. It should be noted that in the publications of that time that used the information about the leading scientific journals, the experts did not focus on the criteria and procedure of their selection. For example, I.G. Dezhina and V.V Dashkeev mentioned only the fact that the list of 12 economic journals, which was used by the authors as a source for identifying leading economists, was determined by expert assessments from among the most famous ones [14].

To date, several methodological approaches have been formed to identify the impact of academic journals *(Tab. 1)*: 1) ***bibliometric approach,*** based on the analysis of scientometric indicators (Murav'ev's rating, 2013 [15]; Tret'yakova's rating, 2015 [3]); 2) ***expert approach,*** built on the sociological assessments of opinions of the scientific community (project of the National Research University Higher School of Economics, 2015 [16]; Rubinshtein's rating, 2017 [17]); 3) ***expert and bibliometric approach*** that combines bibliometric analysis with expert assessments (Balatsy–Ekimova's rating, 2013 [18]); 4) ***network approach***, which identifies system-wide important scientific journals in the networks arising from cross-citation (Aleskerov et al., 2016 [19]);

Table 1. Main methodological approaches to ranking Russian economic journals

Methodological approach	Rating product	Issue date	Developer	Organization
Bibliometric	Rating of journals in economics and allied disciplines	2013	A.A. Murav'ev	Saint Petersburg University; NRU HSE (Moscow)
	Rating of academic journals of RAS economic institutes	2015	O.V. Tret'yakova	Vologda Research Center of RAS
Expert	HSE rating of Russian academic journals (economics)	2015	Office for Research Evaluation at the National Research University Higher School of Economics	NRU HSE (Moscow)
	"Cluster" rating of Russian economic journals	2017	Rubinshtein et al.	RAS Institute of Economics; NRU HSE (Moscow)
Expert and bibliometric	Rating of leading Russian economic journals	2013-2016	E.V. Balatsky, N.A. Ekimova	Financial University under the Government of the Russian Federation
Network	Rating of economic journals based on cross-citation analysis	2016	F.T. Aleskerov et al.	NRU HSE (Moscow)
Aggregation	Aggregated rating of scientific journals in economics and management	2016	A.N. Subochev	NRU HSE (Moscow)
	Consensus rating of leading Russian economic journals	2017	E.V. Balatsky, N.A. Ekimova	Financial University under the Government of the Russian Federation

5) ***aggregation*** of existing rating products (Subochev's rating, 2016 [20]; Balatsky–Ekimova's consensus rating, 2017 [21]).

According to the scientific and expert community, none of these approaches is flawless. Weak points of the ratings are said to be as follows: bibliometric indicators are often selected arbitrarily and they can have a weak correlation with academic authority of the journals; besides, the procedure for aggregating the indicators or expert assessments can be insufficiently substantiated; in addition, the surveys of experts can lack representativeness [22]. Experts believe that the existence of different ratings of Russian journals that are based on the same indicators and provide different ranking results is an evidence of unreliability of the ratings [23].

The intensified rating movement aimed to evaluate leading Russian economic journals has urged the academia to discuss methodological approaches to ranking, the appropriateness of using bibliometric indicators in these approaches, and the comparability of the results obtained. There are different opinions on various rating products, up to completely opposite viewpoints. In 2016, the website of the journal *Neergodicheskaya ekonomika* [Nonergodic Economics] opened a special information and analytical portal "Ratings"; in the current situation, this can be considered an attempt to consolidate rating products and establish a dialogue between rankers and the expert community in order to smooth the contradictions between quantitative and qualitative assessments and develop the correct attitude toward ratings, which would help eliminate the errors related to these assessment tools [1].

The impact rating that we have developed reflects the degree of impact of scientific journals and is based on the analysis of citation indicators. The traditional idea of citation as an indicator of impact and an instrument

for assessing scientific contribution follows from the theoretical works of R. Merton, who believed that if the work of a scientist remains unnoticed and is not used by other members of the academia, then the value of such work is doubtful [24]. Approaching the interpretation of the role of citation from different aspects, researchers note that it is somehow an indicator of "the usefulness and importance of the work" (Garfield [25]), "the authority of the cited work", since authors usually cite authoritative articles and avoid "trivial" and "irrelevant" ones (Gilbert [26]). Authority here is understood as "the potential impact of the publication on the activities carried out around the research"; influence is defined as real impact (Martin, Irvine, [27]). When asked what exactly makes highly cited works important and authoritative, some researchers talk about the fact that "the peers recognize the cognitive value of the sources that have become influential because they are highly cited" and characterize citation as a "criterion of intellectual impact" (Zuckerman [28]).

We share the opinion of experts and agree that citation can be used as a tool to measure the impact that the work has on the community as a whole (S. Cole, J.R. Cole [29]; H. Moed, [30]). Taking citation rate as a measure of impact of publications, we have analyzed economic journals affiliated with organizations of the Russian Academy of Sciences, and made an impact rating of these journals.

Ranking methodology

We use the Russian Science Citation Index as a tool to assess the impact and authority of academic journals in economics. We apply the multidimensional comparative analysis technique based on the distance method; the technique is widely used in economic research to carry out a comprehensive comparative evaluation of the economic performance of enterprises. In relation to scientific journals, this method enables us to consider not only the absolute values of bibliometric indicators of each journal, but also the degree of their deviation from the standard.

In order to make an impact rating that would show the relevance and authority of academic journals we adjust the composition of the criteria. We use the following four indicators:

1. RSCI two-year impact factor without self-citation (IF_2).
2. RSCI five-year impact factor without self-citation (IF_5).
3. Herfindahl index for the citing journals (HI_J).
4. Number of highly cited papers (HP).

In our opinion, these indicators, on the one hand, allow us to assess with a high degree of objectivity the level of relevance and authority of the publication; on the other hand, which is no less important, the above indicators are transparent and accessible if there is a need to verify the results.

The impact factor devised by the American scientist Eugene Garfield as a tool for measuring the value of journals by calculating the average number of citations per article for a certain period of time [31] is traditionally used as an indicator reflecting the scientific prestige [32] and authority of a journal [34] and its impact on the relevant scientific field [35]. According to Hoeffel, widespread use of the impact factor as an indicator of journals' relevance and authority is due to the fact that it correlates very well with the opinion that has developed among scientists about the best journals in their disciplines [36].

We use two indicators of the impact factor (two-year and five-year) as the criteria for ranking journals because first, we want to identify the journals that publish the articles that have the greatest number of citations since their publication and the greatest impact in

their field; and second, because it is necessary to smooth out the outlying cases of individual articles with abnormal citation rate by taking into account the impact of the papers for a longer period of time, which allows us not to understate the rating of the journals the papers in which receive a considerable if slower response of the academia. In order to neutralize the effect of self-citation, the high level of which, as R. Rousseau points out, shows that the journal is not widely-known [37], we use impact factor values that take into account only the links from other journals. If a journal has an English version, then we take the values of the impact factor taking into consideration the translated version without self-citation.

When ranking the journals we want to take into account not only the rate of citation, but also its scale, i.e. our goal is to identify the journals well-known in the scientific community and, simultaneously, to lower the rating of the journals that are cited by a narrow circle of other publications and that use mutual citation in order to improve their indicators artificially. To achieve all this we apply normalization taking into account the Herfindahl index for the citing journals. Its value is defined as the sum of the squares of the percentages of the journals citing this one in the total number of citations. The greater the number of the citing journals and the more evenly the references to the journal under consideration are distributed among them, the smaller the value of this indicator. The maximum value of 1,000 is reached when all references are made from a single journal. High values of this index show that the journal is in demand and is valued highly only by a small number of journals, and according to experts, such a situation is incompatible with the nationwide status of the publication [15].

In our opinion, when identifying the most in-demand scientific journals in different thematic areas, the information on the number of highly cited articles published in them should be taken into account. We believe that in addition to the impact this indicator will determine the scientific level of the journal and its ability to accumulate breakthrough research findings. The values of the two-year and five-year impact factors, as well as the Herfindahl index for the citing journals were established by the values already calculated in the RSCI. As for the number of highly cited articles, we calculated it on our own.

In order to determine highly cited publications we used basic principles of the methodology of the international database Essential Science Indicators[4]; the database considers a paper as highly cited if it is among 1% of the world's most cited papers among those published in the same year and in the same scientific field. Experts traditionally consider such articles as being of the highest quality in terms of international recognition of scientific findings of researchers from a certain country (Aksnes, Sivertsen [38]; Garfield [39]; Glänzel, Schubert, [40]; Tijssen, Visser, Leeuwen [41]; Kotsemir [42]), emphasizing their relevance for the science of the top level (Pislyakov [43]).

We believe that the main principles of the methodology for determining highly cited publications can be applied not only to Web of Science data, but also to citation indicators obtained from other analytical systems. For example, to evaluate research performance of Russian economists whose works are not represented widely in international databases, it is possible to get more complete data on their publications from the Russian Science Citation

[4] Essential Science Indicators – an analytical tool of Clarivate Analytics, which enables to reveal new trends in science, to identify influential scientific organizations and the most popular publications and journals in various research areas, to rank the best researchers; it is based on Web of Science data.

Index. Of course, in this case we are not talking about international recognition of the results reflected in the publications and about their impact in the world science as a whole, but we can assess their importance for the Russian segment.

To determine the number of highly cited publications, it is necessary to compare the papers in the journal under consideration and in other journals. Thus, the choice of such publications will depend not only on the quality of the journal's own papers and their citation, but also on its standing in comparison with other journals on the same subject. Since it is incorrect to compare the works of different years due to the fact that some of them could get more citations because of their "age", the comparison is carried out in a subset of publications issued in the same year.

We analyzed a large sample of articles published in 2016 in journals indexed in the RSCI on the subject "Economics. Economic sciences". All publications were arranged in descending order of their citations, after which we determined the upper section of 1% of their total number. Using the number of citations of the last article included in the upper section we set a threshold number of citations that a publication must receive in order to become highly cited. Then for each journal from the reference group we formed a list of articles whose number of citations meets the threshold. After that, we evaluated the quality of each article. For our purpose, we have excluded self-citation and those citations that we conventionally call "cluster" citations. We are talking about the cases when one article is cited many times by different authors in a single collection or journal. Obviously such citation does not indicate the availability of breakthrough research findings and cannot be taken into account in identifying the most relevant publications. Having "cleared" the works of self-citation and "cluster" citations, we established for each journal the number of publications, the number of citations of which remained not lower than the threshold, and defined them as highly cited for the journals of this reference group.

As mentioned above, the overall ranking of the journals was carried out with the help of multidimensional comparative analysis based on the distance method. In each column of the source data matrix we defined the maximum element (max a_i), which was taken as a unit. The matrix of standardized coefficients (x_{ij}) was created from the values obtained by dividing each input factor in the column (a_{ij}) by the maximum (optimal) element of the model journal (max a_i):

$$x_{ij} = \frac{a_{ij}}{\max a_i} .$$

We carried out "reverse" normalization for the indicator reflecting the Herfindahl index for the citing journals; the best index value is considered the one that is the lowest.

At the next stage all elements of the matrix of standardized coefficients were squared. From the sum of the squares of the indicators selected for journal evaluation, we extracted the square root to obtain an integral index of the generalizing rating score (R_j). The algorithm of calculation is as follows:

$$R_j = \sqrt{{x_{i1}}^2 + {x_{i2}}^2 + {x_{i3}}^2 + {x_{i4}}^2} .$$

The final rating of the journals is based on ranking the integral indicators (R_j), the position of each journal is determined by the level of its impact and importance for the scientific community: the first place is occupied by the journal with the highest value of the integral index; the second place – by the journal with the second best result, etc.

Results of ranking academic journals in economics according to bibliometric parameters

We have analyzed bibliometric indicators of economic journals that are affiliated with the organizations within the academic sector of science that were included in the Economics Section of the Social Sciences Department of the Russian Academy of Sciences before the reform of RAS and represented a single reference group; we have ranked these journals by analyzing the integral indicator obtained with the help of multidimensional comparative analysis of bibliometric data. For the purposes of our analysis we have selected 16 journals that are included in the Russian Science Citation Index in the subject area "Economics and Economic sciences". We think that the results of our analysis can be useful for other scientific publications who are interested in their own development and in entering international information systems. In addition, the results we have obtained can be taken into account by the organizations that publish these journals, so that they could work out strategies to develop the publications. The initial data and the results of journal ranking are presented in *Table 2*.

Most of these journals enjoy considerable authority in the Russian scientific community, as indirectly evidenced by the distribution of impact factors.

In the reference group under consideration, we compared the values of the two-year and five-year impact factors of RSCI without self-citation for 2016 with their median values in the group of journals in the subject area "Economics. Economic sciences" (data of the RSCI for April 2018). We found out that 410 publications have the value of the two-year impact factor greater than 0. The median of the distribution of two-year impact factors is 0.293. This means that half of the journals have an impact factor above 0.293, and half – below this value. The median of the values of five-year impact factors was 0.260.

The impact factors of 15 journals in the analyzed reference group significantly exceed the median indicator; this fact shows a sufficiently high level of their citation, and consequently, the demand in the scientific community and the importance for the scientific field *(Fig. 1)*.

As for the Herfindahl index for the citing journals, its values are low (less than one thousand) for 14 journals. Consequently, they are generally quite well known in the scientific community.

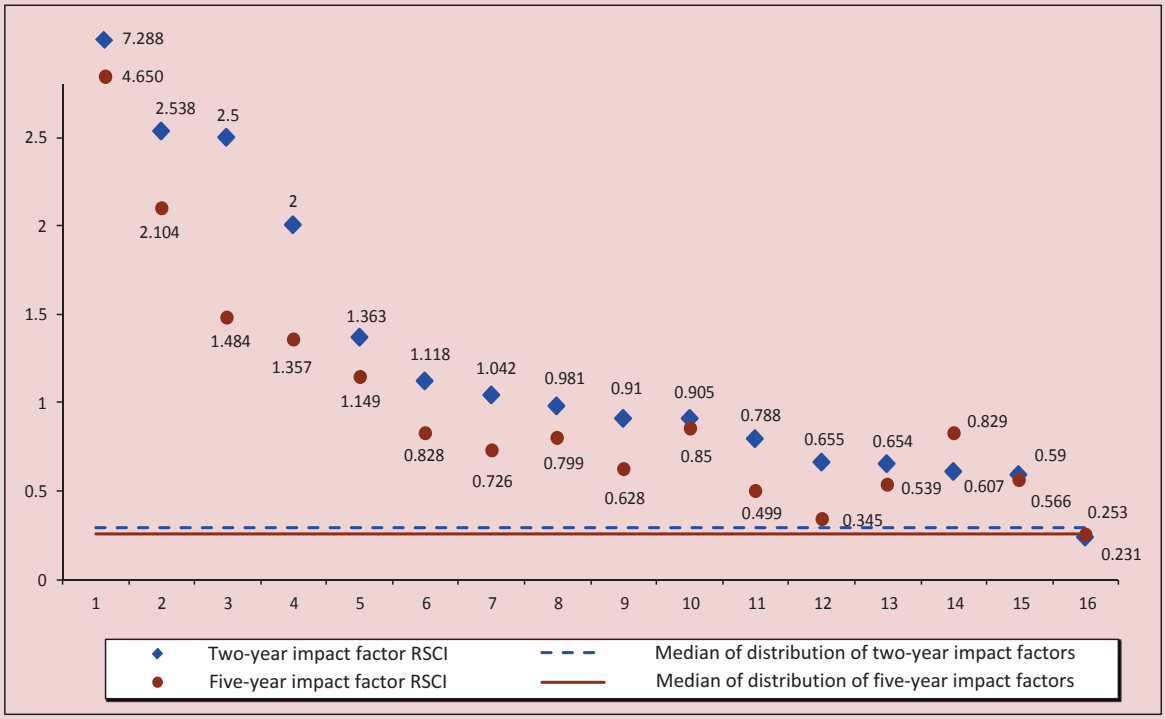
Let us describe in more detail the calculation results for the indicator of the number of highly cited papers, which is absent in the RSCI and which we performed on our own. The analysis was carried out on a large array of economic journals for 2016. The sample consisted of 606 journals with 52,220 articles. With the use of the methodology of the international database Essential Science Indicators we distinguished 547 highly cited articles published in Russian economic journals in 2016 (according to RSCI data as of January 2018).

The threshold value of the number of citations that a work published within the specified year had to receive in order to enter the top 1% of the highly cited works is 11. The total number of references to the publications included in the upper section of the most cited papers has exceeded 10 thousand. Thus, the share of 1% of all publications in Russian economic journals in the RSCI accounts for 8% of the total citations, i.e. one citation in twelve belongs to a highly cited paper.

The data on the number of highly cited articles in economic journals of the academic sector are presented in *Figure 2*.

Having analyzed the relative indicators showing the proportion of articles that are published in the journal and that can be considered highly cited, we can say that the journal *Voprosy ekonomiki* has greatest share of highly cited

Figure 1. Distribution of economic journals published by RAS institutes, by the value of the two-year impact factor RSCI without self-citation for 2016 (data of the RSCI as of April 2018)



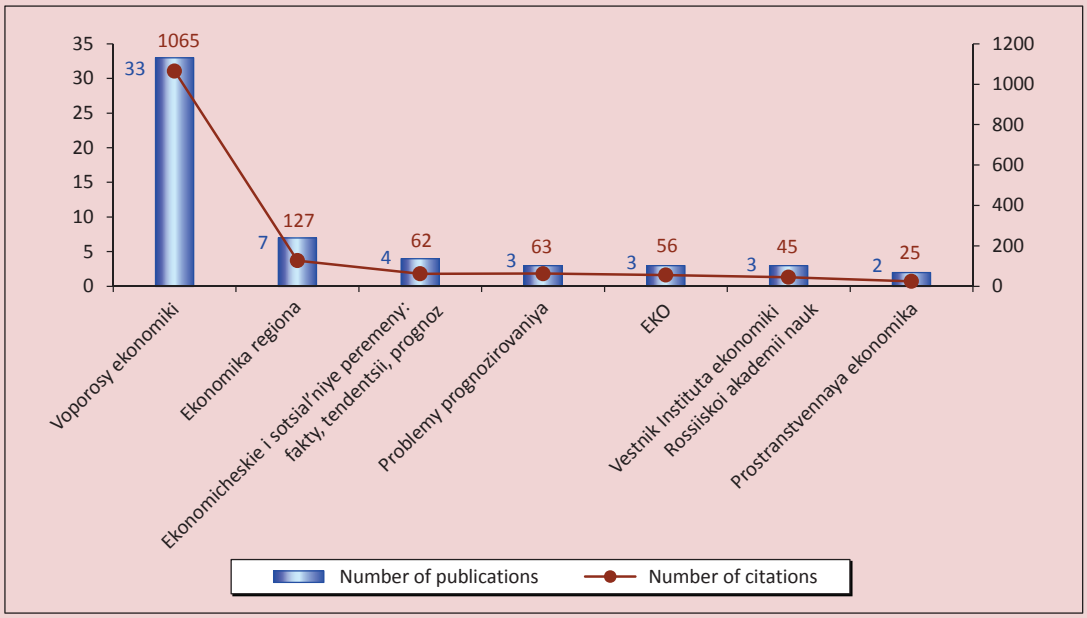
The numbers in the graph denote the following journals:

1 – *Voprosy ekonomiki* [Economic Issues]
2 – *Problemy prognozirovaniya* [Studies on Russian Economic Development]
3 – *Ekonomika regiona* [Economy of Region]
4 – *Prostranstvennaya ekonomika* [Spatial Economics]
5 – *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz* [Economic and Social Changes: Facts, Trends, Forecast]
6 – *Zhurnal novoi ekonomicheskoi assotsiatsii* [Journal of the New Economics Association]
7 – *Problemy razvitiya territorii* [Problems of Territory's Development]
8 – *Prikladnaya ekonometrika* [Applied Econometrics]
9 – *EKO* [ECO Journal]
10 – *Region: ekonomika i sotsiologiya* [Region: Economics and Sociology]
11 – *Vestnik Instituta ekonomiki Rossiiskoi akademii nauk* [Bulletin of the Institute of Economics of the Russian Academy of Sciences]
12 – *Regional'nye agrosistemy: ekonomika i sotsiologiya* [Regional Agricultural Systems: Economics and Sociology]
13 – *Ekonomika i matematicheskie metody* [Economics and Mathematical Methods]
14 – *Ekonomicheskaya nauka sovremennoi Rossii* [Economics of Contemporary Russia]
15 – *Zhurnal ekonomicheskoi teorii* [Russian Journal of Economic Theory]
16 – *Regional'nye problemy preobrazovaniya ekonomiki* [Regional Problems of Transforming the Economy]

publications in the total number of the articles. We can conclude that in 2016, every third publication of this journal was among the highly cited ones.

Having ranked the journals on the basis of the integral index obtained by the method of multidimensional comparative analysis of bibliometric indicators of the journals according to the stated parameters, we identify the core of top ten economic journals affiliated with scientific organizations of the Russian Academy of Sciences *(Tab. 2)*. Judging by the results, the top of the rating includes publications that are well-known in the scientific community and that have an impact on the development of economic science in the country. This can be concluded from their high citation rates that indirectly show the scientific prestige of the journals. Their widespread popularity in Russia is confirmed by the considerable number of the citing journals, as evidenced by the low values of their Herfindahl index. All this allows us to

Figure 2. Number of highly cited articles in economic journals of the academic sector, 2016 (RSCI data as of January 2018)



say that the publications included in the core of the list are among the top Russian journals in economics and to determine their status as nationwide.

We characterize the level of impact of the journals included in the top five as high. Today, their authority is recognized not only by Russian economists, but also by the international scientific community, since they are included in the main international scientometric databases: *Voprosy ekonomiki* (WoS: ESCI, Scopus), *Ekonomika regiona* (WoS: ESCI, Scopus), *Zhurnal Novoi ekonomicheskoi assotsiatsii* (WoS: ESCI, Scopus), *Problemy prognozirovaniya* (Scopus), *Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz* (WoS: ESCI). As we can note, these databases traditionally select the most influential journals from different scientific areas, which promote advanced ideas and meet high standards of the quality of scientific content. Prior to being accepted by these databases, the journals undergo an evaluation procedure carried out by the expert group on formal and qualitative criteria. That is, we can say that the scientific authority of the publications under consideration is confirmed not only by bibliometric indicators, but also by independent expert opinion.

In order to verify the final results we compare them with the results of other ratings for the similar time period *(Tab. 3)*. First of all, we are interested in the Rating of Russia's leading economic journals–2016 developed by Evgenii V. Balatsky, Director of the Center for Macroeconomic Research at the Financial University under the Government of the Russian Federation, and his colleague Natal'ya A. Ekimova[5]. Having compared the two lists we see that Balatsky–Ekimova's diamond list contains nine journals out of the ten that form the core of our rating. At the same time, the positions of the top five publications from our list coincide with the order of the journals affiliated with RAS organizations in Balatsky's rating.

Table 2. Results of comparative rating of economic scientific journals published by organizations of the academic sector

Journal		Input data matrix				Standardized coefficients matrix				Comparative rating evaluation results						
No. (j)	Name	Indicators (a_{ij})				Coefficients (x_{ij})				Indicator square				Sum	Int. indicator (R_j)	Position
		IF_2	IF_5	HI_J	HP	X_1	X_2	X_3	X_4	X_1^2	X_2^2	X_3^2	X_4^2			
1	Voprosy ekonomiki	7.288	4.650	81	33	1.000	1.000	1.000	1.000	1.000	1.000	1.000	1.000	4.000	2.000	1
2	Ekonomika regiona	2.500	1.484	146	7	0.343	0.319	0.555	0.212	0.118	0.102	0.308	0.045	0.572	0.757	2
3	Zhurnal novoi ekonomicheskoi assotsiatsii	1.118	0.828	117	0	0.153	0.178	0.692	0.000	0.024	0.032	0.479	0.000	0.535	0.731	3
4	Problemy prognozirovaniya	2.538	2.104	206	3	0.348	0.452	0.393	0.091	0.121	0.205	0.155	0.008	0.489	0.699	4
5	Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz	1.363	1.149	176	4	0.187	0.247	0.460	0.121	0.035	0.061	0.212	0.015	0.323	0.568	5
6	Vestnik Instituta ekonomiki Rossiiskoi akademii nauk	0.788	0.499	155	3	0.108	0.107	0.523	0.091	0.012	0.012	0.273	0.008	0.305	0.552	6
7	EKO	0.910	0.628	161	3	0.125	0.135	0.503	0.091	0.016	0.018	0.253	0.008	0.295	0.543	7
8	Prostranstvennaya ekonomika	2.000	1.357	304	2	0.274	0.292	0.266	0.061	0.075	0.085	0.071	0.004	0.235	0.485	8
9	Prikladnaya ekonometrika	0.981	0.799	230	0	0.135	0.172	0.352	0.000	0.018	0.030	0.124	0.000	0.172	0.414	9
10	Ekonomicheskaya nauka sovremennoi Rossii	0.607	0.829	224	0	0.083	0.178	0.362	0.000	0.007	0.032	0.131	0.000	0.169	0.412	10
11	Region: ekonomika i sotsiologiya	0.905	0.850	241	0	0.124	0.183	0.336	0.000	0.015	0.033	0.113	0.000	0.162	0.402	11
12	Ekonomika i matematicheskie metody	0.654	0.539	237	0	0.090	0.116	0.342	0.000	0.008	0.013	0.117	0.000	0.138	0.372	12
13	Problemy razvitiya territorii	1.042	0.726	272	0	0.143	0.156	0.298	0.000	0.020	0.024	0.089	0.000	0.133	0.365	13
14	Zhurnal ekonomicheskoi teorii	0.590	0.566	270	0	0.081	0.122	0.300	0.000	0.007	0.015	0.090	0.000	0.111	0.334	14
15	Regional'nye agrosistemy: ekonomika i sotsiologiya	0.655	0.345	1104	0	0.090	0.074	0.073	0.000	0.008	0.006	0.005	0.000	0.019	0.138	15
16	Regional'nye problemy preobrazovaniya ekonomiki	0.231	0.253	2230	0	0.032	0.054	0.036	0.000	0.001	0.003	0.001	0.000	0.005	0.073	16

Notes:

IF_2 – two-year impact factor RSCI without self-citation (taking into account the translated version) – the number of citations, received in the current year, of articles published in the journal during the two preceding years, divided by the total number of articles published in that journal during the two preceding years.

IF_5 – five-year impact factor RSCI without self-citation – the number of citations, received in the current year, of articles published in the journal during the five preceding years, divided by the total number of articles published in that journal during the five preceding years.

HI_J – five-year Herfindahl index for the citing journals. It is calculated as the sum of the squares of the percentages of the journals citing the journal under consideration in the total number of citations. The calculation takes into account citations from the current year of articles for the five preceeding years, including self-citation. The greater the number of the citing journals and the more evenly the journal's citations are distributed among them, the smaller the value of this indicator. The maximum value is 10,000 and is reached when all the citations are from the same journal.

HP – number of hot papers.

Table 3. Comparison of the results of the impact rating of the journals from the academic sector with the data of other ratings of Russian economic journals

Journal	Impact rating, 2016	Balatsky–Ekimova's rating, 2016 Rank / sequence order of RAS journals	Balatsky–Ekimova's consensus rating, 2017 Grading / rank	Rubinshtein's rating, 2017 Category / rank
Voprosy ekonomiki	1	1 / 1	A / 2	A1 / 2
Ekonomika regiona	2	3 / 2	D / 27	-
Zhurnal novoi ekonomicheskoi assotsiatsii	3	5 / 3	A / 3	A1 / 1
Problemy prognozirovaniya	4	6 / 4	B / 10	A3 / 8
Ekonomicheskie i sotsial'nye peremeny: fakty, tendentsii, prognoz	5	10 / 5	E / 46	-
Vestnik Instituta ekonomiki Rossiiskoi akademii nauk	6	-	D / 21	B1 / 14
EKO	7	39 / 9	D / 19	-
Prostranstvennaya ekonomika	8	20 / 7	B / 9	A3 / 11
Prikladnaya ekonometrika	9	12 / 6	A / 5	A2 / 4
Ekonomicheskaya nauka sovremennoi Rossii	10	21 / 8	B / 11	B1 / 15

A weaker degree of correlation can be seen when comparing our ranking results with the data of the Consensus rating of leading Russian economic journals [21]. Although it contains all the ten journals that form the core of our rating, their position relative to each other is significantly different. We believe that this is due to different ranking criteria and the time gap between our list and the individual rating products, the results of which are summarized in the Consensus rating.

The lowest correlation is observed when we compare the results of our rating with the rating developed under the guidance of A. Rubinshtein and which takes into account only the data of expert surveys [17]. In our opinion, this is due not so much to the lack of significant links between bibliometric indicators and the opinion of the expert community based on intuitive views of economists about the scientific authority of journals, as to the composition of the initial sample of the journals. According to the rating developers, the initial list of analyzed journals has been formed on the basis of the list of publications included in the RSCI, the principles of construction of which have aroused many questions from the expert community, which were discussed on the pages of scientific publications [44]. Taking into account the known shortcomings of the list, the authors have made an attempt to adjust the selection of publications. Nevertheless, we see that it does not include even those journals that are included in global citation indexes and whose quality and level of impact are confirmed by independent expert opinions at the international level. We believe that if the sample and, possibly, the geography of the experts were expanded, the results of the rating based on the data of sociological surveys would be different, and the degree of their correlation with the results of our rating would be higher.

Judging by a high degree of correlation between our rating and Balatsky–Ekimova's rating that is based on a combination of bibliometric and expert assessments, we can assume that the composition of the criteria we have chosen and the method of their aggregation we have used may be suitable for ranking not only publications of the academic sector, but also all Russian economic journals. Some difficulties associated with the use of this

method to rank a wide range of journals are seen in the procedure for calculating the number of highly cited publications, in particular, the need for additional qualitative evaluation of citations that each such article received.

Conclusion

Summing up, we should note that the results we have obtained allow us to approach the question of the choice of criteria, in particular bibliometric ones, to evaluate academic journals. The composition of criteria we propose has been adjusted in comparison with the sets of criteria used in the previous rating [3]. Having introduced the indicator of the number of highly cited publications we were able to deepen the analysis of citation and to rely on the characteristic of its ability to accumulate "breakthrough" articles in the evaluation of the scientific authority of the journal. The findings of our research are presented in the form of an impact rating of economic journals, which reflects the level of their research impact, the importance and usefulness of their publications, and their scientific authority. The degree of correlation of the final list with other ratings of economic journals confirms that the criteria we propose and the method of their aggregation that we use enable to obtain fairly objective data suitable for ranking scientific journals.

In general, we can say that the integrated indicators obtained with the help of multi-dimensional comparative analysis of several significant bibliometric indicators of publications based on the data of the RSCI for 2016, allowed us to rank the journals and distinguish among them the core of the ten leading scientific journals in economics that are affiliated with academic organizations. These are well-known publications in the scientific community that have an impact on the development of economic science in the country.

It is obvious that the methodology for constructing the impact rating presented in this study can be used for ranking a wide range of scientific publications. In this case, the procedure for calculating some indicators, in particular the number of highly cited publications, would be simplified if the Russian Science Citation Index contained indicators that reflect the so-called "extreme" citation. A good solution to the problem of objective data collection would be to introduce tools that would automatically exclude links that have been manipulated. It is obvious that improving the systems that accumulate the initial data used in ranking will have a positive effect on the ranking results.

In conclusion we should note that ratings can be used as sources of additional information to analyze the effects and factors that hinder the success of academic publications, as well as reference points; they can help improve the quality of not only specific journals, but also the entire Russian economic science. As for the shortcomings that we have identified in the current ratings, they can be eliminated in the process of further study of the choice of criteria for ranking publications and improving the methodology of their analysis.

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Institutional Response of Regional Socio-Economic Systems to Investing in Human Capital Increment: Assessment Technique*

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Abstract. Modern theories view human capital as the main source of economic growth. Managing the concentration of human capital to form new growth centers, provided by the Concept of the strategy of Russia's spatial development, requires the use of effective institutions. The authors' method of studying the responses of socio-economic systems to changes in the institutional conditions of human capital increment helps determine the ranking of the impact of material and institutional factors applying the methodological tools of regression analysis using dummy variables. Moreover, the study based on the proposed method makes it possible to take into account the heterogeneous nature of the socio-economic space of Russian regions in the context of human-oriented development paradigm in assessing the effectiveness of institutions based on comparative analysis of standardized coefficients of institutional variables in the regression models of the managed characteristics of human capital by regional clusters. The testing of the methodology on the example of institutional impact on the reproductive increment of the quantitative component of human capital in Russian regions for 2005–2015 has revealed the great importance of the institutional factor which ranks second by the influence of all independent variables. The estimation of heterogeneity of the socio-economic space of Russian regions was carried out using the methods of factor analysis of twelve factor-indicators of territories' attractiveness for the population, which helps form seven clusters. The characteristic of clusters is provided with the use of the author's method of a three-component vector of socio-economic territorial development. The study revealed the direct impact of the socio-natural component of regional clusters on the institutional response of socio-economic systems and the reverse impact – of the economic and inclusive component. The results can be used as analytical materials to justify the institutional measures for concentrating human capital in the planned centers of economic growth and forecasts of the need for developing the social infrastructure in the regions. The application of the developed methodological approach can be extended to the study of the impact of other institutions on the socio-economic processes.

Key words: institutional conditions, responses of socio-economic systems, human capital, cluster analysis of regions.

Introduction

Modern concepts and theories of economic growth present human capital as one of the main development factors which determines the relevance of research into its management. Studying the models of economic growth, R.J. Barro and X. Sala i Mart n conclude that "growth positively depends on the initial quantity of human capital measured by educational level and health" [1, p. 24]. *The theory of endogenous economic growth* due to human capital and its ability to self-educate (the impact of experience on productivity). – *Author's note*) provides the opportunities for unlimited growth. The models of endogenous growth by M. Frankel (1962) [2], Z. Griliches (1979) [3] and P. Romer (1986) [4] determines the special role of human capital in economic development by the effects of knowledge and experience. In the famous work by R. Lucas *On the Mechanics of Economic Development* (1988) [5], the development model is based on the fact that human capital is a source of production and transfer of knowledge.

Many experts [6, p.12] speak about the "exceptional importance of human capital" for modern Russia. According to V. Polterovich (2015), one of the priority initiatives of the state is "building human capital" [7]. Awareness of the role of human capital in economic development has generated interest

in determining its content, reproduction, and use. Referring to the concept of human capital by T. Schultz [8] and G. Becker [9], A. Shabunova and G. Leonidova (2011) define its contents as a set of qualities that affect productivity, including "natural ability, knowledge, and skills ... creativity, and ... the motives of action providing an opportunity to generate income" [10, p. 102]. V. Iontsev and A. Magomedov (2015) understand human capital "not only a set of knowledge, educational and professional characteristics", but also "spiritual, psychophysical, and demographic qualities" inherent to each person [11, pp. 89–90]; this points to the inextricable link between reproduction of human capital and reproduction of population. Since this process is rather long and requires significant investment, G. Gagarina (2012) draws attention to the fact that significant investment in human capital "is only beyond the state's abilities" [12, p. 10].

Formation and use of the program-target approach[1] for management purposes since the mid 1990–s was aimed at improving the efficiency of reforming Russian economy. Most of federal target programs (hereinafter – FTP) adopted in the early 2000–s were directly or indirectly aimed at investing in human capital and improving the conditions of its formation at the expense of budget funds. Among them are *Prevention and control of social diseases FTP*, *Electronic Russia FTP*, *Children of Russia FTP* and others. Since 2006, a large package of target programs (included in the state programs since 2014) has been adopted marking a new wave of social and economic reforms. Using the most common classification of types of human capital[2] [13] we note that programs adopted since the mid 2000–s were aimed at increasing the following components.

1. *Health capital*:

1.1. Development of physical culture and sports in the Russian Federation for 2006–2015 (extended to 2016–2020).

1.2. Social support for disabled people (2006–2010).

1.3. Improving road safety in 2006–2012 (extended to 2013–2020).

1.4. Clean water (2011–2017).

2. *Human capital*:

2.1. Federal target education development program for 2006–2010 (extended to 2011–2015 and 2016–2020).

2.2. Economic and social revival of indigenous peoples of the North until 2011.

2.3. Social development of a village up to 2012 (Sustainable development of rural areas for 2014–2017 and up to 2020).

3. *Intellectual capital*:

3.1. R&D in priority areas of science and technology development in Russia for 2007–2013 (extended to 2014–2020).

3.2. Development of nano-industry infrastructure in the Russian Federation for 2008–2010.

3.3. Science and science-pedagogical per-sonnel of innovative Russia (2009–2013 extended to 2014–2020).

4. *Cultural and moral capital*:

4.1. Russian culture (2006–2010 and 2012–2020).

4.2. Development of the Russian judicial system (2007–2012).

[1] The procedure for developing and implementing Federal target programs and interstate target programs with the participation of the Russian Federation: the Russian Federation Government Decree No. 594 dated 26 June 1995. Official website of Consultant Plus company. Available at: http://www.consultant.ru/cons/cgi/online.cgi?req=doc&base=LAW&n=287235&fld=134&dst=100042,0&rnd=0.16337567839718226#0 (accessed: 15.01.2018).

[2] Smirnov V.T., Soshnikov I.V., Vlasov F.B., Skoblyakova I.V. Human capital management: study guide. Oryol: Oryol GTU, 2005. 276 p.

It should be noted that Federal target and state programs are not the only source of investment in human capital formation. For example, since 2005 the Ministry of Economic Development has been implementing a program to support small and medium business at the regional level in the form of subsidies[3] for the development of organizational and entrepreneurial capital. Moreover, a large number of funds and centers providing assistance to entrepreneurs and contributing to the formation of their entrepreneurial skills have been established [14].

In economic growth models government support and regulation measures are institutional variables[4]. Thus, the models of P. Romer (1990) [15], J. Grossman and E. Helpman (1991) [16], F. Aghion and P. Houitt (1992) [17] are based on the dependence of long-term economic growth rates on "government actions such as taxation, law support...protection of intellectual property rights" [1, p.31], as well as on the regulation of other socio-economic processes. Based on analysis of a large number of studies of modern traditional and new institutionalists V. Volchik[5] identifies "three types of influence of institutions on the economic behavior" of individuals. In addition to restrictive and informative-cognitive functions the third type of influence is realized through the teleological function[6] which involves the generation of motivation. In the present study, the authors believe that changes in institutional conditions in conjunction with material space factors have an impact (in the form of appropriate motivation) on the economic behavior of individuals aimed at reproduction of human capital across the spectrum of its characteristics.

The research relevance lies in the need to increase the effectiveness and targeting of public administration of socio-economic development in the regions taking into account their significant differences. Identifying the institutional response of socio-economic systems forming Russia's regional space to the implementation of government measures to increase human capital is relevant not only from the standpoint of assessing the effectiveness of budget investment, but also progressive nature of areas and mechanisms for implementing the socio-economic policy. Given the heterogeneity of development of Russian territories the authors state **the purpose of the study**: to develop methods for assessing the responses of socio-economic regional systems to changes in the institutional conditions for expanding human capital. To achieve it, the following **objectives** have been set.

1. Forming the conceptual basis of the study.

2. Developing the research algorithm to synthesize the author's methods for assessing the attractiveness of the territories for the population, the classification of regions by components of human-oriented development and regression analysis tools for building models of human capital growth in regional clusters including factors in institutional conditions.

3. Testing the method through introducing one of the institutions (at the federal level) of regulation of the process of human capital reproduction in the regions.

[3] On providing and distributing subsidies from the federal budget to budgets of Russia's constituent entities for state support for small and medium business including farm enterprises: Order of the Government of the Russian Federation no. 1605, dated 30.01.2014. Electronic Fund of legal and technical documents. Available at: http://docs.cntd.ru/document/420244200 (accessed: 15.01.2018)

[4] Institutional variables in this study are considered independent factors reflecting the regulatory impacts of the management system (e.g. government actions).

[5] Vol'chik V.V. *Institutional and evolutionary Economics: textbook*. Rosov-on-Don: YuFU, 2011. Pp. 11–12.

[6] Teleological approach is based on the provision of expediency of human behavior, actions and phenomena.

4. Allocating the region's cluster[7] through hierarchical clustering of Russia's constituent entities by characteristics of territory's attractiveness.

5. Describing clusters acting as types of regional socio-economic systems[8] from the standpoint of three-component assessment of territories' development.

6. Conducting comparative analysis of responses of types of regional socio-economic systems to changes in the institutional conditions of human capital reproduction.

7. Interpreting the results obtained to form an array of analytical materials on the responses of regional socio-economic systems to changes in institutional conditions.

Concepts and research methodology

The concept of *the new regional policy* by A. Tatarkin (2012) is based on ***"the human-centered paradigm*** of institutional development" implying "the forcing of the whole spectrum of investment in human development" [18, p. 29].

In the *Concept of the strategy of spatial development of Russia until 2030*[9] (hereinafter – CSSD), the prospects for improving the efficiency of using the spatial factor with respect to human resources are considered in two directions. In the model of market spacing based on the *concept of space polarization*, one of the key factors in economic development is the concentration of resources involving population resettlement to the most dynamic regions. In the model of state space preservation (retention), the most important key development factor according to the *concept of endogenous growth* is human capital whose role in ensuring sustainable development lies in: 1) forming new growth centers through the population concentration in the regions; 2) searching for ways of cost-effectively maintaining the already developed territories.

The implementation of these models of spatial development in Russia requires the development and improvement of mechanisms for managing the increase in human capital in the projected centers of economic growth. In accordance with the author's *conceptual model of functional regional system transformations* [19], this process can be provided based on the following alternative mechanisms: 1) *reproductive*, implying the process of expanded self-reproduction of human capital in the regions; 2) and *integration* associated with the function of system metabolism causing the flow of human capital from other regions.

The authors proceed from the motivational approach and the freedom of each individual to make decisions that affect changes in the human capital in regions. The first type of decision applies to people's reproductive behavior (in the broad sense) in the context of expanded reproduction of human capital. It includes both processes of fertility and growth of life potential, and the processes of learning, gaining experience, intellectual and cultural development, and moral improvement. The second type of decisions is associated with the spatial movement of an individual possessing

[7] The region's cluster in this study is considered as a set of Russia's constituent entities formed as a result of grouping the entities by 12 socio-economic characteristics of territories' attractiveness based on the classification procedure in the IBM SPSS Statistics package with a graphical representation in the form of a dendrogram.

[8] Types of regional socio-economic systems are sets of Russia's constituent entities resulting from the classification whose socio-economic features are described from the positions of the 3 components of value-oriented development (economic, socio-natural, and inclusive).

[9] The concept of the strategy of spatial development of the Russian Federation up to 2030. Moscow, 2016. Pp. 21–25. Available at: http://карьеры-евразии.рф/uploadedFiles/files/Kontseptsiya_ SPR.pdf (accessed: 15.01.2018).

certain characteristics of human capital. According to R. Florida (2008), "clustering and concentration of talented and productive people" is a true source of economic growth [20] so regions with more favorable living conditions acquire greater competitiveness potential.

The author's **method** implies research based on **the algorithm** including the following stages:

1) selecting quantitative and qualitative characteristics of human capital assessment;

2) determining the function (reproductive or metabolic) of its increment;

3) selecting the control parameter of human capital (level of education, life potential, share of employable population, birth rate, net migration rate, etc.);

4) selecting the institution affecting the control parameter (implementation of the federal target or state program, introduction of the institution of maternity capital, changes in migration legislation, etc.).);

5) forming a data array on a dummy variable that takes the "0" value before introducing a relevant institution and the "1" value after its introduction, if the time lag from introducing the institution to manifestation of the result is less than a year (otherwise, the "delayed result" is accounted based on expert evaluation of the time lag);

6) substantiating the system of indicators to assess the regions' attractiveness based on the paradigm of human-oriented development;

7) forming data array of regional statistics for the research horizon covering the period "before" and "after" the introduction of the institution under study;

8) clustering Russian regions in terms of territories' attractiveness using the methods of multivariate statistical analysis;

9) characterizing socio-economic types of regions from the standpoint of value system of human-centered development;

10) conducting regression analysis of the human capital control parameter by regional clusters and all Russia's constituent entities with assessing statistical significance of the models;

11) forming the ranking of factor influence on the control parameter based on standardized regression coefficients;

12) conducting comparative analysis of responses of regional clusters to the introduction of the institution affecting the control parameter of human capital;

13) interpreting the obtained results to form a single array of analytical materials to assess the impact of changes in institutional conditions on the development of regional socio-economic systems.

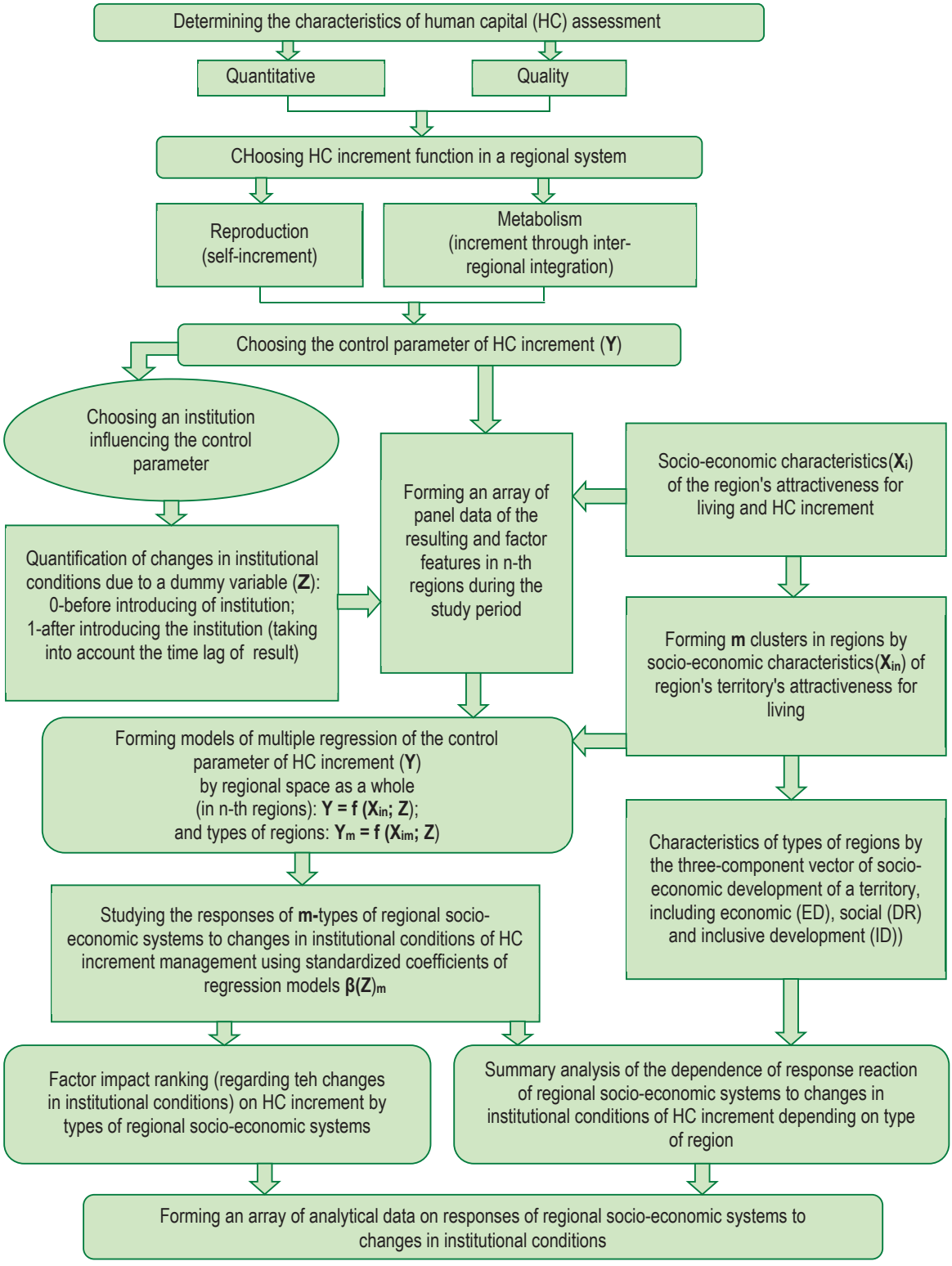
The sequence of stages to determine the responses of regional socio-economic systems to the changes in the institutional conditions of human capital management is demonstrated in *Figure 1.*

According to the presented algorithm, the research method includes the following components.

1. *The author's method of assessing the attractiveness of a territory as a living environment* (habitat) [21, p. 25]. The attractiveness of the territory is estimated by twelve indicator-factors formed from the perspective of the motivational approach based on the system of needs and free choice. These include the physiological need for food (indicator of real earnings), housing (indicator of new housing situation), as well as for favorable climate and environmental conditions[10]. Moreover,

[10] The opportunity to meet physiological needs in a favorable environmental situation and climatic conditions is estimated by the indicator of life expectancy in the region.

Figure 1. Algorithm of exploring responses of socio-economic systems to changes in the institutional conditions of human capital increment in regions



Source: compiled by the authors.

the system of population's primary needs includes the needs for secure physical (crime rate) and social (unemployment rate and real pensions) environment. The ability to meet communication needs are evaluated according to the demographic density in the area (population density) and infrastructure development ensuring transport (road density) and communications connectivity (the volume of communication services per resident) regional space. Considering "the quality of the environment" as an integral part of "the quality of life" of the population, O. Kozlova and others (2015) note that its assessment should take into account "the degree of satisfaction of needs in creativity, self-development and self-realization of human abilities" [22, pp.183–184]. In the proposed method, territory's attractiveness from the point of view of its ability to achieve success is estimated by the degree of innovative activity of the environment (the share of innovation-active enterprises in the total number of enterprises), favorable business climate (the share of employees at small enterprises in the total number of employees) and the level of economic competitiveness (the measure of which, according to M. Porter (1993), is the export of products [23]). This method does not claim to be the most complete coverage of parameters for assessing the quality of life in the regions[11]. The authors see the following advantages:

1) the *scientific validity* of a set of indicators based on the system requirements based on content theories of motivation (Maslow (1954) [24], J. McClelland (1970) [25], and C. Alderfer (1972) [26]);

2) *availability of data* for assessing territories based on using official statistics of Rosstat[12];

3) *focus on the modern system of values* in the society including the values of sustainable growth (economic, social, environmental) and innovative development;

4) *flexibility of the system* of indicators which allows them to be interpreted both from the standpoint of the system of population needs and from the standpoint of territory's potentials (foreign economic, social, innovation, institutional, and infrastructure, which plays a special role in improving the comfort of life of people in Northern territories [27, p. 56]);

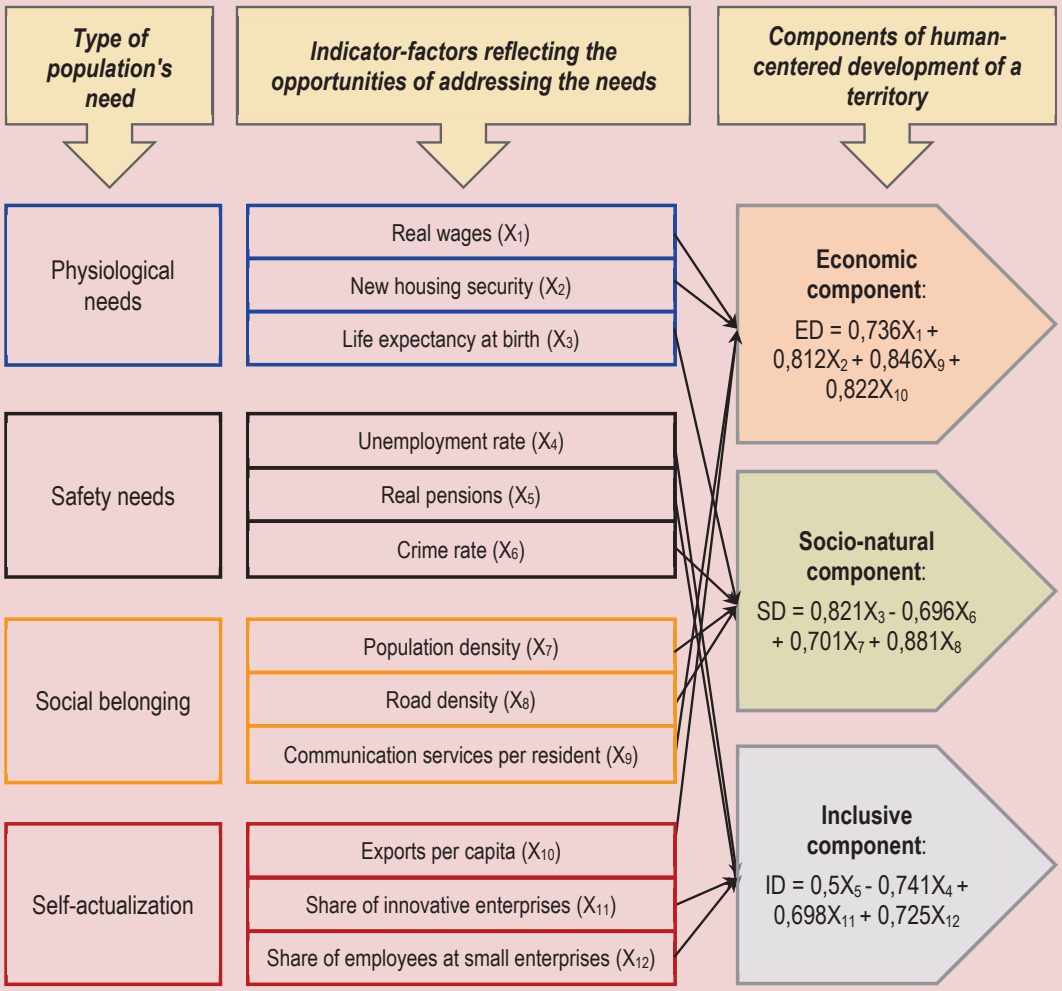
5) *multifunctional indicators*, which makes it possible to form components of socio-economic development of a territory and successfully interpret them on the basis of the human-cantered paradigm as demonstrated in *Figure 2*.

2. *The author's method of assessing the territory using a three-component vector of socio-economic development from the perspective of the human-centered paradigm*. Most methods for assessing the quality of life and the standard of living, as well as any methods for complex measurement of socio-economic development of territories include two stages: 1) analysis stage, which implies distinguishing a set of development components estimated by private indicators; 2) synthesis stage, where a generalized estimation takes place, most often based on weighted average values. In the proposed method, the weight of 12 particular indicators (in the form of loads on the main component) was obtained as a result of factor

[11] Various aspects of the quality of life are most fully reflected in the methodology of the RIA Rating Ranking Agency, which includes more than 70 indicators used to form the ranking of Russian regions. The limitation of the number of characteristics of territories' attractiveness in the proposed methodology to 12 indicator-factors reduces assessment complexity, but its results are close to the estimates of the mentioned Agency.

[12] Official statistics. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/accounts/ (accessed: 15.01.2018

Figure 2. System of indicator-factors for assessing the attractiveness of a territory as a living environment based on the motivational approach and paradigms of human-centered development*



* The paradigm of human-centered development developed after the crisis of 2008–2009, when social contradictions in the society worsened. In the document "Europe 2020. The strategy of smart, sustainable, and inclusive growth" the values of inclusive development related to employment, equal opportunities, access to social benefits, and individual self-realization were identified as a separate component.

Source: compiled by the authors.

analysis of panel data by Russian regions using the methods of multivariate statistical analysis in the IBM SPSS Statistics package. The resulting models of principal components were interpreted from the standpoint of the component of value-driven development, including the inclusive[13], socio-natural[14] and economic[15] component [21, pp. 26–30].

3. *Methodological tools of regression analysis using dummy variables*. The resulting feature (control parameter) is the human capital growth rate with the i-th characteristic for the n-th region. To study the influence of the institutional response in the system of indicator-factors, in addition to 12 characteristics of territories' attractiveness, an additional (13th independent variable) dummy variable is included, which reflects the introduction of the institution aimed at increasing human capital.

Most studies devoted to responses of economic actors to changes in institutional conditions (for example, the influence of the institutional environment on investment behavior [28]), are limited forecasting "the benefits" related to simulating behavior patterns or stating the changes in resulting indicators. The developed research technique evaluates the "institutional response" based on empirical data (de facto) which characterize the changes in population's socio-economic behavior (measured by the resulting factor in regression equations) and the influence of the institutional variable on such behavior through the standardized regression coefficient of the dummy variable. Using regression analysis tools increases the degree of objectivity and information content of the results obtained through the developed methodology. The informational base of the study consists of panel data on the socio-economic development of 83 Russian constituent entities for 2005–2015.

Research results

The developed technique, whose calculation algorithm is demonstrated in Figure 1, was tested based on the indicator of reproductive growth of quantitative characteristics of human capital (birth rate). Introduced since January 1, 2007, the institution of maternity fund[16] aims to improve the conditions of human capital reproduction at the expense of the federal budget, including: 1) improvement of housing conditions; 2) recovery of educational costs; 3) recovery of costs of social adaptation of children with disabilities; 4) formation of retirement savings for mothers. Changes in the institutional conditions of reproductive growth of the quantitative component of human capital has served as an impulse for the formation of a positive trend in both natural and general growth of the population in Russia (*Fig. 3*).

The efficiency of institutional measures of using the mechanism of stimulating reproductive growth through maternity funds has

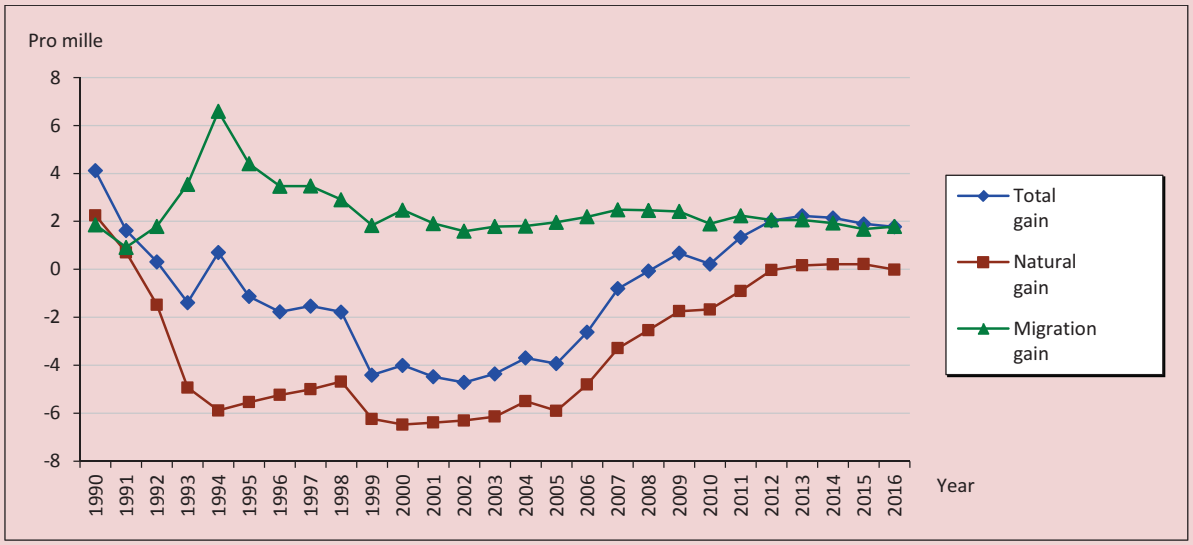
[13] In the author's method of assessing the socio-economic development of the territory based on the human-centered paradigm, an inclusive component characterizes the development from the standpoint of the quality of working life, including its innovative and entrepreneurial aspects.

[14] The social component in the social-nature component characterizes the state of the regional space from the standpoint of "non-labor" aspects of the society (crime rate, development of the society, transport availability). The natural component is assessed in the context of environmental values and sustainable development through life expectancy.

[15] The economic component of human-centered development of a territory is estimated from the standpoint of the population's standard of living (in terms of real wages and new housing security), the degree of economic "servicization" (manifested, for example, in the increased volume of communication services) and its increased competitiveness (measured by exports).

[16] On additional measures of state support for families with children: Federal Law no. 256-FZ, dated 29.12.2006. Official website of ConsultantPlus company. Available at: http://www.consultant.ru/document/cons_doc_LAW_64872/ (accessed: 15.01.2018).

Figure 3. Performance of growth rates of the quantitative component of human capital



Sources: Demographic Yearbook of Russia, 2002–2017. Federal State Statistics Service. Available at: http://www.gks.ru/; Russia in figures, 2003–2017. Federal State Statistics Service. Available at: http://www.gks.ru/ (accessed: 15.01.2018).

helped overcome the downward trend in demographic component of the human capital in Russia. At the end of 2017, the President of Russia signed a Law on extending the maternity fund program to 2018–2021[17], which confirms the relevance institution choice.

Using the authors' research methodology has helped form a model of reproductive growth of the quantitative component of human capital for 2005–2015. In the regression model of reproductive growth of human capital in the whole population of Russian regions, the impact of changes in institutional conditions (associated with introducing the institution of maternal fund) ranks second in the factor ranking (with a standardized coefficient of 0.385) (*Fig. 4*).

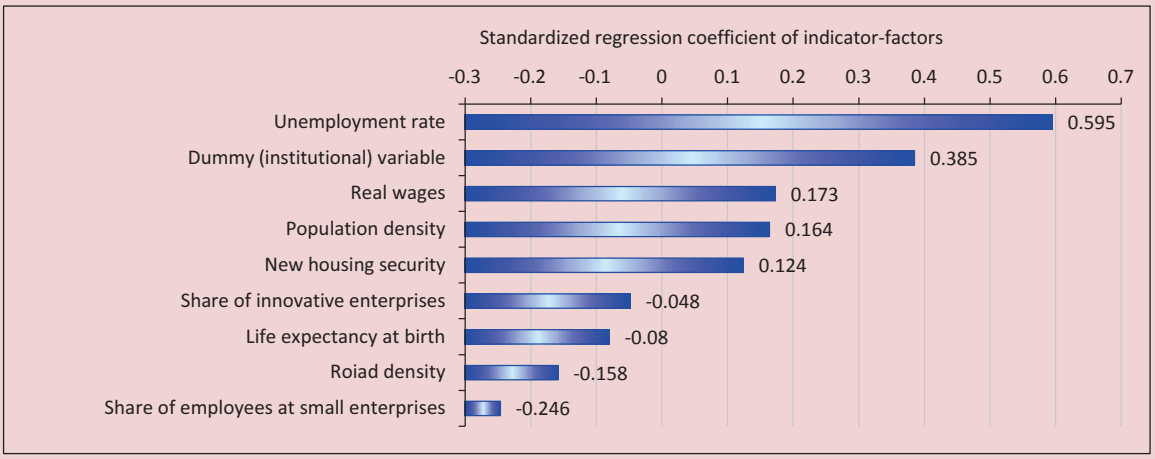
Judging by the values of standardized coefficients[18], the most positive impact on reproductive growth rate is unemployment rate (0.595). Together with factors characterizing the state of the business environment (-0.246) and innovation activity of regions (-0.048), which have the opposite effect on the birth rate, these three independent variables characterize the inclusive component of the territory development. The third most important factor in terms of the impact on the dependent variable is real wages (0.173), which, together with population's new housing security (0.124) characterizes the economic component of regional development.

Taking into account the fact that Russia's regional space is much differentiated by socio-economic characteristics of territories' attractiveness, the objective to build models of

[17] Federal law no. 432-FZ "On amendments to Federal Law "On additional measures of state support for families with children"", dated 28.12.2017. Official website of ConsultantPlus company. Available at: http://www.consultant.ru/document/cons_doc_LAW_286465/ (accessed: 15.01.2018).

[18] The standardized regression coefficient helps determine the direction and degree of influence on the dependent variable (reproductive growth coefficient) of each factor included in the model.

Figure 4. Ranking of factors affecting the coefficient of reproductive growth of the quantitative component of human capital in all Russian regions, according to standardized regression coefficients



Calculated according to: Regions of Russia. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138623506156 (accessed: 15.01.2018).

reproductive growth of human capital in clusters of Russia's constituent entities has been set. Using the methods of hierarchical clustering by characteristics of attractiveness of a region as a population's habitat[19] provided by the author's method [21], has formed four main clusters including Middle, Northern, Agglomeration and Southern. Based the numerous regions making up the Middle cluster, which includes 57 Russia's constituent entities, it was divided into 3 sub-clusters at a lower level of clustering (*Tab. 1*).

The names of clusters and sub-clusters within the Middle cluster are given by the authors based on the economic and geographical location and features of socio-economic development. The average standardized factor values are presented in *Table 2*.

To identify the characteristics of regional clusters (forming the types of socio-economic systems), 12 indicator-factors in accordance with the authors' assessment methodology were grouped using the principal component method into three components including economic, socio-natural, and inclusive. The results of forming the three-component vector of socio-economic development in regional clusters obtained by standardizing the indicators by their relation to the average values for all constituent entities, are demonstrated in *Figure 5*.

The clustering of Russia's constituent entities helps reveal the peculiarities of territories' development according to a three-component vector of human-centered development. These peculiarities are as follows.

1. There is a *significant differentiation in the overall level of socio-economic development*. The "separation" of the Agglomeration cluster by the level of development from other clusters (from 4 times compared to the Middle developed cluster up to 14 times compared to the Southern cluster). This amplitude is ensured through the socio-natural component which

[19] Clustering is carried out on the basis of panel data on 12 characteristics of attractiveness of territories of 83 regions of the Russian Federation for 2005–2015.

Table 1. Clusters of Russia's constituent entities according to 12 characteristics of development of the socio-economic regional space as a population's habitat

All Russian regions (83 constituent entities)	**1. Middle cluster** (57 entities)	***1.1. Middle economic cluster*** (20 entities)	Altai Krai Arkhangelsk Oblast Astrakhan Oblast Vologda Oblast Irkutsk Oblast Kemerovo Oblast Krasnoyarsk Krai Kurgan Oblast Leningrad Oblast Magadan Oblast	Novosibirsk Oblast Omsk Oblast Orenburg Oblast Perm Krai Republic of Bashkortostan Republic of Karelia Komi Republic Republic Khakassia Sverdlovsk Oblast Tomsk Oblast
		1.2. Middle developed cluster (5 entities)	Belgorod Oblast Lipetsk Oblast Moscow Oblast	Republic of Tatarstan Chuvash Republic
		1.3. Middle balanced cluster (32 entities)	Bryansk Oblast Vladimir Oblast Volgograd Oblast Voronezh Oblast Ivanovo Oblast Kaliningrad Oblast Kaluga Oblast Kirov Oblast Kostroma Oblast Krasnodar Krai Kursk Oblast Nizhny Novgorod Oblast Novgorod Oblast Oryol Oblast Penza Oblast Pskov Oblast	Republic of Adygea Mari El Republic Republic of Mordovia Rostov Oblast Ryazan Oblast Samara Oblast Saratov Oblast Smolensk Oblast Stavropol Krai Tambov Oblast Tver Oblast Tula Oblast Udmurt Republic Ulyanovsk Oblast Chelyabinsk Oblast Yaroslavl Oblast
	2. Northern cluster (17 entities)		Amur Oblast Jewish Autonomous Oblast Zabaykalsky Krai Kamchatka Krai Murmansk Oblast Nenets Autonomous Okrug Primorsky Krai Altai Republic	Republic of Buryatia Republic of Sakha (Yakutia) Tyva Republic Sakhalin Oblast Tyumen Oblast Khabarovsk Krai XM Autonomous Okrug Chukotka Autonomous Okrug Yamalo-Nenets Autonomous Okrug
	3. Agglomeration cluster (2 entities)		Moscow Saint Petersburg	
	4. Southern cluster (7 entities)		Kabardino-Balkar Republic Karachay-Cherkess Republic Republic of Dagestan	Republic of Ingushetia Republic of Kalmykia Republic of North Ossetia-Alania Chechen Republic

Source: compiled by the authors.

evaluates the factor in "capitality" through the social component. Uneven development manifested in the "capitality", "periphery" and "outskirts" territories is the most characteristic feature for the Russian space.

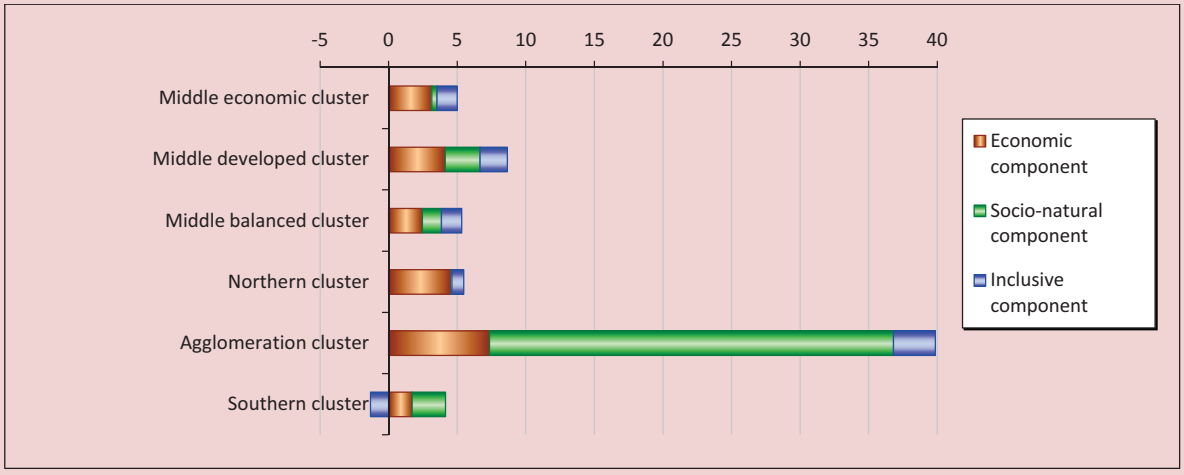
2. The heterogeneity of space is also manifested in *different degrees of components' balance*. The territories of new industrial development (regions of the Northern cluster) are characterized by imbalance of the socio-economic development components in favor of the economic component. The territories at advanced stages of regional development (entities forming the Middle cluster), demonstrate a more harmonious development of space.

Table 2. Average standardized* values of indicator-factors of territories' attractiveness by regional cluster for 2005–2015

Indicator-values	Sub-clusters of Middle cluster			Northern cluster	Agglomeration cluster	Southern cluster
	Economic	developed	balanced			
Real wages	1.037	1.078	0.904	1.137	1.388	0.834
New housing security	0.938	2.023	0.995	0.897	1.164	0.671
Life expectancy at birth	0.989	1.023	1.001	0.966	1.072	1.074
Unemployment rate	0.822	0.563	0.713	1.020	0.146	3.328
Real pensions	1.029	1.116	1.036	0.864	1.001	0.998
Crime rate	1.213	0.779	0.892	1.227	1.259	0.418
Population density	0.100	0.638	0.296	0.026	32.045	0.540
Road density	0.389	2.040	1.113	0.112	7.931	1.661
Communication services per resident	0.985	1.062	0.853	1.249	2.519	0.634
Exports per capita	0.965	0.970	0.332	2.359	3.971	0.029
Share of innovative enterprises	1.125	1.431	0.999	0.865	1.738	0.455
Share of employees at small enterprises	1.074	1.172	1.088	0.803	1.993	0.455

* Average indicator values for all Russia's constituent entities are taken per unit.
Source: calculated according to: Russian Regions. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138623506156(accessed:15.01.2018)

Figure 5. Characteristics of regional clusters from the standpoint of three-component assessment of territories' socio-economic development



Source: compiled by the authors.

3. The backwardness of certain regions is most evident in the *inclusive component of development*. The low level of human-centered development of the Southern cluster territories is manifested in the fact that the indicators determining the quality of working life in these areas are much lower than the national average.

The revealed features of socio-economic development in the clusters have an impact on the population's economic behavior including the processes of reproductive increment of the quantitative component of human capital.

At the next stage of the study, the objective is to determine the responses of regional clusters

to changes in the institutional conditions of human capital reproduction. The regression analysis of reproductive increment coefficients of the quantitative component of human capital has helped obtain regression coefficients of the dummy variable (reflecting the introduction of the institution of maternity fund) by clusters, which are presented in *Table 3*.

The obtained values of standardized coefficients of the dummy variable by cluster put forward a hypothesis about the impact of the features of territory's development on the responses of regional systems with the introduction of the institution of maternal fund. To test this hypothesis, we studied the dependence of the standardized coefficient of the dummy variable on the level of socio-economic development of clusters, measured by a three-component vector (*Fig. 6*).

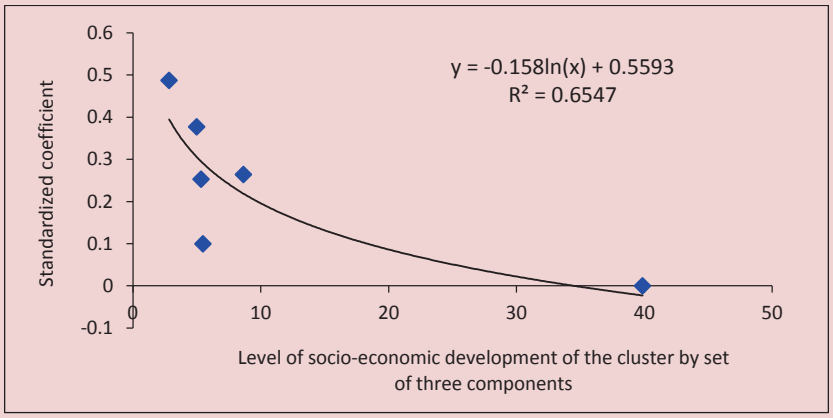
The results indicate that there is an inverse logarithmic correlation between the level of development and the impact of the institutional variable on the population's birth rate in clusters.

Table 3. Regression coefficients of the dummy (institutional) variable in the models of reproductive growth of the quantitative component of human capital in regional clusters

Regional cluster	Non-standardized coefficient	Standardized coefficient (β)
1. Middle cluster	1.253	0.276
1.1. Middle economic cluster	1.639	0.377
1.2. Middle developed cluster	1.078	0.264
1.3. Middle balanced cluster	0.928	0.253
2. Northern cluster	0.901	0.100
3. Agglomeration cluster	0.000	0.000
4. Southern cluster	6.445	0.487

Source: calculated according to: Russian Regions. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138623506156 (accessed: 15.01.2018).

Figure 6. Dependence of standardized regression coefficient of the institutional variable on the level of socio-economic development of regional clusters



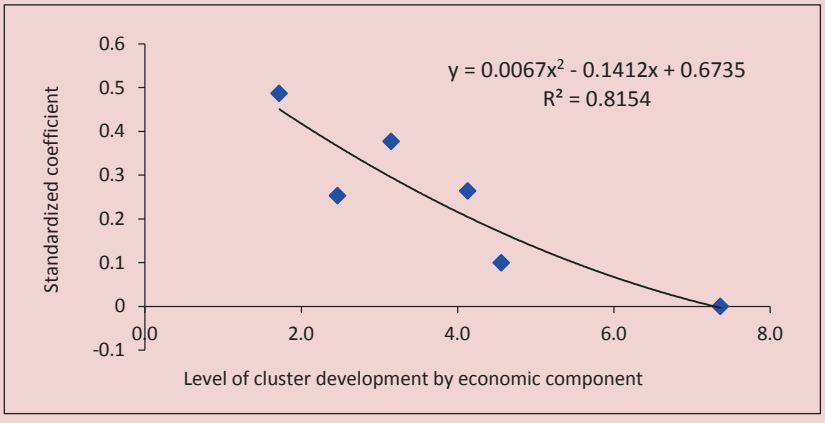
Source: calculated according to: Russian Regions. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog / doc_1138623506156 (accessed: 15.01.2018).

Moreover, we have studied the dependence of the nature of the regional clusters' response to changes in the institutional conditions of reproductive increment of human capital on each of the three components of the vector of territories' socio-economic development. The obtained second-degree polynomial dependence with a high degree of approximation accuracy indicates that the economic component has the strongest negative impact, as shown in *Figure 7*. The higher the level of economic development of cluster territories, which is reflected, in particular, in the level of real wages, new housing security for the population, the less is the influence of the institutional factor on the reproductive processes.

The level of socio-economic cluster development regarding the inclusive component, as well as the economic one, has a negative impact on the significance of institutional conditions for reproductive increment of the quantitative component of human capital, judging by the results presented in *Figure 8*. The less opportunities for the population there are in the territory's labor market for entrepreneurial and innovative activities, the higher is the influence of the institution that performs the stimulating function to increase the birth rate.

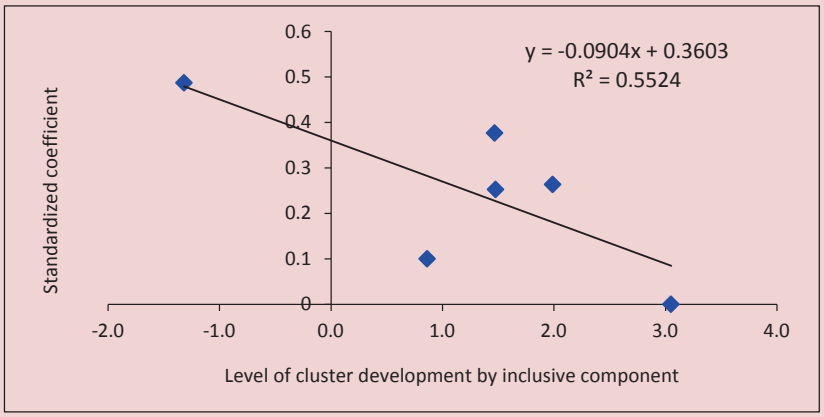
The study of dependence of the dummy (institutional) variable on the socio-natural component that characterizes territories' sustainable development does not help draw definite conclusions due to high differentiation of clusters in terms of its level of development. Only if the Agglomeration cluster with abnormally high socio-natural component (mainly due to social development factors) is excluded from the set of objects under study can the power dependence of the degree of influence of the maternal fund institution on fertility depending on the quality of the socio-natural conditions in regional clusters be observed (*Fig. 9*). One of the most important indicators of this component is life expectancy at birth, which is a generalized characteristic of the environment in the regional space and climatic features of living in the territorial

Figure 7. Dependence of the standardized regression coefficient of the institutional variable on the economic component of the socio-economic development of regional clusters



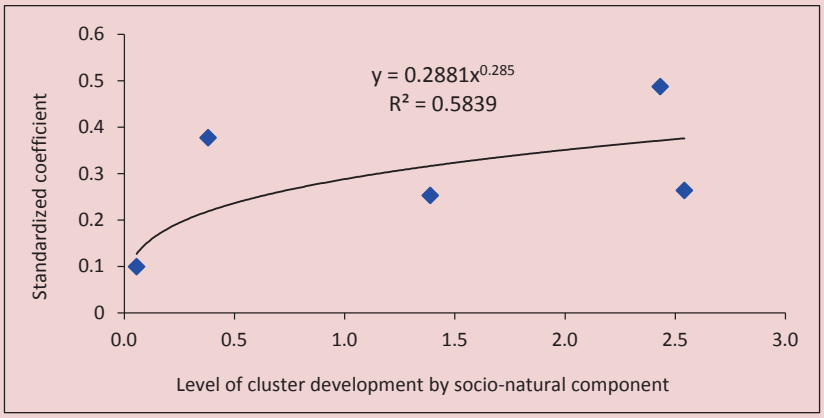
Source: calculated according to: Russian Regions. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138623506156 (accessed: 15.01.2018).

Figure 8. Dependence of standardized regression coefficient of institutional variable on inclusive component of socio-economic development of regional clusters



Source: calculated according to: Russian Regions. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/ doc_1138623506156 (accessed: 15.01.2018).

Figure 9. Dependence of standardized regression coefficient of institutional variable on socio-natural component of socio-economic development of regional clusters (excluding Agglomeration cluster)



Source: calculated according to: Russian Regions. Socio-economic indicators. 2006–2016. Federal State Statistics Service. Available at: http://www.gks.ru/wps/wcm/connect/rosstat_main/rosstat/ru/statistics/publications/catalog/doc_1138623506156 (accessed: 15.01.2018).

zone. The more favorable these conditions are in the regional cluster, the greater is the institutional response of the socio-economic system to the introduction of the institution that stimulates the reproductive increment of the quantitative component of human capital.

The obtained dependences confirm the hypothesis of inverse dependence of the response reaction of territorial socio-economic systems to changes in the institutional conditions of the quantitative component of human capital on m the degree of economic and inclusive development of regional clusters. The motivational function of the maternity fund institution is reduced in the regions belonging to the type of clusters with high economic activity. This is particularly evident in the Agglomeration cluster.

Discussion and conclusion

Studying the responses of territorial socio-economic systems to changes in the institutional conditions of the reproductive increment of the quantitative component of human capital in Russian regions leads to the following conclusions.

1. The introduction of the institution of maternity fund was generally effective: in the ranking of impact of 13 studied indicator-factors characterizing the population's living conditions on the birth rate the institutional variable ranks second.

2. The living conditions and reproduction of human capital in the regional socio-economic systems in Russia have a significant differentiation both in the level of development and the degree of balance of components identified in the study (economic, social, and inclusive). These components have a multidirectional impact on the increment of the quantitative component of human capital. The responses of territorial socio-economic systems to changes in the institutional conditions under study decreases as the level of economic component increases and opportunities for successful work (inclusive component) in the regions are expanded. The stimulating function of the maternity fund institution is increasing in regional clusters with more favorable socio-natural living conditions.

Data obtained during the study help form an array of analytical materials on responses of regional socio-economic systems to changes in institutional conditions of the increment in the human capital quantitative component. They can be used to justify the forecasts of spatial development regarding the settlement system and development of strategies for the regions' socio-economic development, which will improve the "quality of government planning and regulation of regional economic development" [29].

3. The developed methodological approach can be used to study the influence of other institutions related to the regulation of population's economic behavior through the motivating function and aimed at the development of regional socio-economic systems in order to determine their comparative effectiveness.

Using the obtained results for management purposes will make it possible to implement the principles of the regional policy proclaimed in CSSD, which are *to improve the manageability* of spatial development, use *the differentiated approach* and *balance* the socio-economic space.

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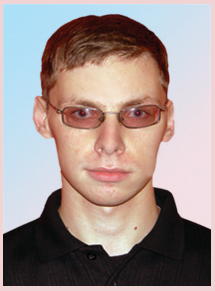
Youth in Former Soviet Republics in Conditions of Value Transformation of Society (Case Study of Russia and Armenia)



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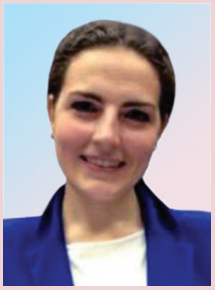

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Abstract. Value orientations of the older generation (over 55 years of age) are well-established, and, as a rule, they are influenced by the worldview that developed in the Soviet time. As for young people, their life ideas relating to various manifestations of social reality are still actively forming. In this regard, the two generations have certain differences in their sets of values. It is interesting and important to study them because young people perceive their current status and opportunities as being completely natural, while for their parents much of what looks normal and routine now was completely inaccessible in the years of their youth. The article considers value orientations of young people from former Soviet countries by highlighting their similarities and differences in comparison to those of the older generation. We are particularly interested in the views on the life and mindset of young people who represent a generation oriented toward modernization changes in society. Using research data, the paper attempts to find

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a determining vector of spiritual development of young people. The study is based on the analysis of secondary data of sociological surveys conducted in the Russian Federation and in the Republic of Armenia. Youth and the older generation are the objects of comparison in the surveys. The study not only identifies common features in the value consciousness of two generations in Russia and Armenia, but also substantiates the nature and importance of the impact of socio-cultural factors on the vital values of young people. It is established that intergenerational differences in socio-cultural determinants affect the attitude toward personal prospects in life and family, income, education, etc. The results of the study allow us to determine the direction of changes in young people's value orientations. Trends in the cultural and spiritual development of youth in both countries reflect an intergenerational shift from the focus on economic and physical security to the increasing role of self-expression, subjective well-being and the quality of life, which ambiguously affects social well-being. In particular, the correlation analysis has established the inverse relationship between people's Internet activity and their confidence in the future. This suggests that the behavior of young people who "immerse" deeply in the Internet space is fraught with manifestations of social apathy. In conclusion, we present our own reflections on the need to intensify intercultural dialogue between former Soviet republics and participate jointly in addressing youth policy issues.

Key words: life values, generation, youth, education, digital retreatism, modernization, survey, correlation.

Introduction. Former Soviet countries are undergoing profound structural transformation on the background of economic and social problems and contradictions that are essentially similar [1, pp. 15-24]. The processes are directly linked to the implementation of a model of modernization as the foundation of a competitive economy [2, pp. 14-26]. Scientists (for example, P. Sztompka, N.I. Lapin) note that, as the pace of modernization slows down, the human factor plays a significant role besides economic "barriers" [3; 4].

For many years, modernization ideas were the property of "elites". Due to the complexity and inconsistency of these ideas they did not find understanding among common people. In this regard, at present, modernization lacks support "from below" [3]. It will be possible only if wide social strata are engaged in the process and "all forces are mobilized" to achieve the goals of transformation of the economic and sociocultural environment [5, pp. 181-191].

In this regard, major attention should be focused on young people, because the younger generation has a special mission as a mobile and creative socio-demographic group that is most susceptible to innovation [6, pp.156-158]. While society is continuously changing, young people (due to age-related properties of an individual) tend to construct social reality on their own so that it could fit their demands and needs [7, pp. 112-122].

However, the issue of young people being a "driving force" of modernization has a contradiction between their "status" role (i.e. what young people ought to be) and reality [8, pp. 52-63]. Economic and social instability emerging in the former Soviet countries is felt acutely in youth environment: political and social passivity is manifested in it, which in some cases makes it difficult for young people to respond efficiently, timely and effectively to modernization challenges [9, pp. 31-40].

Young people are not always successfully adapting to a rapidly changing social reality. In

practice, they often face certain difficulties that impede the implementation of their potential, up to social exclusion. In most cases, it is due to a lack of social experience, dependence on the opinions of other people, imitation, lack or shortage of opportunities for self-actualization, etc. [10, pp. 25-31].

In addition, young people's life in society is characterized by a number of negative manifestations, such as unemployment, the spread of self-destructive behavior (including that which leads to suicidal activity), involvement in extremist and terrorist Internet communities, etc.

As a result, such phenomena as retreatism (escaping from reality), social pessimism, and even escapism (intentional disregard for the norms and laws of society) emerge in youth environment [11, pp. 192-201]. The potential of the younger generation ceases to be used to the fullest extent, as evidenced by the emergence of the term "NEETs" which describes a category of young persons who are "Not in Education, Employment, or Training" [12, pp. 31-39]. Thus, young people gradually cease to be a "driving force" of social transformations; and modernization, in turn, loses its support "from below".

This combination of circumstances leads to the risk of emergence of a "destructive model of society" that is focused on regress and demodernization rather than on modernization-based values [13, pp. 91-97]. This once again emphasizes the importance of studying the value and worldview foundation which the socialization of youth is based on.

Theoretical foundations of the analysis. The tradition of studying life values in the world science was established long ago. For instance, prominent Armenian philosopher of the 6th century David Anhaght (David the Invincible) raises issues of development of culture and diverse forms of its manifestation [14, pp. 110-118]. Special attention is paid to the evolution of those cultural values that depend on the results of cognition, and also rational, aesthetic and moral activities of people [14, pp. 110-118].

First generalizing studies of the cultural aspects of life in Western Europe appeared in sociology in the second half of the 19th century. M. Rokeach allocated two classes of values – terminal (desirable end-states of existence) and instrumental (means of achieving the terminal values). He also proposed a method of studying value orientations based on direct ranking of the list of values (36 values: 18 terminal and 18 instrumental) [15; 16].

In accordance with the classification developed by S. Schwartz and W. Bilsky, values represent three universal requirements of human life: 1) biological needs; 2) interactional requirements for interpersonal coordination; 3) societal demands for group welfare and survival [17; 18].

N.I. Lapin groups basic values of civilization into three types (universal, traditional, modern) and into two functional layers (terminal and instrumental) that develop in the public mind beyond any laws [19, pp. 173-179].

The above-mentioned scientific concepts have one drawback, but it is significant. They consider the study of values from the viewpoint of their universality, without taking into account the level of economic development of the population and the role of traditions and innovations in certain societies. Therefore, it is difficult to use them as guide when making cross-country comparisons.

In the second half of the 20th century R. Inglehart, having studied the surveys conducted regularly in Europe, came to the conclusion about gradual displacement of life

attitudes of materialism by the values of post-materialism [20; 21]. R. Inglehart's theory is based on the difference between characteristics of three generations of people who grew up in traditional and industrial societies [20; 21]. The essence of his theory is that any development is primarily the strengthening of the human nature, because "pursuit of freedom is, by definition, inherent in man" [22, p. 21]. According to Inglehart, values undergo transformation, which is caused primarily by economic development [22, p. 21]. Based on this, two classes of values are considered:

a) survival values: faith in God, family, obedience, national pride, absolute standards, negative attitude toward divorce and abortion, etc.;

b) self-expression values: their carriers have opposite feelings toward the traditional values [20].

Along with the progress in economic development, survival values in industrial countries become weaker and self-expression values grow stronger there [22, pp. 38-39].

According to R. Inglehart, modern youth is at the "transition point" from materialistic values (preference for physical and psychological safety and well-being) to the priority of postmodern values (self-expression and quality of life) [20].

Within the framework of this approach, R. Inglehart put forward a scientific hypothesis about the value significance of the missing, which explains the inter-generational change of the value series by the state of socio-economic environment. Under this hypothesis, the greatest subjective value is given to what the person is relatively lacking [20].

Based on Inglehart's methodology, which is often used for cross-cultural studies of values, a number of international studies are conducted, such as the World Value Survey[1] and the European Values Study[2].

We take R. Inglehart's idea concerning the inevitable transformation of population values in the process of generation change from priority of survival to supremacy of self-expression and on its basis we develop a hypothesis for our study, which considers life priorities of young people in the two former Soviet states and we determine the nature of intergenerational transformation of values.

Our analysis uses materials of public opinion polls conducted in the Russian Federation and in the Republic of Armenia. The object of study was not chosen randomly. Despite the absence of common territorial borders, Russia and Armenia have a common historical past as former republics within the USSR, a common religion, close ties at the level of international politics; all this taken together allows us to talk about the basis for cultural proximity of the peoples of these countries who, at the same time, maintain their own national traditions. The Armenian diaspora is quite extensive in Russia: according to the Union of Armenians of Russia, it includes more than 2.5 million people (173 people per 10 thousand Russians)[3].

We would like to draw your attention to the fact that sociological studies, the materials of which which will be presented later, were carried out in Russia and Armenia using different methods and tools. In Russia, the sample included both urban and rural population, in Armenia – only urban (this predetermined the difference in the sizes of the samples).

[1] World Value Survey. Available at: http://www.worldvaluessurvey.org/WVSOnline.jsp, http://www.worldvaluessurvey.org/WVSDocumentationWV6.jsp (accessed: 29.04.2016).

[2] European Values Study. Available at: http://www.europeanvaluesstudy.eu/ (accessed: 24.02.2018).

[3] More than 2.5 million Armenians live in Russia. Available at: https://ria.ru/society/20021216/282886.html (accessed: 07.04.2018).

Therefore, in the article we do not make direct comparisons of the data obtained in different countries and try to avoid speculating about what is "more or less", "weaker or stronger", which would be methodologically incorrect. Thus, the object of our analysis is **secondary** research materials indicating the scale and nature of the spread of certain cultural phenomena in the Russian and Armenian societies, rather than **primary** data of population surveys. This approach allowed us to compare, first of all, trends that characterize the intergenerational transmission of values in the two countries, the "general picture", rather than specific indicators.

A working hypothesis of our research suggests that the evolution of value orientations as a result of the change of generations in the two former Soviet states does not fully reflect natural transition from traditional norms to key priorities of postmodern society, because this process is hampered by incompleteness of modernization. People's priorities in both countries, first of all, are determined by the lack of opportunities to live a decent life. As mentioned earlier, we formulated and substantiated our hypothesis with the use of R. Inglehart's approach.

To prove the hypothesis, we selected indicators, the analysis of which helped identify the nature of influence of the intergenerational change of values on young people's lifestyle. It was not an end in itself to search for indicators in full compliance with Inglehart's typology of values. First of all, it cannot be done because of the set of tools that aims to obtain information on similar issues, but is not initially reduced to unified formulations. It was essential for us that the secondary analysis clearly show the commitment of respondents in Russia and Armenia either to the values of survival or to the values of self-expression. In the framework of the study, the following concepts were operationalized: life value, attitude toward the future, attitude toward social institutions and benefits *(Tab. 1)*.

Table 1. Operationalization of concepts in our study

Concept	Survey in Russia		Survey in Armenia	
	Variable	Indicator	Variable	Indicator
1. Survival values	To what extent are certain aspects of life important to you?	Importance of health, material security, happy family life, friendship, work, knowledge for the population (in points from 1 to 5)	What is the purpose of your life? In your opinion, what does a person need to feel happy?	Importance of health, financial success, reliable environment, family, education, faith for the population (% of respondents)
2. Self-expression values		Importance of active life, freedom, self-expression, and public recognition for the population (in points from 1 to 5)		Importance of career success, opportunities to travel around the world for the population (% of respondents)
3. Attitude toward the future	How confident are you in your future?	Proportion of people confident / not confident in their future (confident / not confident)	How would you describe yourself?	Proportion of people who consider themselves to be optimists / pessimists (% of respondents)
4. Attitudes to social institutions and goods	Your work is first and foremost a way…	Important aspects of employment for the population (I agree / I disagree)	Do you agree with the statement "Money talks"?	Distribution of the population in relation to the importance of money in the life of society (% of respondents)
	Education for you is first of all...	Important aspects of educational activities for the population (% of respondents)	Do you agree with the following statements regarding higher education?	Proportion of people who agree with the statements about the importance of education (% of respondents)

In the course of our research, the answers of the younger generation (up to 30 years of age) were compared with those of the older generation (over 55 years old). It helped analyze the commitment of young people to certain groups of values and determine in which direction the "intergenerational value shift" takes place. The following groups of life values were considered: a) **survival values**: economic security (financial security, prosperity, work as a guarantor of economic profit, etc.) and physical safety (health, law, family, support of relatives and friends, etc.); b) **self-expression values**: individual self-expression (independence, active life, professionalism, qualification, public recognition, etc.) and the quality of life (subjective well-being, confidence in the future, etc.).

Research technique. In the *Republic of Armenia*, where the sociological survey was carried out in 2016, its participants were urban residents. The total sample of the survey was 250 residents of Yerevan 18–66 years of age (33.5% of the total population) [21]. A random, quota, and proportional sample was used [21]. Quotas were distributed by gender and age. Among the respondents from 18 to 30 years of age (57.2% of the total number of respondents) 45.3% were men and 54.7% women; from 55 to 66 years of age (42.7% of the total number of respondents) – 57.5 and 42.5%, respectively. The age groups for the survey were determined by the method of stratification selection. Sampling error did not exceed 5%.

The choice of Yerevan population for the survey is due to the fact that this city is the largest political, economic and cultural center of the country, on the territory of which almost all layers of Armenian society are concentrated[4].

[4] According to the Statistics Committee of the Republic of Armenia, the population of Yerevan is 1 074, 100 people (35.8% of the total population of the country).

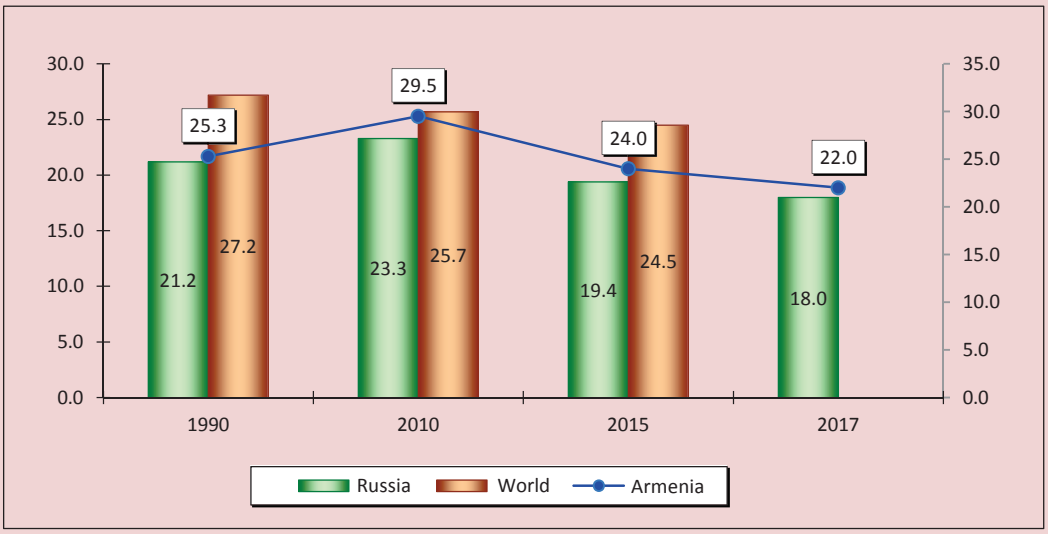
The door-to-door questionnaire survey was based on the authors' set of tools developed with the use of the approaches of R. Inglehart, S. Schwartz, M. Rokeach, G. Hofstede, etc., taking into account national specifics of Armenian society [23]. The questionnaire included 68 questions, the answers to which formed the basis for analyzing people's value orientations [23].

The sociological research in the *Russian Federation* was also carried out in 2016. Its participants were economically active Vologda Oblast residents (living in both urban and rural areas and aged 15–72). The total sample of the survey is 1,500 people (0.2% of the total population). A quota and proportional sample was used. The sample quotas were distributed according to sex, age, place of residence. The distribution of quotas by sex is as follows: men – 51.9%; women – 48.1%; by age: aged 15–17 years – 3.2%; aged 18–24 – 12.8%; aged 25–29 – 14.7%; aged 30–49 – 49,3%; aged over 50 – 19.9%; by place of residence: Vologda – 27.2%; Cherepovets – 28.1%; municipal districts – 44.7%. Sampling error does not exceed 3%.

The door-to-door questionnaire survey was carried out with the help of a questionnaire compiled and used by the Russian-Belarusian team in the framework of the work on the scientific project "Professional vocation: human potential of innovation development in Russia and Belarus" (under grant 15-22-01013 of the Russian Foundation for the Humanities). The questionnaire contains 65 questions.

Sociological research was carried out in different areas, according to different techniques and pursued different goals (in Armenia – a survey of the population of a large metropolis, in Russia – a survey of the population of the region with different representation of urban and rural residents). The research tools (in both cases it was the

Proportion of the younger population (15–29 years of age; percentage of population of all ages)



Source: World Population Prospects. Available at: http://esa.un.org/unpd/wpp/Download/Standard/Population/ (accessed: 16.05.2018).

questionnaire) were not formed using similar wording of the questions. Therefore, in our paper, we do not directly compare the primary data of these projects, but generalize the conclusions from the secondary data (separately for each country), so that at the theoretical level we could talk about the presence of similar and distinctive trends in socio-cultural development of the younger generation of the two countries.

Research findings. Russia and Armenia are currently characterized by a similar declining trend with regard to the population under the age of 30 *(Figure)*. However, a similar trend is observed in European countries. The main reason for the transformation of the age structure was the transition to "narrowed reproduction" (which began in the 1960s). In the West, such a demographic transition occurred several decades earlier [24; 25; 26]. In 2000, this figure reached its historical minimum: 8.7 ‰ in Russia and 10.6 ‰in Armenia.

In addition to the above-mentioned reason, population migration has a strong impact on demographic processes in Armenia. As a result, the problem of "brain drain" has come to the fore. According to the participants of an unstructured in-depth interview[5] conducted in the course of the research in Armenia, *"... The high rate of migration was and still is the most important problem caused by the economic crisis. "Brain drain" is the very reason why Armenia continues to lose highly qualified young specialists... The impact of all this on the education system is catastrophic: there are fewer schools, fewer students, fewer future specialists"* [23]; *"...senior students of higher education institutions, knowing that there are no desirable prospects for them in Armenia, leave the country. It turns out that universities educate and train specialists for foreign markets"* [23].

[5] Here and below we present the materials related to an unstructured in-depth interview conducted in Yerevan in May 2015. This study covered 56 experts (specialists from the social and cultural sphere: artists, politicians, writers, scientists, teachers, etc.).

Table 2. Russians' assessment of the importance of different aspects of life, broken down by age groups (points on a five-point scale, where 1 means "has no value at all", 5 means "very important")

Answer	Age group			
	Under 30		Over 55	
	Score	Position	Score	Position
Health (physical and mental)	4.5	1	4.3	1
Material security	4.5	1	4.2	2
Happy family life	4.5	1	4.2	2
Love	4.4	2	3.9	3
Having good and loyal friends	4.4	2	3.8	4
Freedom, independence	4.3	3	4.1	1
Interesting job	4.3	3	3.9	3
…				
Active life	4.2	4	3.6	6
…				
Knowledge	4.0	6	3.5	7
Entertainment	4.0	6	3.1	9
Public recognition, authority	3.8	7	3.5	8
Approval of others	3.7	8	3.6	6
Creativity, art	3.5	9	3.0	10
Source: Sociological survey of the Vologda Oblast residents (N=1,500 people).				

The value orientations of young people relating to different spheres of social life (economic, political, social, spiritual and moral) are in the active phase of formation [23]. In order to determine the nature of the value shift, we compare the answers of two age groups: "young people" (up to 30 years of age) and "older generation" (aged 55–66). Value orientations of the second group, as a rule, stem from their worldview formed back in the Soviet period when they were 18–30 years old (the current age of representatives of the first group).

As an object of research, young people can be considered as an independent group, which is oriented, on the one hand, toward status-based achievements, on the other – toward obtaining the benefits of life [23]. Having analyzed the results of the study we see that young people in Russia and Armenia perceive their current status and potential as a completely natural state, while much of what seems now normal and familiar was completely inaccessible to their parents in their young years [23]. The older generation perceives young people as carriers of modernization ideas and new liberal-democratic attitudes and as supporters of the Western model of political and economic system. At the same time, the way young people perceive their own generation differs from the image established in the minds of the older population, since the value and worldview orientations of "fathers" and "children" do not coincide sometimes [23].

What are these value orientations? How different or how similar are they among people of the two countries?

According to the data of the research, the most important values of Russian youth include health, material wealth and family (4.5 points out of 5 possible). These life attitudes can be called traditional, as they are also shared by the older generation (over 55 years of age; *Tab. 2*).

However, a whole layer of traditional values that are important for the "generation of fathers" is fading away from the worldview of the younger generation in Russia. This is

Table 3. Distribution of answers of Armenian population to the question: "In your opinion, what does an individual need to feel happy?", broken down by age groups (percentage of respondents)

Answer	Age group			
	Under 30		Over 55	
	In %	*Position*	In %	*Position*
Love	34.0	*1*	22.4	*3*
Good health	18.9	*2*	24.0	*2*
Good education	15.1	*3*	10.3	*7*
Comprehensive knowledge	15.1	*3*	19.5	*4*
Secured life	11.3	*4*	15.5	*5*
Faith	5.1	*5*	12.1	*6*
Being famous and having a good reputation	0.0	-	94.8	*1*
Romantic and (or) adventurous experiences	0.0	-	0.0	-
Prosperous and secure country	0.0	-	0.0	-
Journeys	0.0	-	5.2	*8*
Source: sociological survey of Yerevan residents (N=250 people).				

especially true of the desire for independence (3rd place among the life priorities of young people and 1st place among the population over 55 years of age) and the approval of actions by others (8th and 6th places, respectively). Life attitudes toward recognizing the opinion of authorities are replaced by a new set of values, including the realization of oneself in active forms of life (sports, tourism, entertainment, social projects, etc.) and having a company of friends. At the same time, in the era of the spread of social networks on the Internet, the meaning of friendship among young people is often transformed into the phenomenon of "friendism", which levels spiritual affection of friends, turning them into "sympathetic interlocutors" [27, pp.72-78].

A similar picture is observed in Armenian society. Here both generations have differences between the hierarchies of values in terms of personal priorities and normative ideals [28, pp. 31-35].

Preserving traditional values is clearly manifested in Armenian society, which can be seen in the distribution of answers to the question "What do you need as an individual to feel happy?" Thus, good health is considered a necessary condition for a prosperous life both by the younger (19%) and older generations (24%). Healthy lifestyle is ranked second on the list of values by both age groups *(Tab. 3)*. In part, this suggests a close relationship between the terminal goals (a prosperous family, financial security, love, knowledge, etc.) and the tools to achieve them amid the dominance of values like physical health, education, etc. [23].

Life goal for Armenian youth is mainly to implement their potential in society and economy and to experience the joy and pleasure of life. These young people are somewhat different from the older generation whose opinions are more altruistic ("live together with my children", "do everything for the prosperous future of my children") [21].

Young people also tend to considered prosperity as the main goal in their life: 26% against 19% among the older generation *(Tab. 4)*. It is shown that professionalism at the workplace is not highly estimated by young people – 15% (26% among the older generation). At the same time, young Armenians are more ambitious in terms of career prospects than the older generation (8% versus 4%, respectively). It may mean that

Table 4. Life goals of Armenian population in the context of age groups (percentage of respondents)

Answer	Under 30		Over 55	
	In %	*Position*	In %	*Position*
Achieve financial success	26.4	*1*	19.0	*2*
Become a qualified specialist	15.1	*2*	25.9	*1*
Have a reliable social circle	13.2	*3*	15.5	*4*
Be wise	13.2	*3*	17.2	*3*
Have a happy family	11.3	*4*	5.2	*5*
Achieve a high position at work	7.5	*5*	3.6	*4*
Enjoy the support of colleagues	7.5	*5*	6.9	*6*
Travel around the world	5.6	*6*	6.7	*5*
Source: sociological survey of Yerevan residents (N=250 people).				

Table 5. Distribution of answers of Russians to the question: "What is important to you in your work?", broken down by age groups (percentage of respondents)

Answer	Under 30	Over 55
Making good money	63.3	64.8
Helping people, being of use to them	36.8	37.5
Having enough freedom in my work	26.8	13.6
Having a good professional reputation, good name	25.0	31.8
Having an opportunity to make a career, to take a managerial post	24.8	12.5
Having an opportunity to develop and improve my skills	24.8	12.5
Using my knowledge, experience, qualification to the fullest extent	22.0	19.3
Implementing my personal abilities to the fullest extent	20.3	19.3
Working in a prestigious institution	14.8	5.7
Working with highly qualified colleagues	14.5	4.5
Having an opportunity to engage in scientific (research) work	3.0	4.5
Other	0.8	2.3
Source: Sociological survey of the Vologda Oblast residents (N=1,500 people).		

young men and women not always associate material benefits with their performance in profession; and they not always consider qualification to be a prerequisite for the implementation of career plans.

Perhaps, due to their ambitiousness, young people have quite clear notions about their own prospects. According to the sociological data obtained, only less than 17% of Russian youth have not decided on their plans for the near future (the figure is 26% among the older generation); in Armenia – 19% (14% among the older generation).

The younger generation considers work, as well as health, to be an important tool for achieving the desired quality of life. For example, for Russian youth, receiving money income is an unconditional priority when getting a job (63%; *Tab. 5*). Even the social benefits of working life (for example, professional reputation, which the older generation finds more important) are not so important to young people. However, similar values determine the older generation's attitude toward labor; this indicates the strengthening of the action of personal and environmental

coping resources in the youth group, rather than the change of value orientations in the course of intergenerational mobility. According to the terminology introduced into scientific use by A. Maslow, coping includes life strategies that help cope with the situation of uncertainty in various ways, including through the identification of oneself with representatives of older ages [29]. In some cases, it explains the "borrowing" of the value system in the generational aspect, the desire "to be like everyone else", the rejection of everything new.

The situation is somewhat similar in Armenian society. Respondents were asked to continue the phrase that begins with "Today it would be best to become..." It is interesting to note that 89% of young respondents said that today it is best to become "rich" (in the group of respondents over 55 years of age, the figure was 35%) [23]. This, in particular, confirms Inglehart's hypothesis of the "value significance of the missing". The greatest subjective value is really given to what is relatively lacking for personal development in the current socio-economic situation. Money plays a fundamental role of such a "scarce good" and at the same time a condition for achieving a high quality of life and independence for young people.

At the same time, the difficulties experienced by the younger population of Armenia with regard to the possibility of starting a business (only 25% of respondents under 30 years of age determine the conditions prevailing in this sphere as favorable) and purchasing housing (only 48% of respondents under 30 years of age consider mortgages affordable for young families), often lead to the fact that survival strategies rather than modernization tactics start to prevail in young people's behavior [23].

As a proof, we provide an excerpt from the interview with one of Armenian experts: *"Adherence to principles in defending one's own beliefs is not in demand, since society favors adaptive attitudes aimed at possessing material values"* [21].

From our point of view, it would be wrong to reduce this mass desire for wealth only to "passive hedonism" [23]. In the minds of young people, the guarantee of a secure existence is associated almost exclusively with material security and monetary savings, since today social guarantees (free medical care, education) do not function in full force and in expected amount [23].

However, the gap between their own expectations (often unreasonably high) and awareness of their own capabilities (usually very modest) leads to persistent negative attitudes in the perception of reality, which can be expressed in discrediting some social values [23]. A telling example of such phenomena can be found in the transformation of the value of education. Armenian and Russian societies have formed different ideas of the purpose of education. So, the legislation of the Russian Federation contains (since 2013) an idea concerning the marketization of the education system in terms of its gradual transformation into the sphere, the functioning of which is aimed, among other things, at satisfying the needs of the population [30, pp. 26-34]. It should be noted that the Armenian legislation does not contain such an approach; on the contrary, it supports the traditional attitude toward education as a purely social good.

A side effect of the change in the status of education in Russia is expressed in the transformation of public perception of this sphere, in particular in the phenomenon of overqualification of labor force (according to experts, in the Russian Federation, the share of people working in professions below their qualification is 60%) [31, p. 9].

We consider it necessary to note that marketization is also evident in the sphere of higher education in Armenia. According to Armenian experts, today the country's universities are *"focused on business", and "the level of education is proportional to the system of value orientations of modern youth"* [32, pp. 6-11].

It seems that Russia's experience could help Armenia to avoid future mistakes that are directly related to the devaluation of the value of education, and above all to the overqualification of labor force.

Discussion of the results. The results of the study allowed us to find a methodological approach to finding an answer to the question "What is the determining vector of spiritual development of modern youth in former Soviet countries: socio-cultural modernization or the establishment and dominance of traditional values?" [23]. The answer to this question is not simple.

On the one hand, young people of the two countries that share common historical past experience an impact of the phenomenon of "cultural memory" [33, pp. 80-94]. The bearer of this memory is the older generation and its example in the minds of the younger population forms a significant layer of values of materialism (according to the terminology of R. Inglehart) [21].

The intergenerational transmission of values is more evident in the Armenian society: it supports the original national features of everyday life and traditional culture of recreation and celebrations [23]. Youth and adults appreciate their religious and ethnic community that was formed over the centuries, preserve their national language, and maintain ties with compatriots all over the world [34, pp. 28-30].

A positive role in this process is played by the Armenian Apostolic Church, the values of which are spreading rapidly among young people and connect different generations [34, pp. 28-30]. Young people support the importance of respect for elders and mutual support in the family [23]. The commitment of all generations of Armenians to traditional values both in Armenia and abroad ensures successful intergenerational transmission of socio-cultural values and cultural stability in society as a whole [34, pp. 28-30].

However, the range of socio-cultural dominants under consideration is reflected in the increasing value of instrumental rationality [35, pp. 80-94]. On the materials of inter-generational comparisons we see how in the youth environment the importance of material well-being increases, and the importance of culture decreases. Such patterns emerging against the background of unstable economic development of the two countries cause the rooting of survival strategies among young people, rather than the strategies of their self-realization in society [23].

Economic differentiation of society leads to the fact that the bottom" of society (low-income groups) is dominated by focusing on survival and obtaining the means livelihood, and the "top" (wealthy population) expresses a desire for the realization of personality and the achievement of spiritual goals [23].

On the other hand, we observe a transition to post-modernist values among young people of the two countries (in R. Inglehart's terminology) [21]. The shift toward post-materialist priorities entails reducing the role of obligations to society and taking social mobility for granted. The younger population places a stronger emphasis on the quality of life [23].

At the bottom of the hierarchy of young people's values there are interpersonal relations, as well as other priorities somehow connected not with personal life, but with the interests of society [23].

The antithesis of materialist and post-materialist values reflects an intergenerational shift from physical and economic security to an increasing importance of subjective well-being and self-expression [23]. If the "generation of fathers" focused on obtaining education, achieving long-term goals, social justice and equality, then today's young people growing up in market conditions favor hedonism and utilitarianism and perceive competition as a social norm [23].

Such ambiguity in the perception of values by young people raises questions about the prospects for the development of former Soviet republics. The question arises whether young people will support the idea of modernization and whether the specifics of their lifestyle will not cause a slowdown in the modern processes of economic development. For example, the previously noted trend of increasing importance of hi-tech values among people under 30 is not related to social optimism and to the desire to update the society; on the contrary, it leads to Internet addictions, escape from objective reality, apathy, and indifference toward the surrounding reality.

Thus, according to the correlation analysis (Pearson's correlation), the use of the Internet among young people has an inverse correlation with the variable "confidence in the future". This pattern is confirmed by the data obtained in Russia ($p \geq -0.192$) and in Armenia ($p \geq -0,201$)[6]. As a result, we can talk about "digital retritism" ("escaping" from the lifestyle, which is considered "normal" in society, in virtual reality) as a characteristic feature resulting from penetration of ideals of the society of consumption in the minds of young people, which can lead to a rupture of social relations and the growth of a critical mass of related problems (youth crime, vandalism, cyberterrorism, gambling, etc.). Young people may find themselves unprepared for them [11, pp. 192-201].

In this regard, the issues of transformation of socio-cultural values should form the agenda for former Soviet countries. They should focus on the preservation of traditional institutions of socialization (religion, family, education, labor market) and on the nature of the impact of "new" agents of the process of socialization (business and the Internet) on young people.

Due to the similarity of the issues highlighted in our paper, youth problems could become a subject of intercultural dialogue of countries. However, it is currently significantly limited by the lack of a proper regulatory framework. First of all, neither Russia nor Armenia has a framework law stipulating the status of young people as such. Countries of the former Soviet Union still do not have an international structure (similar to that of Junior Chamber International[7]), within the framework of which it would be possible to hold joint discussions on youth policy.

In addition, it is important for research organizations to take an active part in the formation of a single set of tools for regular monitoring of the changes taking place in the areas related to the quality of life and social well-being of the younger generation, and to the value background of development of youth in former Soviet countries.

[6] The correlation is significant at the level of 0.01.

[7] Junior Chamber International. Available at: https://www.jci.cc/ (accessed: 11.05.2018).

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Migration Attitudes of the Students Enrolled in Arctic-Focused Higher Education Programs*

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Abstract. The article presents the findings of a sociological survey conducted in the regions that are partially or completely included in the Arctic zone of the Russian Federation (hereinafter – the Russian Arctic). The goal of our research is to study migration attitudes of students and determine the factors affecting the readiness of future skilled personnel to leave the territory of the Russian Arctic. The survey was conducted among students enrolled in Arctic-focused higher education programs and trained for the needs of the economy and social sphere of the polar regions of Russia in the cities of Arkhangelsk, Murmansk, Krasnoyarsk and Yakutsk. The study pays considerable attention to information-related and educational factors associated with the subject matter of the Arctic ("Arctic-focused" education; assessment of the extent of Arctic-related specifics of educational programs; awareness of specifics of formation of the Russian Arctic, and others). According to the results of the survey, migration attitudes of students are identified as quite strong. We have confirmed the hypothesis that when students consider their preparation for the future Arctic-focused specialty, they generally reduce the level of their migration attitudes and do not express a strong intention to leave the region. Internal migration is the dominant direction of potential student migration. Migration preferences of students are almost equally divided between capitals and other regions of Russia. Among the capital regions, Saint Petersburg is the most popular one, and the regions of Central and Southern Russia are most popular among the provincial ones. Most potential migrants collected information on living conditions and specifics of moving, both in person and at a distance. Some of them were looking for a job in a new region (country), and only a few were engaged in specific preparation for moving. Migration intentions of students are primarily related to economic factors. Psychological and information-educational factors affect the delay in the planned time of leaving the Arctic macro-region. Using the results of the survey we formulated recommendations for higher education institutions that can positively affect the migration situation in the Russian Arctic. Our recommendations include the development and modernization of Arctic-focused educational programs, comprehensive career guidance work with students, strengthening of interaction with employers and with national and local government, inclusion of graduates working in the territory of the Russian Arctic in the educational process, promotion of innovation and research-to-practice work of students.

Key words: Arctic region, migration sentiments, migration intentions, migration factors, student youth.

Introduction

The Arctic is one of the priorities in the development of Russia. The concept "Arctic zone of the Russian Federation" (hereinafter – the Russian Arctic) is introduced into active regulatory circulation. Its boundaries have been defined, and now approaches and plans for the development of this macroregion are being worked out. The Russian Arctic becomes a full-fledged object of state management.

At the moment, the macroregion under consideration includes the Murmansk Oblast, Nenets Autonomous Okrug, Chukotka Autonomous Okrug and Yamalo-Nenets Autonomous Okrug. It also includes part of the Arkhangelsk Oblast (cities of Arkhangelsk and Severodvinsk, town of Novodvinsk and four municipal entities), Krasnoyarsk Oblast (city of Norilsk and two districts), Republic of Komi (town of Vorkuta), the Republic of Sakha (Yakutia) (five districts) and three municipal districts within the Republic of Karelia[1].

[1] Strategy for development of the Arctic zone of the Russian Federation and provision of national security for the period up to 2020. Available at: http://government.ru/info/18360/ (accessed 27.11.2017).

Human capital is one of the key resources in the development of the Russian Arctic. Without qualified specialists ready to work in difficult climatic conditions, none of the Arctic projects and none of the Arctic territories will be able to successfully operate and develop [1; 2]. However, the range of production and socio-economic problems leads to an intensive migration outflow primarily among skilled specialists and young people. Thus, over the past 15 years the Arctic regions experience population decline due to migration *(Tab. 1)*.

The largest outflow of population from the regions that are fully or partially included in the Russian Arctic is observed in Chukotka and Nenets autonomous okrugs and in the Republic of Komi. Migration situation in the Krasnoyarsk Krai is relatively stable.

Migration of graduates of higher education institutions negatively affects the Russian Arctic, especially if their training has an "Arctic" focus [3]. It is for a reason that the strategy for development of the Arctic zone of the Russian Federation and provision of national security for the period up to 2020 highlights that the provision of training, retraining and advanced training of specialists in the system of higher and secondary special education to work in the Arctic conditions and the attraction of qualified personnel are important tasks of socio-economic development in the macroregion [4].

According to a sociological research conducted at M.V. Lomonosov Northern (Arctic) Federal University in March – April 2016, 30 educational institutions of the country (28 universities and two branches) were engaged in training personnel for the Russian Arctic and Arctic projects. Among them, six higher education institutions (five universities and one branch) are located directly in the macroregion, five – in the regions of the Russian Arctic, and 19 – outside it [5].

At the time of the study, on the territory of the Russian Arctic, a little more than 11 thousand university students were enrolled in the so-called "Arctic-focused" programs containing 225 fields of studies *(Tab. 2)*. In the regions of the Russian Arctic (that is, on the territory of municipalities that were not part of the macroregion) there were about 20 thousand students who were trained in 307 Arctic-focused fields of studies.

Research methodology and technique

The study of migration attitudes of students was conducted by the staff of M.V. Lomonosov Northern (Arctic) Federal University in the framework of the study of the factors that cause young specialists to leave the Russian Arctic. The object of the study were students enrolled

Table 1. Migration gain per 10,000 population* (people, value of the indicator for year)

Region	2005	2010	2015	2016
Republic of Karelia	-115. 155	-53. 853	-11.63	-16.04
Republic of Komi	-162. 798	-139. 036	-101.53	-81.2
Nenets Autonomous Okrug	-20.52	-49.87	23.16	-72.91
Arkhangelsk Oblast	-71.684	-82.067	-68.02	-56.29
Murmansk Oblast	-169.232	-68 953	-57.37	-57.15
Yamalo-Nenets Autonomous Okrug	-24.129	-87 811	-222.92	-65.24
Krasnoyarsk Krai	-63. 855	-14. 642	9.62	16.82
Chukotka Autonomous Okrug	72. 549	-173 553	-116.98	-103.22
Republic of Sakha (Yakutia)	-28.004	-70.823	-56.21	-43.2

* Compiled with the use of data from the official website of the Federal State Statistics Service http://www.gks.ru/dbscripts/cbsd/dbinet.cgi?pl=9400008.

Table 2. Training of specialists in Arctic-focused programs in the territory and regions of the Arctic zone of the Russian Federation in 2016

RF constituent entity	Name of higher education institution	Number of training programs	Number of students, persons
Territory of the Russian Arctic			
Arkhangelsk Oblast	M.V. Lomonosov Northern (Arctic) Federal University	120	2753
Arkhangelsk Oblast	Northern State Medical University	10	2360
Arkhangelsk Oblast	Severodvinsk branch of M.V. Lomonosov Northern (Arctic) Federal University	16	701
Arkhangelsk Oblast	Institute of Management	9	1330
Murmansk Oblast	Murmansk Arctic State University	24	169
Murmansk Oblast	Murmansk State Technical University	46	3867
TOTAL		**225**	**11880**
Regions of the Russian Arctic			
Krasnoyarsk Krai	Siberian Federal University	21	2488
Krasnoyarsk Krai	Siberian State University of Geosystems and Technologies	20	5506
Republic of Komi	Syktyvrar Forest Institute – branch of St. Petersburg State Forestry University named after S.M. Kirov	7	1039
Republic of Komi	Ukhta State Technical University	8	2722
Republic of Sakha (Yakutia)	M. K. Ammosov North-Eastern Federal University	251	8752
TOTAL		**307**	**20507**

Source: Kudryashova E.V. (Ed.). *Arctic – National Mega-Project: Staffing and Scientific Support*. Arkhangelsk: SAFU, 2016. P. 145-189.

in Arctic-focused educational programs and trained for the needs of the economy and social sphere of the Russian Arctic in educational institutions located in the Russian Arctic and in the subjects that are part of it. Arctic-focused programs of higher education are those that are implemented with attraction of resources of partner organizations working in the Russian Arctic; such programs also organize internships for students in the territory of the Russian Arctic, and the range of their disciplines includes vocational and special competences and training results, which determine the specifics of professional activity in the region.

The aim of the survey was to study migration attitudes of students, to determine the factors affecting the willingness of future young professionals to leave Russia's Northern territories.

In this regard, the questionnaire contained a section of personal information of an anonymous nature, which included data on the level and field or specialty of education, professional aspirations, assessment of the socio-economic situation in the region, migration sentiment, and questions to determine the factors that promote or constrain migration aspirations of students.

At the stage of development of the program of sociological research in March – April 2016 we made an inquiry to educational institutions of higher education of the Russian Federation and received information about the current Arctic-focused educational programs and the number of students enrolled in them; the data allowed us to determine the structure of the general population, which amounted to 20,507 students enrolled in bachelor's and master's degree programs and specialist programs.

For the purposes of the survey we selected six higher education institutions and two branches. These included Murmansk Arctic State University (MASU), Murmansk State Technical University (MSTU), M.V. Lomonosov Northern (Arctic) Federal University (NArFU), Severodvinsk Branch of NArFU

(SB NArFU), Northern State Medical University (NSMU). These educational institutions are located on the territory of the Archangelsk (NArFU, NSMU, SB NArFU) and Murmansk (MSTU and MASU) oblasts.

Our sample also covered educational institutions located outside the boundaries of the Russian Arctic, but included in its regions: Siberian Federal University (SibFU), North-Eastern Federal University (NEFU), Chukotka Branch of NEFU (ChB NEFU). These educational institutions are located in Krasnoyarsk Krai (SibFU), in the Republic of Sakha (Yakutia) (NEFU) and in Chukotka Autonomous Okrug (ChB NEFU).

We have chosen these educational organizations because they have a typical range of Arctic-focused educational programs that cover engineering, economics and management, social sciences and the humanities, psychology and pedagogy, natural science, medicine, and information technology, and a great number of students are concentrated in these educational institutions.

In the selection of observation units, a nested sample was used, which included groups of students in the Arctic-focused areas of training, different courses and levels of education. Thus, in each educational organization, with the help of the two-stage method, we selected the courses or groups, within which a continuous survey was conducted. The survey was conducted mainly in the form of a group online questionnaire survey using the platform http://survey.narfu.ru in a computer lab or classroom, using individual devices that have access to the Internet.

The information was collected by means of an online survey in October – November 2016. The survey covered 4,503 students. After the rejection of defective questionnaires, 4,024 questionnaires remained, and their data were processed using the SPSS v.17 computer program for statistical processing. Statistical sampling error does not exceed 3%.

Thus, the study involved students who are enrolled in bachelor's degree programs (1,722 people), specialist's programs (1,842 people) and master's degree programs (460 people). Among all respondents, 1,562 people were final-year students. The distribution of respondents by educational organizations of higher education is presented in the *Table 3*.

The main concepts of the study are "migration sentiments" and "migration intentions". Migration sentiments can be attributed to the affective level of the personality. Sentiment is an emotional expression of consciousness, it indicates the presence in the mind of a favorable or unfavorable background for certain plans and actions. In our study, this term refers to a generalized desire to leave the current place of residence or stay there.

Migration intentions refer to the cognitive level of the personality. They are more rational and are primarily related to the plans to change

Table 3. Number of students participating in the survey

Higher education institution	Number of students
Murmansk Arctic State University	134
Murmansk State Technical University	141
M.V. Lomonosov Northern (Arctic) Federal University (NArFU)	1022
Severodvinsk branch of NArFU	203
Northern State Medical University	996
North-Eastern Federal University (NEFU)	1096
Siberian Federal University (SibFU)	386
Chukotka Branch of NEFU	46

the place of residence. Intentions, as a rule, immediately precede action. We agree that migration sentiments and migration intentions belong to different levels of people's readiness to change the place of residence [6].

One of the key objectives of our research is to study the attitudes associated with moving away from the region in which students are studying and which is part of the Russian Arctic. At the same time, considerable attention was paid to the impact of Arctic-related information and education factors on migration readiness. For example, the "Arctic" focus of training and assessment of the "Arctic-related" content of educational programs, awareness of the institutionalism of the Arctic zone of the Russian Federation, awareness of the benefits and guarantees for the residents of the Far North, the ideas of shift work in the Northern conditions.

Taking into account the objectives of the study, we differentiated the directions of migration (territories of possible relocation) as follows:

– return migration (native region);
– "capital" migration (Moscow and the Moscow Oblast, St. Petersburg and Leningrad region);
– interregional migration (other regions of Russia);
– external migration (to other countries).

Literature review

Migration processes are studied by various sciences. In Russia, this topic is disclosed most fundamentally in the writings of L.L. Rybakovsky. The author defines this concept as a set of events leading to changing the place of residence [4]. Professor Rybakovsky divides migration process into three stages: preparatory, main (actual resettlement) and final (adaptation of migrants to the new place) [7, pp. 36-43]. He believes that in order to carry out migration, an individual must receive the expected increment of the necessary components of living, learning and working conditions, as a rule, in an ideal form, in the form of a certain image, mostly developed on an informative basis.

The preparatory stage plays an important role in migration process. This stage of migration is most actively studied by sociology. Sociologists study primarily the subjective readiness of population and youth to migration – migration sentiments, intentions, and attitudes. At the same time, researchers are interested in the goals, reasons, directions, plans for possible relocation, as well as factors that constrain or promote migration [8; 9; 10].

According to both foreign and domestic scientists, the Northern and Arctic territories are characterized by increased migration mobility of the population, which is due to specific living conditions [1; 6; 11; 12; 13]. At the same time, migration sentiments are particularly strong among young people [14; 15].

Many sociologists study migration attitudes of students. Most often, domestic and foreign works on the subject are devoted to educational migration of students or their emigration intentions and plans [16; 17; 18; 19; 20; 21; 22; 23; 24; 25; 26].

Most Russian studies indicate a high degree of migration and emigration sentiments among students. Socio-economic factors related to living and working conditions are most often identified as factors affecting migration attitudes [3; 17; 22]. Psychological and climatic factors are mentioned less frequently. As for information and educational factors, Sociologists pay attention to them very rarely.

According to many foreign authors, economic well-being of the region has a dominant impact on the migration of graduates of higher education institutions [21; 28; 29].

In the territorial aspect, the majority of works on student migration are devoted to the situation in universities in some regions of Russia. Only some studies cover several regions [30; 31; 32].

Migration sentiments

Migration sentiments of student youth in the Russian Arctic are quite clear. More than half of respondents in Arkhangelsk and Murmansk expressed a desire to leave the region of education *(Fig. 1)*. Migration sentiments of students studying in the regions of the Russian Arctic in the east of Russia (Yakutsk, Krasnoyarsk, Anadyr) are less pronounced. The number of people wishing to leave the region does not exceed 45%.

Let us assume that the high level of migration sentiments among students in the western part of the Russian Arctic has an inertial character. The Arkhangelsk and Murmansk oblasts have been among the regions with a large negative migration balance for the last decades. This is a consequence of decreasing state support in relation to the territories of the Far North and the Arctic in the 1990s. Both regions have suffered the most from this policy. The eastern regions of the Russian Arctic were less affected by the development of capitalism and market relations.

Migration sentiments are expressed differently in various demographic groups. Young women participating in the survey expressed a more intense desire to leave the regions of the Russian Arctic. This feature is known to demographers and sociologists of many countries. In the northern and near-Arctic territories, the share of men is greater and the migration of women is significantly higher than in the more southern regions [12].

Place of residence before entering the university is an important factor in migration sentiments (see *Fig. 2*). Students who came to study from other districts, regions, republics and countries expressed the strongest desire to leave the region after graduation. At the same time, about one in four nonresident students would like to connect their lives with the Arctic region.

Figure 1. Respondents' answers to the question "Would you like to leave the region after completing your education?", N=4,024

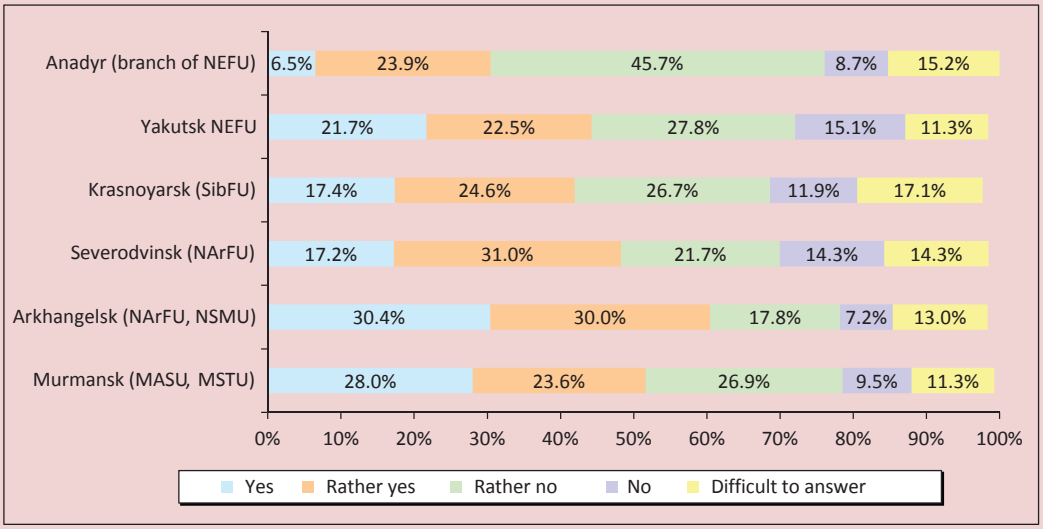
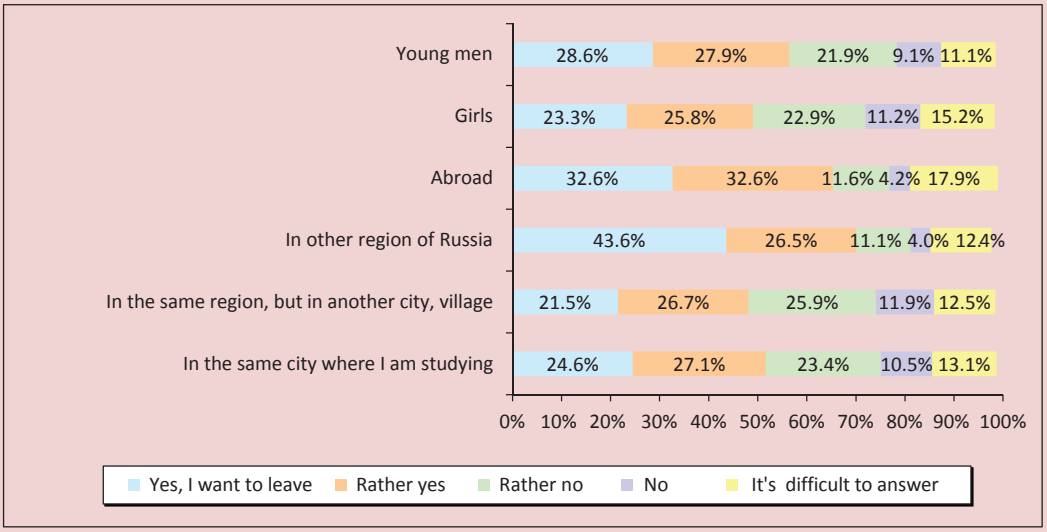


Figure 2. Migration sentiments depending on sex and place of residence before enrolling in higher education programs, N=4,024



Among the inhabitants of the Arctic region, pronounced migration sentiments are observed among students who already lived in the place where their university is located before they were admitted to the university. Almost 55% of them intend to move to another region or country, and only one in ten firmly wants to stay and work in their home area. Given the fact that the majority of educational institutions of higher education are located in the territory of administrative centers of the Northern regions, it can be assumed that the conditions of life in them ceased to meet the increased demands of young residents who are potential young professionals of the "Arctic" orientation.

Migration sentiments of those who came to study from other parts of the region are much weaker. Many of them plan to stay in the city of education after graduation.

At the same time, the level of recognition of their education as having the "Arctic orientation" among the students who are enrolled in educational programs with a focus on regional specifics should be recognized as low. Only one third of the students surveyed noted that their training has an "Arctic" focus. It can be assumed that it is due to the following reasons:

– superficial or formal nature of the "Arctic" focus of educational programs;

– mismatch between the "Arctic" focus of educational programs and the professional and life orientations of students that are not connected with the North;

– different understanding of the Arctic component of educational programs among students and supervisors of educational programs, and organizers of educational process.

The assessment of the degree of the Arctic orientation of educational programs differs significantly depending on the profile of training and place of birth. Students of social-humanitarian and natural-scientific programs called their educational programs "Arctic-focused" more often. The Arctic focus of their educational program was pointed out to a lesser extent by future economists, managers,

physicians, and IT specialists. Nonresident students (from other regions and countries) identify their training profile as Arctic more often than resident students. Apparently, this is due to the novelty of the perception of the "Arctic" orientation of their training programs by visiting students. Students who have lived in the Northern regions for a long time are less susceptible to the Arctic orientation and therefore are more critical in assessing the specifics of educational programs.

Migration intentions

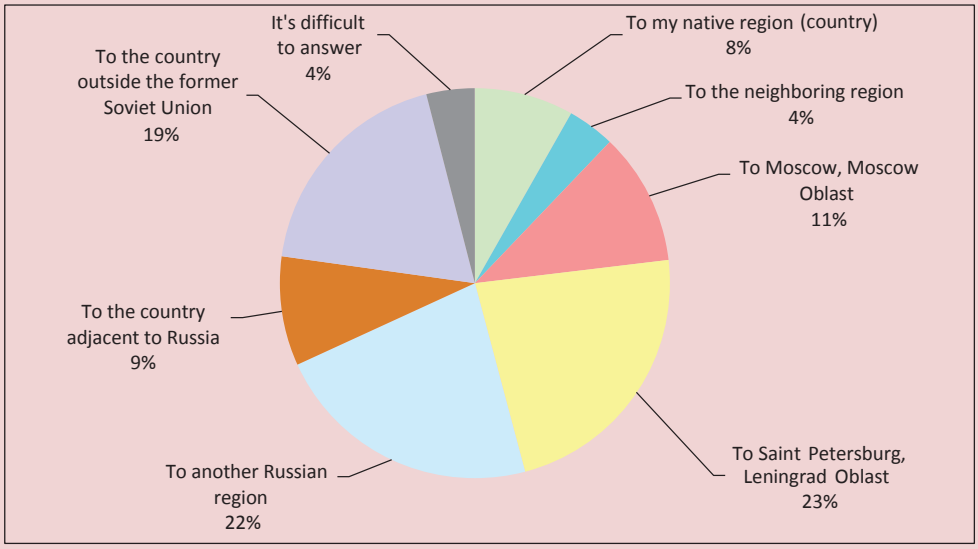
The key direction of potential student migration in the Russian Arctic is the internal one. About 70% of potential migrants would like to move to other regions of Russia *(Fig. 3)*. The preferences of this group are evenly divided between the capital and non-capital regions. Among the capital regions, the most popular one is Saint Petersburg and its surroundings, and among other territories – the regions of the Central and Southern federal districts of Russia.

About 30% of respondents express a desire to move to other countries. There are more potential emigrants in the east of Russia. The most popular destinations of possible departure abroad are countries of Northern Europe and North America. Among the former Soviet republics, the Baltic countries are most in demand. Belarus and Kazakhstan are more often mentioned from other former Soviet countries.

Every tenth potential migrant plans to return to their home area after graduation. At the same time, about 35% of respondents who came to the Russian Arctic from other regions and only 15% of foreign students expressed their desire to return to their native areas after graduating from higher education institutions of the Russian Arctic.

Thus, only a small part of the students who came to study in the Arctic region from other regions or countries have a desire to return after graduation. About 20–25% of nonresident students plan to stay in the region in which they are studying, and the majority wants to move to other regions of Russia. Return migration is quite pronounced among Arkhangelsk

Figure 3. Possible migration directions of those who express a desire to leave the region in which they are studying, N=1,966



students and students from the eastern part of the Russian Arctic (SibFU, NEFU). In these cities, its share varies from 14 to 16% of all migration directions.

Migration sentiments of undergraduate students and master's degree students are determined by a number of socio-demographic parameters.

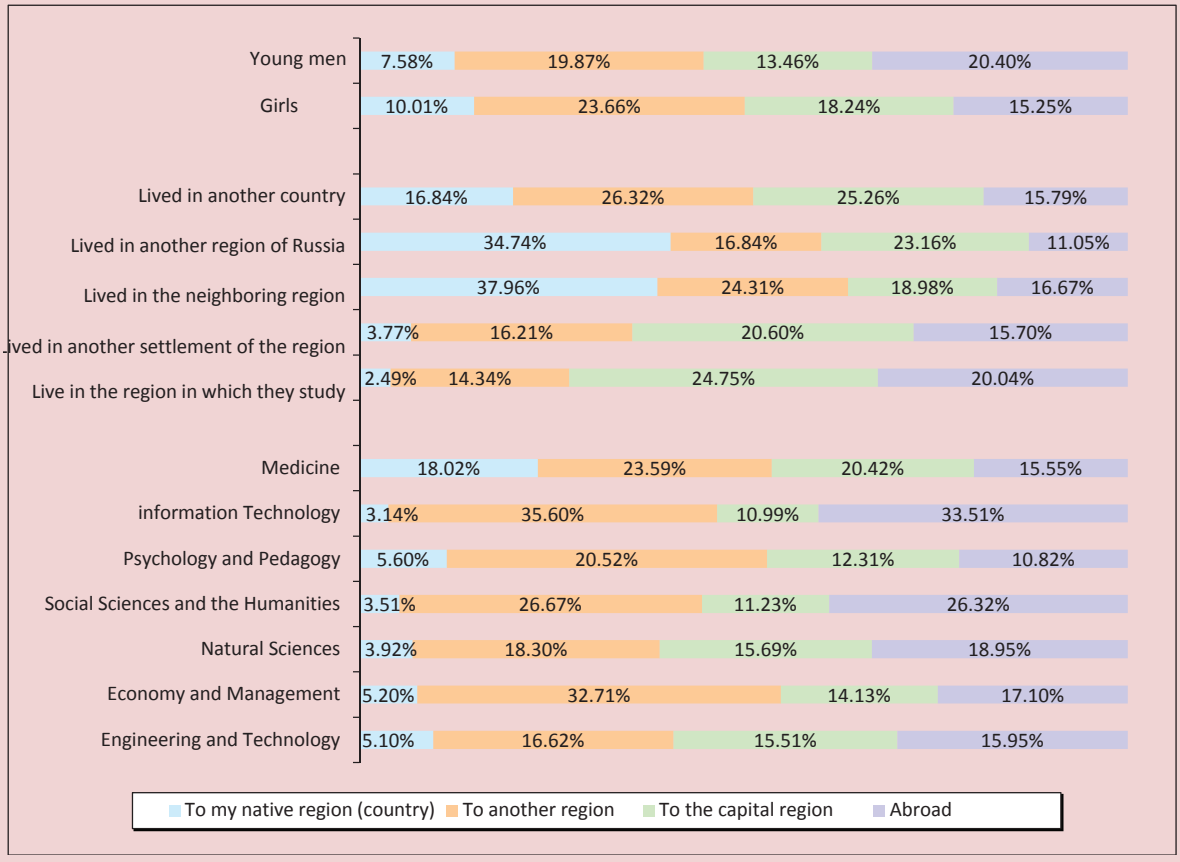
Young men living in the region of study more often name other countries as migration destinations, and young women name the capital and other regions of Russia, that is, they consider the domestic direction as a priority for migration *(Fig. 4)*.

It is noteworthy that, with the exception of the medical specialty, as the time of graduation approaches, there is a decrease in the proportion of students who want to move to other countries. Most likely, the reason lies in a critical look at the difficulties and consequences of moving to another country; so there is a clear preference for internal migration.

During the period of study, the proportion of those who are going to return to their native region decreases. At the same time, the number of potential return migrants decreases significantly (in 1.5–2 times), especially among future masters and bachelors.

The dynamics of interest in living in the capital region is more complex. Among the bachelor's and master's degree students the proportion of those who want to move to one of

Figure 4. Directions of migration depending on sex, education program and place of residence of students before they enroll in higher education institutions (values are given in % of the number of all respondents in this category)



the capital cities somewhat increases; and as for future doctors and engineers, as they reach their final year of training they can loose interest in the idea of moving to the capital region.

Interest in interregional migration is increasing at all levels of higher education. The seriousness of migration intentions is usually determined by the questions concerning the timing of migration and the preparations for moving.

The most serious intentions were demonstrated by potential return migrants. Almost 70% of them are planning to return home immediately after graduation, and 10% are planning to do so in the medium term. Potential migrants who are planning to move to the capitals or to other regions have almost similar temporary and preparatory plans. Approximately 35% of them are planning to move immediately after graduation, and another 25% – in the medium term. Students who are interested in internal migration have demonstrated a high level of activity in preparation for moving to a new place. For example, about 40% of them visited the place of intended residence, and more than 60% collected information and received advisory support concerning the move *(Tab. 4)*.

Potential emigrants are much less serious in their plans and actions. Only 30% of them talk about the possibility of their leaving abroad in the near future, and more than 45% have not yet done anything to prepare for departure. Thus, the probability of realization of migration desire among those who want to go abroad is much lower than among internal migrants (those who intend to move within Russia).

Potential migrants who have considered their intentions most thoroughly study at the universities located in the west of the Russian Arctic (Arkhangelsk, Murmansk). More than 30% of students from this part of the Arctic zone have already taken various actions to prepare for the move, while in educational institutions of the eastern part of the Russian Arctic the share of such students does not exceed 20%.

Most often, active potential migrants were engaged in collecting information about the living conditions and the specifics of moving, both "at a distance" and visiting the place of future residence. One in four potential migrants tried to find a job in a new region (country), and only every fifteenth was engaged in specific preparation for moving (sale of real estate, registration of documents for departure, etc.).

On the basis of cluster analysis, we selected a group of students **with pronounced migration intentions**, who are likely to leave the regions of the Russian Arctic after graduation. The size of this group depending on the region and a particular university varies from 5 to 17% and is about 10% on average. The majority of people within this group are girls who live

Table 4. Answers of respondents to the question: "What actions have you already taken to prepare for moving to another place of residence?", N=1,966

In % by column	Direction of migration		
	Other regions	Capital region	Abroad
Visited the place of intended residence	33.7%	**39.7%**	24.4%
Independently collected information about living conditions in the intended place of residence	33.1%	34.6%	**40.6%**
Consulted on issues related to moving	19.3%	20.1%	23.0%
Tried to find a job in the intended place of residence	11.1%	11.8%	11.0%
Tried to sell / sold property	1.7%	1.8%	1.7%
Prepared documents for moving	1.6%	2.1%	2.9%
Has not taken any steps yet	32.3%	30.7%	**36.2%**
Found it difficult to answer	7.0%	6.0%	8.9%

in the administrative center of the region, study in the framework of bachelor's degree programs and specialist programs, most often on a commercial basis. Students with social and humanitarian, natural-science or information-technological training specialties are among the most predisposed to pronounced migration actions.

Students who can be included in this group (about half of them) plan to move primarily to the capital regions. Most of the representatives of this group visited the intended place of relocation, collected information and consulted about living conditions there and arrangements for the move. However, only one in four potential migrants was looking for a job in a new place of residence. It is obvious that this group of students is confident about the possibility of finding successful employment in the capital megacities.

Our study did not confirm the hypothesis that **the awareness of the benefits and guarantees provided to the residents of Russia's Northern territories has an impact on migration intentions**[2]. However, the respondents' comments on this issue have led to another hypothesis that needs additional testing. Critical attitude toward the current system of guarantees and benefits for residents of the Far North is a factor that stimulates student migration. A significant part of the students are aware of the Northern benefits and guarantees, but believe that they exist nominally and have no actual impact on the standard of living of the population of the region, especially young people. This is confirmed by the comments:

– "Northern allowances are valid only for employees of government-financed organizations";

– "There are benefits, but they are insignificant";

– "In theory, these benefits exist, but employers are rarely concerned with them";

– "There are benefits and allowances, but they do not compensate for the unfavorable conditions of life and work";

– "There exists the so-called Northern allowance, but it doesn't work. The employer understates the basic salary, so the sum together with the Northern allowance makes the same salary".

The survey has shown that the **students had a weak and fragmentary awareness concerning the establishment of the Arctic zone of Russia** *(Tab. 5)*. Only one third of respondents said that they knew exactly about this fact, while 30% of respondents first learned about it during the survey. In general, the students who study in the west of the Russian Arctic (Arkhangelsk, Murmansk) are more informed on this issue than those who study in the eastern part of the Russian Arctic. Perhaps it is due to the fact that Krasnoyarsk and Yakutsk, unlike other municipalities of the regions, have not been included in the Arctic zone of Russia.

The views of future specialists on the impact that the process of formation of the Arctic zone of Russia will have on the development of the

Table 5. Respondents' answers to the question: "Do you know that the Arctic zone of the Russian Federation is allocated as an independent object of state management in our country?", N= 4,024

In % by column	Murmansk	Arkhangelsk	Krasnoyarsk	Yakutsk
Yes	**41.5%**	**34.8%**	23.5%	23.4%
I hear something about it	32.7%	31.3%	33.6%	37.7%
I don't know	25.8%	33.9%	42.9%	38.9%

[2] About the state guarantees and compensations for the persons working and living in areas of the Far North and the territories equated to them: Law of the Russian Federation of February 19, 1993 No. 4520-1 (as amended December 31, 2014).

region are cautiously optimistic. Slightly less than half of them point out that the population of the region is more likely to benefit from the promotion of the Arctic vector of Russia's state policy.

The analysis did not reveal the direct impact of these results of the sociological survey on migration sentiments, but they are statically related to the indicator of migration intentions "the expected period of migration". In other words, the more the students know about the Arctic zone of the Russian Federation and the more positive they are about the prospects for its development, the less they consider the opportunity to leave the region.

Causes and driving forces of migration

The questions concerning respondents' motivation have revealed a set of reasons for potential migrants' intentions to move. In general, there is a wide range of views on this issue.

The most popular reason for leaving the region of study was the following: "I like the region (country) to which I would like to move" *(Tab. 6)*. This answer was noted, generally, without mentioning the other answers at the same time. This allows us to consider the students who have chosen this option as a special migration group. Representatives of this group are more than others dissatisfied with the terms for education, cultural development and with the provision of housing in the area where they are studying. In addition, they believe the region is "grey and listless" and at the same time "kind and dear". Students who pointed out this motive are interested in a creative, high-paid and career-promising job. They are particularly attracted to science, business, and politics as future professional spheres.

In general, a typical representative of this motivational group can be called a creative person who is looking for "an ideal place of residence". Such people need a bright, energetic and financially stable territorial environment, which should help unlock their potential in the professional, social and personal sphere. Students hope to find such an environment in Saint Petersburg or abroad (especially in Northern Europe, the USA, Canada, and Japan). Only four out of ten such people visited

Table 6. Respondents' answers to the question: "Why do you want to move to another region (country)?", N= 1,966

In % by column	Direction of migration		
	Other regions	Capital region	Abroad
The region where I am going to move is interesting	42.0%	45.0%	**49.2%**
Low wages in the region	35.7%	39.0%	**41.9%**
Severe climate	35.0%	35.5%	37.3%
Inability to find a well-paid job	28.9%	**33.7%**	29.1%
Undeveloped cultural and leisure environment	25.3%	**29.2%**	23.8%
High prices	24.2%	22.3%	24.6%
Poor environment	23.9%	20.6%	23.7%
Economic instability in the region	20.3%	21.75%	**27.8%**
Housing issues	18.5%	15.3%	17.5%
I want to start my own business, to run a business	10.1%	12.39%	11.5%
The desire to create a family	**8.6%**	7.1%	6.7%
Be close to my family/friends	7.8%	7.8%	3.9%
Difficulties concerning the provision of medical services	7.2%	7.1%	11.0%
Other family circumstances	5.7%	6.1%	4.1%
Other	0.7%	0.8%	1.1%
Difficult to answer	3.5%	2.9%	3.3%

the place of possible relocation, so the ideas about the desirable place of residence of the majority of these people are not derived from personal experience.

The socio-economic causes of migration (low wages in the region, inability to find decent work, high prices, economic instability in the region) rank second. The key answers of this set of reasons are related to work. In fact, they show students' disappointment with finding well-paid jobs within their specialty in the region. Such thoughts are especially relevant for students enrolled in information technology, social and humanitarian education programs and partly for future physicians. However, similar feelings are expressed by students who train in the programs with a pronounced "Arctic" orientation (the programs have a reference to it in the title). Most likely, the ambitious salary expectations of this group negatively affect their perception of the regional labor market and contribute to the development of the desire to leave the region.

At the same time, labor-related pessimism of university students is associated with the fact that they know little about the leading enterprises of the industry. Thus, only 20% of the respondents from the number of graduates said that they know a specific organization or a company in which they would like to work. It is significant that the proportion of such students in the first year and final year is similar, in general.

The third place among the causes of migration is occupied by natural and environmental (severe climate, poor environment) factors, and the fourth and fifth places – by socio-psychological factors.

It should be noted that the structure of migration motivation of young men and young women is fundamentally different. The motives of young men are primarily related to the professional and labor sphere and material problems (salary, work, high prices, economic instability). The motivation of young women is largely shaped by the situation in the family and personal sphere and emotional problems (severe climate, desire to create a family, to be closer to one's relatives/friends).

Among the subjective factors, the influence of which on migration attitudes of students was statistically confirmed, the following can be distinguished:

– readiness to work within one's obtained specialty;
– life plans after graduation;
– preferred types of work;
– level of financial aspirations;
– attitude toward the development of the Arctic zone of Russia.

If the surveyed students already have some plans related to employment after graduation, then they find migration to capital cities and outward emigration not so attractive anymore, and their interest in remaining in the territory of the Russian Arctic increases. But if they are planning to continue education or start their own business, this urges them to move to the capital regions and abroad.

Orientation of students toward innovative (science, entrepreneurship) and management (socio-political activities, public service) activities is one more factor "pushing" them to leave the Russian Arctic. Preferences related to production, practical and pedagogical activities, on the contrary, reduce the likelihood of leaving.

Financial aspirations of the students have complex effects on their migration sentiments. Financial demands are higher among those who want to move to abroad, primarily to North America or Northern Europe. Higher financial expectations are also a factor that increases interest in capital migration for students of

Table 7. Answers of respondents to the question: "What can keep you from leaving your region?", N= 1,966

In % of respondents by column	Young men	Girls
Employment on good terms, in a good organization	56.7%	52.3%
Improvement of the economic situation in the region	**34.7%**	27.6%
If I start a family, find my loved one	33.1%	**37.5%**
Family circumstances, the interests of loved ones	31.4%	**37.9%**
Improving infrastructure in the region	**30.4%**	22.6%
The emergence of benefits, various forms of support for young people in the region	23.8%	24.0%
Friends, their unwillingness to let me go	**11.0%**	5.3%
Other	6.0%	3.7%

Arkhangelsk and Murmansk. At the same time, the difference in the expected salary among those who want to stay in the region and those who intend to leave is only 20–30%, depending on the university and the direction of migration. Therefore, the level of financial aspirations cannot be considered a critical factor in migration sentiments.

A good job is the most important reason for the majority of respondents to stay in the Russian Arctic. And the main parameters of successful employment, in their opinion, are high wages and career opportunities. Personal factors and psychological circumstances (love, family, relatives, friends) are important reasons for young women to postpone their leaving the North or to abandon the idea of moving *(Tab. 7)*.

Conclusion

Migration sentiments of student youth in the Russian Arctic are quite strong, especially in the cities of Arkhangelsk and Murmansk; and they are manifested differently in subgroups of young people. For example, girls and students who lived in administrative centers of RF subjects before entering the university expressed a strong desire to leave.

The study confirmed the hypothesis that a more pronounced identification of students with the Arctic orientation of their training reduces the level of migration sentiments.

The dominant direction of potential student migration is the domestic one. However, during the years of study, students show less interest in moving abroad.

Only a small part of students who came to study in the Arctic regions from other Russian regions or from abroad plan to return home after graduation. About a quarter of students who came from other regions want to connect their lives with the Arctic regions, and the majority of students want to live and work in more southern regions of the Russian Federation.

The number of students with pronounced migration intentions, depending on the region and the specific university, varies within the average value, which is about 10%. Such students are more often found among the respondents studying in the west of the Russian Arctic (Arkhangelsk, Murmansk). The majority of potential migrants have already collected information about the conditions of life and about moving, both from personal experience and from other sources. Some of them were looking for a job in a new region (country), and only a few were engaged in specific preparation for the move.

Migration intentions of students are primarily related to economic factors. However, the impact of psychological, information and education factors cannot be underestimated. Thus, the analysis of the survey data revealed that the awareness of the fact that the Arctic zone of the Russian Federation has been established and a positive attitude toward the prospects of its development affect the increase in the planned period of departure from this macroregion.

However, the desire to leave the Russian Arctic is influenced not only by the objective situation, but also by the subjective perception of the situation through the eyes of students, their life and professional ideas and plans. The main factors that can help retain young professionals are associated with the activities of federal and regional government bodies, local authorities, and business structures of the macroregion.

Factors related to the work of higher education institutions play a secondary role in migration processes. However, their importance cannot be underestimated, especially since it is possible to correct them in a shorter time than to change the main factors.

According to the results of the study, a number of areas can be identified in the activities of higher education institutions, the optimization and promotion of which can positively affect migration processes in the Russian Arctic and help address the issues concerning the shortage of personnel for the economy and social sphere of the macroregion.

These areas are as follows:

1. To develop and upgrade Arctic-focused educational programs: to include reference to the Arctic orientation in the name of educational programs; to include Arctic-focused educational modules in the programs for each year of training; to organize network programs that unite personnel and educational resources of educational organizations engaged in Arctic-focused studies; to develop and implement educational modules on the history of the Arctic, the current state and development prospects of the Russian Arctic. It is worth noting that the institution that can perform a coordinating role in the improvement of training is the National Arctic Research and Education Consortium; it was established in June 2016 and brings together more than 40 leading scientific, educational, non-governmental organizations of Russia involved in staffing and scientific support of Arctic projects.

2. To carry our systematic career guidance work with schoolchildren and students: to support and promote various forms of main and additional educational activities of schoolchildren related to the Arctic direction and topic (subject-oriented classes, clubs, elective courses, expeditions, trips); to work with schools located outside administrative centers of the regions; to inform students about the state of the industry labor market in the region of education and other regions of the Russian Arctic; to create an open access Internet database of enterprises and organizations that can be potential employers in the Russian Arctic industry, to arrange them on an industry and professional principle within the database.

3. To cooperate with employers on the organization of practical training, preparation of graduation papers, and employment of graduates. It is advisable to use the expert potential of employers to assess the prospects of new areas of training, help select the topics of graduation papers, and analyze the content of educational programs. It is necessary to expand the practice of creating basic departments at the enterprises of the region, increasing the number of large, medium and small partner organizations that are willing to provide on-the-job training.

4. To cooperate with public authorities and local self-government on forecasting personnel requirements of municipal entities and the region; to develop and implement measures to support young professionals. The projects of government and municipal programs for providing support to young people and young professionals should be subjected to preliminary discussions at the universities in the regions. It is advisable to inform students about the measures taken and implemented in the region and municipal entities to support young people

through trade union activities and elective educational disciplines.

5. To organize work with graduates, especially with those who successfully work within their specialty at enterprises and organizations in the territory of the Russian Arctic. It is advisable to collect and arrange information about graduates and use their potential as lecturers, consultants and experts with the help of the association of graduates.

6. To organize research and innovative work of students: to involve them in scientific and applied work; to establish student business incubators and technology parks that would execute orders for the real sector of the economy of the macroregion.

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Patterns of Population's Self-Preservation Behavior: Research Approaches and Building Experience

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Abstract. As countries make their epidemiological transition, the contribution of behavioral risk factors to population's health is increased; they include challenges of low physical and medical activity, diet and sleep violations, imbalance of work and rest, tobacco and alcohol consumption, and high stress loads. In Russia, the situation is complicated by incomplete epidemiological transition, as well as increased morbidity and mortality from endogenous and quasi-endogenous causes. The purpose for the article is to analyze methodological approaches to studying the self-preservation behavior and build models describing it for the population of the Vologda Oblast. Russian scholars A.I. Antonov, V.A. Borisov, I.V. Zhuravleva, L.S. Shilova, G.I., Ivakhnenko, T.V. Shushunova, and A.E. Lugovoy attempt to highlight the patterns of self-preservation behavior taking into account all or some of its elements (needs, attitudes, motives and actions), but not considering them in a single system. For constructing models the present study applied the method of decision tree using data from sociological surveys, which helps identify eight possible options. As revealed, 57% of the population in the Vologda Oblast demonstrate the strategy characterized by recognizing health as the main value, people's concern for their health and presence of health-preserving practices. The rest demonstrate certain behavioral risks: 21% of respondents do not consider health as one of their life priorities, 15% – are not motivated to choose a healthy lifestyle, and 29% do not take any actions to preserve and improve their own health. It was established that lack of health in the system of life values, low concern for health, passive use of self-preservation measures are

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directly related to the spread of self-destructive practices (alcohol abuse, smoking, unhealthy diet and low physical activity). At the next stage, a survey of residents in the Vologda Oblast is planned, the results of which will help deepen the research study by a more detailed study of patterns of self-preservation behavior at the level of individual groups, expanding the range of behavioral risk factors under study.

Key words: self-preservation behavior, socio-demographic approach, behavior patterns, behavioral risk factors.

Introduction

Over the past 50 years the majority of developed countries have demonstrated great success in fighting against non-infectious causes of death (mainly circulatory, respiratory, and digestive diseases, tumors, external causes), which has helped increase the average age of death from these groups of causes, as well as significantly increase the population's life expectancy thereby triggering the "second epidemiological revolution" [1].

The observed upward trends in mortality rate and population's life expectancy are explained from the standpoint of the concept of epidemiological transition which is a historically conditioned shift of one type of pathology defining the nature of population's morbidity and mortality, towards another; of one structure of diseases and causes of death towards another. As communicable and parasitic diseases as key causes of morbidity and mortality are replaced by chronic non-infections diseases, the contribution of behavioral risk factors to health formation inevitably increases; these factors pose the challenges of low physical health and activity, diet and sleep violation, work and rest imbalance, tobacco and alcohol consumption, high stress loads.

In Russia, the situation is complicated by the fact that, on the one hand, the epidemiological transition is incomplete, i.e., the features of the "traditional" structure of pathology remain: morbidity and mortality rates from communicable and parasitic diseases, digestive and respiratory diseases remain at a high level; on the other hand, there is an increase in morbidity and mortality from endogenous and quasi-endogenous causes (cardiovascular diseases, neoplasms) [2, p. 475]. However, the state pays close attention to reducing mortality from cardiovascular diseases and cancer in recent years: modern cardiology and cancer centers are built, years of fighting against these diseases are announced (for example, 2015 is the Year of fighting against cardiovascular diseases), large conferences and symposia devoted to these issues are held annually. However, the problem of mortality from external causes due to its smaller extent becomes a secondary concern. The objectives of reducing mortality from road traffic injuries are top priority here [3, p. 896], but despite all the importance of this cause, it only causes 10% of all deaths from external causes [2, p. 493]. Other external causes – injuries with uncertain intentions, suicide, murder and alcohol poisoning – directly characterize the psycho-social state of the society and its individuals [4, p. 51].

Both at the federal and regional level, health development programs for 2014–2020 are being implemented, where mortality rates from

Table 1. Target indicators of mortality reduction in the framework of federal and regional health development programs in 2014–2020 according to data for 2017

Target indicators of mortality reduction (deaths per 100,000 people)	Expected result for 2017	Actual result for 2017	Accomplishment
Russia			
Deaths from circulatory diseases	663,0	584,7	✓
Deaths from road accidents	11,2	10,1	✓
Deaths from neoplasms (including malignant)	194,4	196,9	×
Deaths from tuberculosis	11,8	6,2	✓
Vologda Oblast			
Deaths from circulatory diseases	712.8	762.8	×
Deaths from road accidents	8.5	7.4	✓
Deaths from neoplasms (including malignant)	200.5	213.3	×
Deaths from tuberculosis	6.8	2.8	✓

circulatory diseases, neoplasms, road accidents, and tuberculosis are among target indicators[1]. According to data for 2017, the targets of the federal Program were not achieved only in mortality from neoplasms (exceeding the target indicator by 1%), while in the Vologda Oblast – in two indicators: mortality from circulatory diseases (exceeding the target indicator by 7%) and neoplasms (exceeding the target indicator by 6%; *Tab. 1*). At present, the impact of administrative and state measures to reduce mortality, despite their scale, is insufficient to solve this problem, which shifts the "vector" of its consideration to population personal responsibility for their own health.

In this regard, the issues of studying the characteristics of behavior determining the individual's health and lifespan in order to identify the strategies and opportunities to manage them are of particular importance. In the scientific community, this type of demographic behavior is called *self-preservation behavior*. This term was first used in Russian sociology and sociological demography at the beginning of the 1970–s (studies by A.I. Antonov, V.M. Medkov, V.A. Borisov, V.A. Zotin, T.V. Lifar, I.V. Zhuravleva, L.S. Shilova, E.B. Babin, M.S. Bednyi, L.V. Shibut) to describe the individual's willingness to preserve their own life and health, live until old age2. During the same period, Yu.P. Lisitsin, O.V. Grinitsyn, A.M. Izutkin, I.F. Matyushin in the framework of the medical approach used the term "healthy lifestyle" (or "the way of life which promotes health"), reflecting the characteristics of people's behavioral activity related to their own health. Foreign experts began to study people's self-preservation behavior in the 1970–s, first in the framework of the concept "health" ("health promotion") [5, p. 8] and later – in the context of similar terms: "health behavior", "health-related behavior", and "healthy lifestyle" [6, pp. 42–43; 7, pp. 262–263].

In modern research, the following terms are used as synonyms to "self-preservation behavior":

– "health behavior" (M.V. Volkova [8]);

[1] Healthcare development for 2014–2020: state program of the Russian Federation: approved by Government Decision no. 294, dated 15.04.2014. Ministry of Health of the Russian Federation. Available at: http://www.rosminzdrav.ru/; Development of healthcare in the Vologda Oblast for 2014–2020: state program: approved by Decision of Government of the Vologda Oblast no1112, dated 28.10.2013. Department of Health of the Vologda Oblast. Available at: http://depzdrav.gov35.ru/

[2] Antonov A.I., Borisov V.A. *Lectures on Demography: course book.* Moscow: Akademicheskii Proekt; Al'ma Mater, 2011. P. 417.

– "health-preserving behavior" (A.V. Zelionko [9], A.A. Shabunova, V.R. Shukhatowich [10], N.V. Yakovleva [11]);

– "vital behavior" (V.V. Yumaguzin, N.B. Vinnik [3]);

– "health-related behavior" (E.I. Rasskazova, T.Yu. Ivanova [12]).

– Moreover, terms characterizing destructive practices opposite to self-preservation, became widespread:

– "self-destructive behavior" (T.V. Shipunova [13], V.G. Rezapkina [14]);

– "deviant health behavior" (M.V. Volkova [8]).

Despite different conceptual frameworks, their nature is reduced to a priority of the value of health, motivation, and its preservation for individuals [15, p. 23].

Since in modern conditions the behavioral factor associated with the individual's attitude to their own health and life expectancy is becoming increasingly important in determining population's morbidity and mortality, it is important to study the individual characteristics and strategies of self-preservation behavior. *The purpose* of this paper is to analyze methodological approaches to studying self-preservation behavior and construct models describing it for the population of the Vologda Oblast taking into account the inextricable relation of all its components.

Theoretical aspects of the research

In the scientific community, self-preservation behavior (SPB) is studied in the framework of *medical, psychological, and socio-demographic approaches*. The medical approach equates this type of behavior with a healthy lifestyle (hygienic or sanitary behavior), i.e. activities of an individual or groups of individuals most characteristic of specific socio-economic, political, environmental and other conditions aimed to preserve, improve and promote health [16]. The proponents of this approach see *medical activity* as a key component of SPB, while other parameters are considered secondary, subordinated to it (*Tab. 2*). The medical approach only takes into account the individual's health-reserving activities, rather than their motives and values of self-preservation.

In social psychology, self-preservation (health-preserving) behavior is interpreted from three directions: 1) as an act of decision-making; 2) as a staged process; 3) as an activity. Most often it is considered as a specific regulatory activity to ensure an optimal level of individual's health [11]. In the framework of the first direction, foreign researchers M. Becker and L. Maiman developed a *health belief model* back in the 1970–1980-s. It describes the behavior of a subject as a result adding together individual health-related knowledge: perceived risk, awareness of the severity of the problem, the possible benefits and obstacles to adopting this pattern of behavior [17]. The key components of *the model of planned behavior* of M. Fishbein and A. Ajzen are assessment of expectations, validity of action, rules guiding the subject, and control of perceived behavior [18].

The most popular models considering self-preservation behavior as a staged process are precaution adoption process model by H. Weinstein and P. Sandman [19] and the transtheoretical model of behavior change by J. Prochaska and C. DiClemente [20]. According to them, the stages of SPB represent qualitatively different types of behavior, ideas, and experiences. The factors mediating transitions between stages vary depending on the stage an individual is currently at [11].

In Ru-ssian social psychology, the study of self-preservation behavior is based on the activity-based approach is used. N.V. Yakovlev

Table 2. Theoretical approaches to interpretation of self-preservation behavior and its structure

Approach	Scholars	Interpretation of SPB	SPB components
Medical	Yu.P. Lisitsyn, O.V. Grinitsyn, A.M. Izutkin, I.F. Matyushin	Self-preservation behavior is equivalent to *a healthy lifestyle (or hygienic behavior)*, i.e. the activity of an individual, groups of individuals, most characteristic of specific socio-economic, political, environmental and other conditions aimed at preserving, improving, and promoting health	1. Key element – medical activity 2. Subordinate elements (healthy lifestyle standards): - occupational health and safety; - quitting smoking and alcohol abuse; - psychohygienic and therapeutic self-help; - physical activity; - balanced diet; - timely use of medical resources; - first aid skills.
Psychological	M. Becker, L. Maiman, M. Fishbein, A. Ajzen, J. Prochaska, C. DiClemente, N.V. Yakovleva, N.N. Ulanova, L.G. Ulyaeva	Self-preservation behavior (often called health-saving behavior) is considered in different ways: - as an act of decision-making (M. Becker, Л. Maiman, M. Fishbein, A. Ajzen) - as a staged process (Weinstein N., Sandman P., J. Prochaska, C. DiClemente) - as an activity (N.V. Yakovleva, N.N. Ulanova, L.G. Ulyaeva)	Main SPB components: 1. motivation; 2. assessment of current state of health (self-assessment); 3. fixation; 4. system of actions; 5. control of results.
Socio-demographic	A.I. Antonov, V.M. Medkov, V.A. Borisov, V.A. Zotin, T.V. Lifar', I.V. Zhuravleva, L.S. Shilova, E.B. Babin, L.V. Shibut, I.S. Vyalov, G.A. Ivakhnenko, V.Ya. Shklyaruk, L.Yu. Ivanova, A.A. Shabunova	Self-preservation behavior is a system of actions and relations of an individual aimed at preserve health during the whole life and extending lifespan.	1. Needs (in health and longevity). 2. Attitudes (self-reported health, value of health, socially approved standards). 3. Motives. 4. Actions (measures): - medical activity; - physical activity; - balance of work and rest; - sexual behavior; - diet control; - work and rest balance control; - bad habits; - counteracting stress.

Sources: compiled by the authors using: Lisitsyn Yu.P., Izutkin A.M., Matyushkin I.F. *Medicine and humanism*. Moscow: Meditsina, 1984; Yakovleva N.V. Health-preserving human behavior: socio-psychological discourse. *Personality in a changing world: health, adaptation, development: electronic scientific journal*, 2013, no. 3. Available at: http://humjournal.rzgmu.ru/en/art?id=50; Yakovleva N.V. Study of individual differences in health-preserving activity of an individual. *Experimental psychology*, 2015, vol. 8, no. 3; Glanz K., Rimer B., Viswanath K. *Health behavior and health education: theory, research and practice*. San Francisco: Jossey-Bass, 2008. P. 42; Antonov A.I. *Microsociology of a family (research methodology of structures and processes): high school manual*. Moscow: Publishing House "Nota Bene", 1998. 360 p.; Shilova L.S. Transformation of the female model of self-preservation behavior. *Sociological research*, 2000, no. 11, pp. 134–140.

distinguishes five components of health preserving behavior: motivation, self-reported health, fixation on healthcare; system of health preserving actions, control of results [21, p. 203]. The advantage of this approach is that it recognizes the priority of the value-motivational component in self-preservation. However, the psychological approach does not consider SPB as demographic behavior and therefore does not imply its relation with demographic processes.

Within the framework of *the socio-demographic approach* which has been successfully developed in Russian science and was formed into a concept of self-preservation behavior, such behavior is understood as a system of actions and relations of an individual aimed at preserving health during the whole life and extending the lifespan. Moreover, the proponents of this approach, defining the components of the SPB structure, use the value-motivational approach based on the category of social psychology (motivation, attitudes, motives, and actions), on the one hand. On the other hand, they interpret self-preservation behavior as a kind of demographic behavior and recognize its contribution to determining key demographic parameters: population's mortality, life expectancy and birth rate.

At the first stage of developing the concept of self-preservation behavior (1970–1980s), the researchers' attention when studying reproductive behavior was focused on the needs, namely on identifying the preferred (ideal, desired, and expected) lifespan. Further, the concept of SPB was developed in works by I.S. Vyalov, I.V. Zhuravleva, L.S. Shilova, G.A. Ivakhnenko, V.J. Shklyaruk, L.Y. Ivanova who developed a structure and a system of indicators of self-preservation behavior, and identified mediating factors. The issues of its determination and the relation of its components were covered by E.M. Andreev, V.M. Shkolnikov, V.A. Biryukov [7, p. 264]. The problem of preserving health in population's individual activities was being developed by Belarusian sociologists and demographers V.R. Shukhatowitz, T.N. Shushunova, N.A. Baranovskii, and A.A. Zlotnikov.

The most reasonable and developed approach to studying self-preservation behavior, its factors and structural components is, in our opinion, the socio-demographic approach based on principles of social psychology related to SPB content and on theoretical development of sociology and demography, which recognize self-preservation behavior as part of demographic behavior, which determines the performance of the processes of fertility and mortality. In our work, we follow this approach and consider the model of self-preservation behavior as a set of needs, attitudes, motives, and specific actions of an individual to maintain and strengthen their own health.

Methodology

A.I. Antonov made a great contribution to the development of the methodology of studying self-preservation behavior. In 1980–1986, he and a team of scientists from Lomonosov Moscow State University, and later the Institute of Sociology in the regions of the former USSR conducted large-scale sociological surveys to identify the population's motives and attitudes to preserve individual health and longevity. The research of A.I. Antonov, V.M. Medkov, V.K. Zotin, T.V. Lifar, I.V. Zhuravleva, L.S. Shilova, E.B. Babin, L.V. Shibut was based on the scheme of dispositional regulation of behavior [22], according to which the results of self-preservation behavior depend not only on the living conditions, but also on how they are subjectively determined by AN individual in everyday situations.

Most often, when studying self-preservation behavior scientists are limited to considering its individual aspects such as the place of health in the system of life values, self-reported health, medical and physical activity, bad habits, stress resistance of the body, diet, etc., which does not form the idea of the existing total behavior strategies. Attempts to build models describing the individual's health preserving actions less often made, were based on various features.

Table 3. Methodological approaches to identifying models of self-preservation behavior

Scholars	Features of model elements	Models
A. I. Antonov, V. A. Borisov, I. V. Zhuravleva, L. S. Shilova, L. Y. Ivanova	1. The nature of respondents' attitudes towards ideal, desired, and expected life span (negative or positive) 2. Gender (male and female models)	"Pessimistic" and "optimistic" Male and female SPB pattern
T.V. Shushunova	1. Nature of motivation (negative or positive) 2. Level of fixation when forming self-preservation behavior: biological (B), social (S) and psychological (P)	B+P+S+ "Positivist" B+P+S- "Realist" B+P-S+ "Career person" B-P+S+ "Activist" B-P+S- "Conformist" B-P-S+ "Moralist" B+P-S- "Consumer" B-P-S- "Negativist"
E.A. Yugova	1. Absence/presence of bad habits 2. Rational diet 3. Physical (motor) activity 4. Work and rest regime 5. Hygiene and disease prevention	Unstable model Semi-strict model Stable model Sustainable/health preserving model

Sources: compiled by the author using: Antonov A.I. *Microsociology of a family (research methodology of structures and processes)*. Moscow: Nota Bene, 1998. P. 315; Shilova L.S. Transformation of a female model of self-preservation behavior. *Sociological research*, 2000, no. 11, pp. 134–140; Shushunova T.N. *Self-preservation behavior of students: sociological analysis (on the example of Minsk universities)*. Minsk: Pravo I ekonomika, 2010. 114 p.; Yugova E.A. Formation of health preserving behavior among students of higher educational institutions. *Herald of SPbSU*, 2012, no. 2, p. 32.

For example, in studies by A.I. Antonov[3], V.A. Borisov, I.V. Zhuravleva, L.S. Shilova, G.I. Ivakhnenko such indicators are the nature of respondents' fixation on ideal, desired, and expected lifespan (pessimists and optimists) and gender (male and female models) [23; 24; 25]; in works by T.V. Shushunova – the nature of motivation (negative or positive) and level of orientation when forming self-preservation (biological, social, and psychological) [5]; in works by E.A. Yugovaya – absence/presence of bad habits, rational diet, physical activity, work and rest balance, hygiene and prevention of diseases (unstable, semi-strict, stable, and sustainable models [26]; *Tab. 3*).

The advantage of these classifications is that all of them use sociological methods to obtain information about SPB characteristics and take into account the value-motivational aspect of health preservation. However, they do not reflect the components of self-preservation behavior (needs, attitudes, motives, and actions) in a single system. That is why the purpose of the study is to develop models that would take into account the key elements of SPB based on data of sociological surveys.

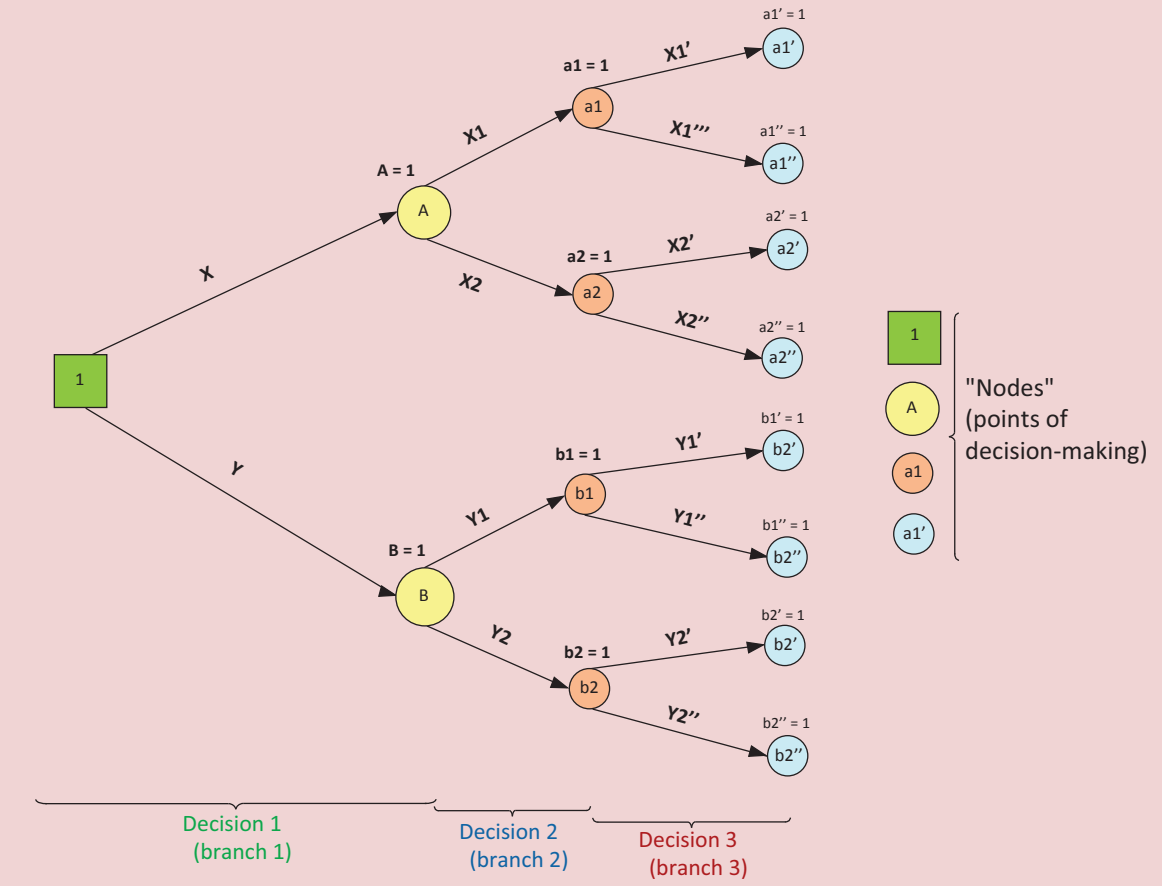
To build these models we use the *decision tree* method based on a schematic representation of a decision-making process branching under certain conditions. This method is used when the result of one decision forces an individual to make the next decision which, in turn, affects the third, the fourth one, etc., until the final result is achieved[4].

The elements of decision tree are *nodes* and *branches of decision-making options* (*Fig. 1*). The *branches* denote possible alternative decisions that can be made and possible outcomes that result from these decisions. The *nodes* denote the points where decisions are made.

[3] Antonov A.I. *Microsociology of a family (research methodology of structures and processes): high school manual.* Moscow: Nota Bene, 1998. 360 p.

[4] Yares' O.B., Pan'shin I.V. *Methods of management decision-making: study guide*. Vladimir: Vladim. gos. un-t im. Stoletovykh, 2011. Pp. 42–43.

Figure 1. The decision tree



Source: compiled by the author.

In the present study, the following sequence of decisions is made: value of health – need for health and motivation to care for it – measures to preserve and promote health. We assume that the value of health characterizes the basic attitude of an individual towards this category. The value of health in an ideal situation depends on the need for it and the motivation to care for it, which, in turn, affects specific self-preservation actions implemented by an individual.

Thus, the starting point of decision-making is defining *the place of health in the system of life values* reflecting the individual's attitude to health as the main condition for sustaining life (*Tab. 4*). Depending on the distribution of respondents' answers to the question "What is the main value for you? " two "branches" are singled out: people who consider health the main value and those who do not consider it a life priority. The next "node" implies *the presence (or absence) of motivation to healthcare*, which acts as an incentive for an individual to take action to promote health and prolong life [5, p. 17]. According to whether a person has any social (desire to have children, be an example for the loved ones, look good, unwillingness to be a burden), psychological (unwillingness to deal with medical institutions, need for good health, fear of illness, deterioration of health) or economic (desire to preserve and improve the ability to

Table 4. Indicators for building the model of self-preservation behavior

Elements of SPB	Questions	Indicators for building decision-making nodes
Attitudes to health	What is your main value in life?*	1. Share of respondents who chose health as the main value
		2. Share of respondents who did not choose health as the main value
Need for self-preservation and motivation to care for health	What motivates you to take care of your health?**	3. Share of respondents motivated to care for health (choose all that apply): – willingness to have healthy children; – willingness to improve performance at work; – unwillingness to be a burden for the loved ones; – unwillingness to deal with medical institutions; – need for good health; – fear of falling ill; – willingness to be a role model for children and loved ones; – willingness to achieve significant life foals (at work, school); – striving for longevity; – willingness to look good and attractive; – deteriorating health, diseases; – other.
		4. Share of respondents who are not motivated to care for their health (who chose the answer "I do not care for my health")
Actions (measures) taken to preserve and promote health	What do you personally do to preserve and strengthen your health?**	5. Share of respondents who take measures to preserve and promote health (who have chosen all appropriate answers): – I am into sports and I harden my body; – I use water filtration appliances, buy bottled water, use water from special sources; – I manage my weight; – I do not smoke; – I consult a doctor at first signs of a disease, I regularly attend medical check-ups; – whenever possible I undergo medical treatment at sanatoriums or health resorts etc.; – I attend sauna or banya; – I drink casually; – I try to walk, walk at leisure areas; – I try to control my mental health; – I try to keep balance of work and rest; – I try to manage my free time with profit to health, self-development, and self-fulfillment; – other.
		6. Share of respondents who do not take any measures to preserve and strengthen their health (who chose the answer "I do not take any measures on purpose")

* The answer implies the choice of up to 3 options.
** The answer implies the choice of all options applied.
Source: compiled by the author.

work, achieve significant goals) motives that encourage to care for health, we distinguish the following "branches": people motivated to care for health and those who are not motivated to care for it. At the same time, in our opinion, the presence of motives simultaneously reflects the need to promote health or, in the case of the answer "I do not care for health", the absence of such. Further, the division of "branches" is based on the distribution of answers to the question about *actions taken to preserve and strengthen one' health*: people who implement such measures and those who so not comply with any measures.

When the "tree" is built all decisions are indicated on it, the share of each option is calculated, their values are put down over the "branches". In our study, the weights are determined based on the distribution of respondents' answers to special questionnaire

questions reflecting individual elements of self-preservation behavior (*Tab. 4*). According to the provisions of the probability theory, each "node" of decision-making equals 1, therefore, each "branch" acquires a certain weight expressed in unit fractions.

The prevalence of models of self-preservation behavior, i.e. the share of each model in their total number, is calculated through multiplying the weights of all "branches" of decision-making to final "nodes" (see Fig. 1):

$$\omega = X \cdot X1 \cdot X1' \cdot ... \cdot 100\% \quad ,$$

where ω is prevalence of a model, *X, X1, X1'* are weights of the decision-making tree branches (%).

The limitations of the method of subjective assessments include the possible of distortion of information provided by the respondents under the influence of factors such as the quality of a questionnaire, professionalism of an interviewer, time and place of a survey, quality of the procedure itself, etc. This should be taken into account when interpreting the results of a sociological study [27]. Despite these disadvantages the method is considered reliable and is recommended by the WHO for monitoring the population's health status as an additional tool for assessing public health [28, p. 51]. Data of sociological surveys make it possible to analyze the characteristics of people's self-preservation behavior, their individual strategies, driving motives and factors.

Designing individual strategies of self-preservation behavior will help identify risk factors of population's unhealthy condition and further assess the possibility of their management influence, which, through a number of special measures, will contribute to the provision of desirable parameters of population quality, and consequently, reproduction process.

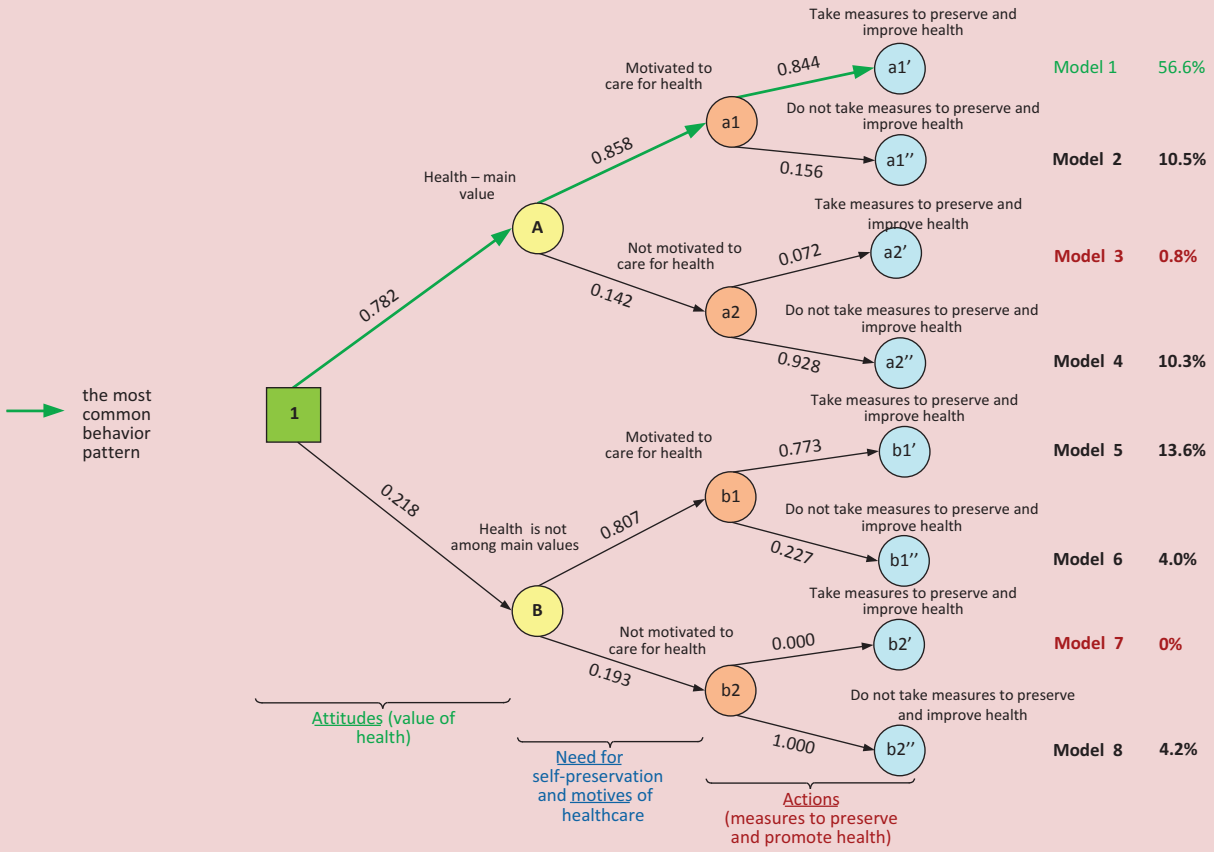
Research results

The study is based on data of a stage of monitoring the physical health of the population in the Vologda Oblast conducted by the Vologda Research Center of the Russian Academy of Sciences in 20165. The monitoring study has been carried out in the region since 2002 in order to identify the key factors in public health including the parameters of people's self-preservation behavior, in particular, the level of physical and medical activity, diet, balance of work and rest, presence of bad habits in everyday life, as well as assessment of availability and quality of healthcare services, and living conditions (environmental, housing, labor).

Constructing the "decision tree" has helped identify eight possible variants of models of self-preservation behavior *(Fig. 2)*. As it turned out, the most common strategy among the population of the Vologda Oblast is characterized by recognizing health as the main value, motivation to care for health and implementation of measures to promote health (57%). However, 14% of respondents care for their health and take certain actions although health is not part of their life values (model 5). Nevertheless, 11% of respondents, despite the fact that they understand the value of their own health and

[5] Monitoring physical health of the population in the Vologda Oblast is carried out in the cities of Vologda, Cherepovets, and eight municipal districts of the Vologda Oblast. The target quota sample size – 1500 respondents. The sample representativeness is ensured by the following conditions: the proportion between urban and rural population, the proportion between residents of different types of settlements (rural settlements, small and medium cities), proportions of the age and sex structure of adult population in the region. The sample error is less than 5%. Technical processing of information is conducted through SPSS and Excel.

Figure 2. Models of self-preservation behavior of the population in the Vologda Oblast



Source: compiled by the author according to the monitoring data on physical health of the population of the Vologda Oblast in 2016.

are motivated to care for it, do not implement any health preserving measures (model 2). 10% of respondents combine the importance of health with lack of motivation for a healthy lifestyle and special self-preservation actions (model 4).

Other behavior patterns were less common. 4% of respondents are characterized by the most unfavorable model 8: health is not considered the main value, there are no incentives and practices of to preserve health. It is noteworthy that the surveyed population do not demonstrate a fixed strategy of individual's behavior where they use measures to promote and preserve health but do not value it and are not motivated to promote it.

Next consider the correlation between behavioral determinants and the components of self-preservation. Currently the main causes of the most common non-communicable diseases (cardiovascular, cancer, chronic respiratory and diabetes) are preventable behavioral risk factors such like *tobacco use, lack of physical activity, poor diet and alcohol abuse*. They cause four main metabolic (physiological) changes: high blood pressure, overweight (obesity), hyperglycemia, and hyperlipidemia [29, C.]. 13].

According to data of the sociological survey, among the residents in the Vologda Oblast who do not consider health one of key life values compared with people who consider it a value,

Table 5. Correlation of key risk factors with components of self-preservation behavior

Risk factors	Value of health		Motivation to care for health		Measures to preserve and promote health	
	Health is the main value	Health is not among main values	Motivated	Not motivated	Taken	Not taken
Alcohol						
Drink	62.2	***69.7***	60.7	***81.2***	59.2	***75.3***
Do not drink	***37.8***	30.3	***39.3***	18.8	***40.8***	24.7
Smoking						
Smokers	28.8	***41.3***	26.0	***62.4***	21.7	***55.8***
Non-smokers	***71.2***	58.7	***74.0***	37.6	***78.3***	44.2
Physical activity						
1. Walking for more than 30 minutes						
Every day or several days a week	***79.5***	62.5	***78.4***	61.8	***80.9***	63.3
Rarely (several times a month)	6.3	9.9	7.1	7.0	6.9	7.4
No	14.2	***27.6***	14.6	***31.1***	12.2	***29.3***
2. Physical education and sports						
Every day or several days a week	17.5	22.9	***21.6***	2.6	***24.1***	5.2
Rarely (several times a month)	10.4	11.1	11.3	6.2	11.8	7.5
No	72.2	66.0	67.1	***91.2***	64.1	***87.3***
3. Running						
Every day or several days a week	7.1	8.5	***8.5***	1.3	***9.4***	2.6
Rarely (several times a month)	7.0	9.5	8.5	2.2	8.4	5.4
No	85.9	82.0	82.9	***96.5***	82.2	***92.0***
4. Morning exercises						
Every day or several days a week	***20.5***	16.1	***22.5***	3.5	***25.8***	4.2
Rarely (several times a month)	10.9	13.9	13.4	1.3	13.8	5.9
No	68.7	***70.0***	64.2	***95.2***	60.4	***89.9***
Diet						
Keep to a healthy diet	***72.2***	61.8	***77.5***	27.9	***84.3***	34.6
Do not keep to a healthy diet	27.8	***38.2***	22.5	***72.1***	15.7	***65.4***

Source: data of monitoring study of physical health of the population in the Vologda Oblast in 2016.

the share of those who drink alcohol (70% against 62%), smoke (41% against 29%), do not keep to a proper diet (38% against 28%), and do not walk for more than 30 minutes (28% against 14%; *Tab. 5*) is higher.

Among the respondents who are not motivated to care for health, compared with motivated people, the share of those who drink alcohol (81% against 61%), smoke (62% against 26%), do not keep to a proper diet (72% against 23%) and do not engage in basic physical activity: walking for more than 30 minutes (31% against 15%), physical education and sports (91% against 67%), running (97% against 83%), morning exercises (95% against 64%) is also significantly higher.

Naturally, respondents who do not take any measures to preserve and strengthen their health are more likely to drink alcohol (75% against 59%) and smoke (56% against 22%) compared to those who take measures; they are much more likely to ignore any healthy eating diet (65% against 16%) and all types of physical activity (walking – 29% against 12%,

physical education and sports – 87% against 64%, running – 92% against 82%, morning exercises – 90% against 60%).

Thus, the absence of health in the system of life values, low motivation, passive use of self-preservation measures contribute to the fact that destructive health-related behavioral patterns become widespread: alcohol abuse, smoking, malnutrition and low physical activity. 21% of respondents do not see health as one of their life priorities, 15% – are not motivated to live healthy lives, and 29% – do not take any action to preserve and promote their health.

Based on the revealed specific features of self-preservation behavior of the Vologda Oblast residents we believe it is appropriate to introduce the measures to reduce behavioral risk factors, preserve and promote health, which are aimed at increasing the value of health, the population's motivation to lead a healthy lifestyle, and applying health preserving measures. These include the following:

1. Development and implementation of a target regional program for behavioral risk factors prevention: such activities should be focused on different models of self-preservation behavior.

2. Introduction of a monitoring system of self-preservation behavior of the population in a region in the framework of implementing the target program of behavioral risk factors prevention for a number of SPB indicators: self-reported health, assessment of importance of health factors, the place of health in the system of values, motivation to lead a healthy lifestyle, measures to preserve and promote health, physical activity, nutrition, bad habits.

3. Raising population's awareness through the media of the importance of preserving and promoting health, the impact of negative risk factors on health and the ways to avoid them. Due to the increasing role of social networks and blogosphere in promoting public information, including health-related topics [30], their use as tools for forming self-preservation attitudes and practices among the residents of the region seems promising.

4. Development and implementation of educational programs aimed to form a responsible attitude to health, a healthy lifestyle and prevent behavioral risk factors in the programs of educational institutions (preschool, schools, secondary vocational and higher educational institutions).

5. Engaging public organizations in activities in the sphere of public health and accounting of public initiatives.

6. Engaging population in physical activities, tourism and sports, recreation and leisure activities, prevention of health risk factors through specialized mass events at the regional and municipal level. At the same time, the systematic approach nature to these activities is of fundamental importance.

Conclusion. The study has led to a number of important conclusions.

First, the most reasoned theoretical and methodological approach to studying self-preservation behavior of the population is the socio-demographic approach which, on the one hand, uses the principles of social psychology in the content of SPB components (needs, attitudes, motives, actions), on the other hand, recognizes self-preservation behavior as part of demographic behavior that determines the performance of the processes of fertility and mortality.

Second, the existing scientific approaches to constructing the models of self-preservation behavior take into account all or some of its elements, but not always consider them in a single system.

Third, the proposed method of decision tree for constructing models of self-preservation behavior, which covers all its structural components, namely attitudes, motives, needs, and practices of healthy lifestyle, helps track the self-preservation strategies formed among the population.

Fourth, 57% of people in the Vologda Oblast demonstrate an SPB model characterized by recognizing health as the main value, motivation to care for it and use of health-saving measures. However, other models contain certain behavioral risks. Thus, 21% of respondents do not see health as one of their life priorities, 15% – are not motivated to live healthy lives, and 29% – do not take any action to preserve and promote their health.

Fifth, absence of health in the system of life values, low motivation to care for it, passive use of self-preservation measures are directly related to the spread of self-destructive practices such as alcohol abuse, smoking, malnutrition and low physical activity.

Despite the fact that the objectives set at this stage of the study have been implemented, there are still issues to be addressed: what are the strategies of population's behavior taking into account the implementation of specific self-preservation practices; what is the difference between SPB models of various socio-demographic population groups; what are the possibilities of management influence on each of them. The next stage of monitoring study of physical health of the population in the Vologda Oblast is planned for 2018. The results will help deepen the study through a more detailed study of models of self-preservation behavior at the level of individual population groups, expanding the range of behavioral risk factors under study.

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PUBLIC OPINION MONITORING

Public Opinion Monitoring of the State of the Russian Society

As in the previous issues, we publish the results of the monitoring of public opinion concerning the state of the Russian society conducted by VolRC RAS in the Vologda Oblast[1].

The following tables show the dynamics of several parameters indicating the social feeling and socio-political sentiment of the Vologda Oblast population in April – June 2018, and also on average for the latest six polls (August 2017 – June 2018). These data are compared with the data for 2007 (the last year of Vladimir Putin's second presidential term, when the assessment of the President's work was the highest) and for 2011 (the last year of Dmitry Medvedev's presidency). The yearly dynamics of the data are presented beginning from 2014.

In February – April 2018, the level of approval of the work of the President of the Russian Federation did not change and was 70%, which corresponds to an average annual indicator for 2015–2017. The share of negative evaluations of the President's work is 18%, which is lower than at the beginning of the year (21%).

The level of support of the work of the Chairman of the Government of the Russian Federation for the past two months also did not change: the share of positive assessments is 52% (which corresponds to the level of 2016–2017), the share of negative assessments is 28% (lower that in February 2018 (31%)).

For reference: according to VTsIOM, the share of positive assessments of the President's work nationwide amounted to 81% in April – May 2018 (the share of negative judgments was 11–12%). In the first half of June, VTsIOM recorded a significant decrease in the level of support for the head of state: the share of positive assessments decreased by 4 p.p. (from 81 to 77%), the share of negative assessments increased by 2 p.p. (from 12 to 14%).

According to Levada-Center, the proportion of positive assessments of the President's work decreased by 3 p.p. in April – May (from 82 to 79%), the share of negative assessments increased by 3 p.p. (from 17 to 20%).

[1] The polls are held six times a year in Vologda, Cherepovets, and in eight districts of the oblast (Babayevsky District, Velikoustyugsky District, Vozhegodsky District, Gryazovetsky District, Kirillovsky District, Nikolsky District, Tarnogsky District and Sheksninsky District). The method of the survey is a questionnaire poll by place of residence of respondents. The volume of a sample population is 1,500 people 18 years of age and older. The sample is purposeful and quoted. The representativeness of the sample is ensured by the observance of the proportions between the urban and rural population, the proportions between the inhabitants of settlements of various types (rural communities, small and medium-sized cities), age and sex structure of the Oblast's adult population. Sampling error does not exceed 3%.

More information on the results of VolRC RAS polls is available at http://www.vscc.ac.ru/.

How do you assess the current performance of..? (percentage of respondents)

Answer	2007	2011	2014	2015	2016	2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Apr. 2018	June 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to …		
														2017	2011	2007
RF President																
I approve	75.3	58.7	64.1	69.1	67.8	67.3	69.7	68.3	68.9	68.7	68.1	70.1	69.0	+2	+10	-6
I don't approve	11.5	25.6	22.3	17.5	18.8	20.0	17.3	19.4	19.3	20.8	18.4	17.5	18.8	-1	-7	+7
Chairman of the RF Government*																
I approve	-*	59.3	54.2	58.1	52.3	49.5	49.7	51.5	49.9	48.3	49.9	52.0	50.2	+1	-9	-
I don't approve	-	24.7	27.6	21.7	27.6	31.1	30.9	29.9	31.3	30.8	27.8	27.5	29.7	-1	+5	-
Governor																
I approve	55.8	45.7	40.1	39.3	37.7	39.8	42.3	40.8	39.4	39.3	39.5	40.5	40.3	+1	-5	-16
I don't approve	22.2	30.5	38.9	36.2	39.3	39.3	38.7	39.2	40.1	37.9	36.1	35.3	37.9	-1	+7	+16

* Included in the survey since 2008.

In April – June 2018, there were no changes in Vologda Oblast residents' assessments of success of the President's work on addressing key problems of the country:

– 55–56% of respondents consider as successful his actions to strengthen Russia's international position and restore order in the country;

– 43% positively assess his work on protecting democracy and strengthening citizens' freedoms;

– 32% approve his work aimed to raise the economy and enhance the welfare of citizens.

On most key issues (except strengthening Russia's international positions), the opinions of Vologda Oblast residents in the middle of 2018 are slightly better than the average for 2017 (by 3–4 p.p.).

In your opinion, how successful is the RF President in coping with challenging issues?*
(percentage of respondents)

Answer	2007	2011	2014	2015	2016	2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Apr. 2018	June 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to …		
														2017	2011	2007
Strengthening Russia's international standing																
Successful	58.4	46.2	50.4	51.7	51.2	55.7	58.1	57.6	56.5	55.2	56.1	55.6	56.5	+1	+10	-2
Unsuccessful	24.9	33.7	32.4	31.3	29.9	26.8	26.1	26.3	28.3	26.9	26.9	26.7	26.9	0	-7	+2
Success index	*133.5*	*112.5*	*118.0*	*120.4*	*121.3*	*129.0*	*132.0*	*131.3*	*128.3*	*128.3*	*129.2*	*128.9*	*129.7*	*+1*	*+17*	*-4*
Imposing order in the country																
Successful	53.2	36.6	48.0	50.2	49.2	50.6	52.0	52.7	52.0	50.9	54.2	55.1	52.8	+2	+16	0
Unsuccessful	34.0	50.0	39.1	37.9	36.7	36.1	35.6	35.1	34.6	32.7	30.8	32.9	33.6	-2	-16	0
Success index	*119.2*	*86.6*	*108.9*	*112.3*	*112.6*	*114.5*	*116.4*	*117.6*	*117.4*	*118.2*	*123.4*	*122.2*	*119.2*	*+5*	*+33*	*0*
Protecting democracy and strengthening citizens' freedoms																
Successful	44.4	32.4	37.5	40.4	36.6	40.3	41.7	42.5	43.3	42.8	42.9	43.4	42.8	+2	+10	-2
Unsuccessful	37.0	48.3	45.4	41.5	44.3	40.2	38.8	38.3	39.3	38.7	37.1	38.1	38.4	-2	-10	+1
Success index	*107.4*	*84.1*	*92.1*	*99.0*	*92.3*	*100.2*	*102.9*	*104.2*	*103.9*	*104.1*	*105.8*	*105.3*	*104.4*	*+4*	*+20*	*-3*
Economic recovery and increase in citizens' welfare																
Successful	47.2	30.7	34.8	34.2	27.2	29.3	31.3	32.3	31.6	31.0	31.3	32.3	31.6	+2	+1	-16
Unsuccessful	39.1	56.1	53.4	52.3	59.4	56.9	55.9	55.3	56.3	53.7	55.3	55.2	55.3	-2	-1	+16
Success index	*108.1*	*74.6*	*81.4*	*81.8*	*67.8*	*72.4*	*75.4*	*77.0*	*75.3*	*77.3*	*76.0*	*77.1*	*76.4*	*+4*	*+2*	*-32*

* Ranked according to the average value of the index of success for 2016.

The structure of Vologda Oblast residents' preferences concerning political parties did not change significantly for the entire period of February – June 2018: the United Russia party is on top (38–40%), LDPR and KPRF are supported by 7–10%, the Just Russia party – by 2–4%.

We should point out that in June 2018 (compared to February 2018 and also to the average for 2017) there was a decline in the proportion of those who believe that none of the major political parties expresses their interests (by 3 p.p., from 30 to 27%).

Which party expresses your interests? (percentage of respondents)

Party	2007	Election to the RF State Duma 2007, fact	2011	Election to the RF State Duma 2011, fact	2014	2015	2016	Election to the RF State Duma 2016, fact	2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Apr. 2018	June 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to …		
																	2017	2011	2007
United Russia	30.2	60.5	31.1	33.4	32.8	38.8	35.4	38.0	34.7	35.2	35.6	37.9	38.4	39.7	38.9	37.6	+3	+7	+7
LDPR	7.5	11.0	7.8	15.4	7.6	6.2	10.4	21.9	11.0	10.9	11.5	11.6	10.1	9.6	9.7	10.6	0	+3	+3
KPRF	7.0	9.3	10.3	16.8	9.7	7.1	8.3	14.2	7.6	8.0	7.3	8.1	7.1	8.1	8.7	7.9	0	-2	+1
Just Russia	7.8	8.8	5.6	27.2	3.5	3.6	4.2	10.8	4.8	5.8	4.5	4.3	3.5	2.5	2.3	3.8	-1	-2	-4
Other	1.8	–	1.9	–	0.3	0.2	0.3	–	0.5	0.4	0.8	1.1	0.9	1.2	0.5	0.8	0	-1	-1
None	17.8	–	29.4	–	34.4	31.8	29.4	–	29.2	26.1	26.2	28.5	28.8	26.2	26.7	27.1	-2	-2	+9
It's difficult to answer	21.2	–	13.2	–	11.7	12.2	12.0	–	12.2	13.7	14.1	8.6	11.1	12.7	13.3	12.3	0	-1	-9

In April – June 2018, the share of positive assessments of social mood was 72–73%, which is slightly higher than at the beginning of the year and the average for 2017 (69–70%).

In addition, over the last two months, the proportion of those who believe that "everything is not so bad; it's difficult to live, but it's possible to stand it" decreased slightly for the past two months from 79 to 77%; however, in general it corresponds to the indicators of February 2018 and the average annual data for 2017 (77–78%).

The structure of people's social self-identification remains stable: the proportion of people who subjectively consider themselves to have "average income" is 43%; the share of "the poor and extremely poor" is slightly higher: 45–46%.

It is necessary to point out a gradual growth of the consumer sentiment index (CSI), indicating an improvement in people's forecasts regarding the prospects of the economic situation in the country and their own financial situation. On average, the CSI was 85 points in 2017, 89 p. in early 2018, and 92 p. in June 2018. Thus, the positive trend of increasing the share of people's optimistic forecasts is obvious, although its pace remains minimal and, in fact, the CSI still remains below 100 points, which indicates the predominance of pessimistic judgments about the prospects of their financial situation.

Estimation of social condition (percentage of respondents)

Answer	2007	2011	2014	2015	2016	2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Apr. 2018	June 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to …		
														2017	2011	2007
Mood																
Usual condition, good mood	63.6	63.1	69.4	68.7	68.0	70.4	73.8	71.0	70.5	68.6	71.5	72.5	71.3	+1	+8	+8
I feel stress, anger, fear, depression	27.8	28.9	24.9	25.9	26.2	24.2	21.2	22.8	24.0	23.4	23.1	22.8	22.9	-1	-6	-5
Stock of patience																
Everything is not so bad; it's difficult to live, but it's possible to stand it	74.1	74.8	80.8	78.4	78.0	77.7	80.5	74.4	77.1	76.2	79.0	76.5	77.3	0	+2	+3
It's impossible to bear such plight	13.6	15.3	12.6	14.5	15.6	15.8	13.5	17.5	16.2	16.3	14.8	16.6	15.8	0	+1	+2
Social self-identification*																
The share of people who consider themselves to have average income	48.2	43.1	43.2	38.7	42.1	43.1	45.2	43.0	41.7	41.2	41.8	43.1	42.7	0	0	-6
The share of people who consider themselves to be poor and extremely poor	42.4	44.3	49.1	50.7	49.0	46.6	45.8	48.8	47.1	46.2	46.5	45.3	46.6	0	+2	+4
Consumer sentiment index																
Index value, points	105.9	89.6	87.6	77.1	77.7	84.6	86.2	86.7	87.3	89.2	90.3	92.2	88.7	+4	-1	-17

* Question: "Which category do you belong to, in your opinion?"

In the context of the main socio-demographic groups, there were no significant changes in the dynamics of positive assessments of social sentiment in the last two months. At the same time, it is noteworthy that, compared with the beginning of the year, the assessments of social sentiment slightly improved (by 3–7 p.p.). in almost all socio-demographic groups (except for people over 55 years of age, people with higher and incomplete higher education, and 20% of the most well-off residents of the Vologda Oblast). And the positive changes over the past six months were especially significant among the people who according to self-assessments of their well-being belong to the category of the bottom 20% of Vologda Oblast residents (from February to June, the share of positive assessments in this group increased by 12 p.p.., from 48 to 60%).

Social mood in different social groups (answer: "Good mood, normal condition", percentage of respondents)

Population group	2007	2011	2014	2015	2016	2017	Aug. 2017	Oct. 2017	Dec. 2017	Feb. 2018	Apr. 2018	June 2018	Average for the latest 6 surveys	Dynamics (+/-), the latest 6 surveys compared to …		
														2017	2011	2007
Sex																
Men	65.9	64.5	68.9	69.5	68.8	70.6	74.6	71.3	70.8	71.0	73.4	74.5	72.6	+2	+8	+7
Women	61.7	62.0	69.8	68.0	67.4	70.2	73.1	70.8	70.3	66.6	70.0	70.9	70.3	0	+8	+9
Age																
Under 30	71.3	70.0	75.1	77.1	76.4	78.1	80.1	79.4	82.2	74.2	79.6	81.3	79.5	+1	+9	+8
30-55	64.8	62.5	69.5	67.2	67.4	71.5	75.9	71.4	73.1	68.8	74.0	75.1	73.1	+2	+11	+8
Over 55	54.8	58.3	65.4	65.5	64.0	64.9	67.8	66.4	61.4	65.6	64.2	64.7	65.0	0	+7	+10
Education																
Secondary and incomplete secondary	58.4	57.4	62.5	63.6	62.1	63.6	65.2	63.3	61.2	60.5	65.5	64.8	63.4	0	+6	+5
Secondary vocational	64.6	63.6	70.4	70.1	68.4	72.0	76.7	73.3	75.0	68.9	72.7	74.9	73.6	+2	+10	+9
Higher and incomplete higher	68.6	68.3	76.2	72.7	74.3	75.8	79.1	77.1	75.6	77.9	76.2	77.4	77.2	+1	+9	+9
Income groups																
Bottom 20%	51.6	45.3	50.8	51.8	52.5	52.9	58.1	57.9	50.7	47.7	61.8	59.6	56.0	+3	+11	+4
Middle 60%	62.9	65.3	72.3	71.0	69.4	72.0	73.7	71.7	72.0	70.3	71.7	73.4	72.1	0	+7	+9
Top 20%	74.9	75.3	84.8	82.0	80.9	83.7	86.4	82.1	86.2	82.2	81.5	82.5	83.5	0	+8	+9
Territories																
Vologda	63.1	67.1	76.4	73.9	69.9	72.6	77.0	74.0	72.2	71.0	73.5	75.4	73.9	+1	+7	+11
Cherepovets	68.1	71.2	76.3	70.6	71.7	75.7	77.9	76.9	75.2	71.5	75.0	76.7	75.5	0	+4	+7
Districts	61.6	57.1	61.8	64.6	64.8	66.1	69.7	66.1	66.9	65.6	68.3	68.6	67.5	+1	+10	+6
Oblast	63.6	63.1	69.4	68.7	68.0	70.4	73.8	71.1	70.5	68.6	71.5	72.5	71.3	+1	+8	+8

Conclusion

The results of the monitoring of public opinion show a relatively favorable backdrop of public sentiment in the first half of 2018. The assessments of the work of the President, the Chairman of the Government and the United Russia party which has a constitutional majority in the State Duma remain stable. There is a high proportion of people who positively characterize their daily emotional state; the consumer sentiment index is gradually increasing, which indicates an improvement in expectations concerning the future of the Russian economy and people's personal financial situation.

Obviously, positive background of public opinion is connected with the beginning of a new political season. The benchmarks of state policy set out by the President for the nearest six years, as well as the mobilization nature of their implementation, are supported by the assessments of public opinion, despite the fact that 47% of Russians do not believe in the possibility of realization of the tasks contained in the Presidential Address to the Federal Assembly[2]. "When Putin at his inauguration said that we are waiting for decisive changes and that he intends to deal with internal problems – primarily socio-economic, rather than external ones, he hit the spot"[3].

At the same time, it should be noted that this stage of VolRC RAS monitoring of public opinion was held before the beginning of June, that is, before the media spoke about the draft pension reform, which is not approved by (92% of Russians according to Romir Research Holding)[4]; and a corresponding petition to the President, prepared by the All-Russian Association of Trade Unions of the Confederation of Labor of Russia, was signed by more than two million people[5].

Beginning from July 1, 2018, in the Vologda Oblast the amount of contribution to the major repairs of apartment buildings will be raised[6]; alcohol prices can be raised[7], as well as the fees for the issuance of passports and driver's licenses[8] – all these, to put it mildly, "unpopular" measures can undermining people's trust in the government, including the President, who nominated Dmitry Medvedev for the post of prime minister. It is no coincidence that, according to VTsIOM, the level of support of the head of state in the first half of June compared to May 2018 has decreased quite significantly (by 4 p.p., from 81 to 77%).

According to experts, "the real reason is related to the need to find additional sources of funding for the budget. The implementation of the President's May Decrees in which a very significant part is related to socially significant programs that require additional funding suggests a noticeable (according to estimates voiced by Dmitry Medvedev – about eight trillion rubles) increase in budget revenues. We recall that the previous May 2012 Decrees of the President were safely "forgotten" for six years (one-time payments to public sector employees in January – February of this year before the presidential election do not count). It is clear that if the new May Decrees of 2018 are not executed, then it may lead to a growing social tension, dissatisfaction with the

[2] *Presidential Address to the Federal Assembly: first impressions: VTsIOM press release*, 2018, no. 3602, March 13. Available at: https://wciom.ru/index.php?id=236&uid=116743

[3] Fedorov V.V. The main front is here and not in Syria or Ukraine. *Analytics of VTsIOM experts*. Available at: https://wciom.ru/index.php?id=238&uid=9149

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[8] Getting an international passport will cost five thousand rubles: why it is so expensive. *Moskovsky Komsomolets,* 2018, June 19. Available at: http://www.mk.ru/social/2018/06/19/oformlenie-zagranpasporta-oboydetsya-v-5-tysyach-rubley-pochemu-tak-dorogo.html

leadership of the country, the emergence of protest actions, etc. People would inevitably remind those in power about the previous May Decrees. That is why such importance is attached to the implementation of the President's May Decrees announced this year. In order to their position, the authorities must ensure successful implementation of at least a visible part of at least the most important social points of these Decrees. At the same time, there are clearly not enough financial resources for their implementation. For this reason, the authorities began to take a number of measures aimed at finding additional funds to replenish the budget in order to be later redistributed to the relevant socially oriented issues and returned back to the economy in an already targeted way… Here we are talking about the redistribution of resources from the entire population to specific recipients by transferring cash flows to socially important areas. In general, these actions will not have a positive impact on the growth rate of the country's economy, despite the assurances of individual leaders that raising the taxes, duties and deductions will lead to a corresponding increase in GDP. It should be understood that in the absence of significant foreign investment, the country's economy is a closed system with a certain "volume and weight"… All redistribution takes place within the system, without affecting its volume and weight"[9].

Thus, the steps taken by the Government are aimed at the implementation of the May 2018 Decrees, but they do not contribute either to the recovery of the economy as a whole, or to overcoming "the main threat and our main enemy – the fact that we are falling behind"[10]; nor do they help strengthen social stability in the country, without which there will be no "decisive breakthrough"[11], especially in the "efforts to preserve the people of Russia and to guarantee the prosperity of our citizens"[12].

At the inauguration ceremony, V. Putin pointed out that "We don't have time for a slow start"[13]. Today's government bills are emerging in this very mode, against the background of the 2018 FIFA World Cup, which is taking place in Russia… However, the vector of movement set by the Cabinet of Ministers shows that the chances that in the near future we will see the continuation of favorable trends in public opinion are illusory.

The materials were prepared by M.V. Morev, I.V. Paranicheva, I.M. Bakhvalova.

[9] *Ibidem* (Opinion of Finam analyst A. Korenev).

[10] Address of the President to the Federal Assembly of the Russian Federation, March 1, 2018. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/56957

[11] *Ibidem*.

[12] *Ibidem*.

[13] V.V. Putin's inauguration speech, May 7, 2018. *Official website of the President of the Russian Federation*. Available at: http://www.kremlin.ru/events/president/news/57416

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[1] Information about the modified Harvard standard is given in the book: Kirillova O.V. *Redaktsionnaya podgotovka nauchnykh zhurnalov po mezhdunarodnym standartam: rekomendatsii eksperta BD Scopus* [Editorial Preparation of Scientific Journals according to International Standards: Recommendations of a Scopus Expert]. Moscow, 2013. Part 1. 90 p.

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