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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.

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In 2017 the socio-economic research was supplemented by agricultural issues. ISED T RAS was joined by the Northwestern Dairy and Grassland Farming Research Institute, and was reorganized into the Vologda Research Center of the Russian Academy of Sciences.

In 2019 the Center continued expanding having launched the Laboratory of Bioeconomics and Sustainable Development within the framework of the national project “Science”. The Laboratory is engaged in scientific research aimed at introducing biotechnologies into the practice of agriculture.

The VoIRC RAS Director is Aleksandra A. Shabunova (Doctor of Economics). The Academic Leader of the Center is Vladimir A. Ilyin (RAS Corresponding Member, Doctor of Economics, Professor, Honored Worker of Science of the Russian Federation).

MAIN RESEARCH DIRECTIONS

In accordance with the Charter, the Vologda Research Center carries out fundamental, exploratory and applied research 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;
- development of scientifically based systems of dairy cattle breeding in the conditions of the North-Western region of Russia;
- development of new breeding methods, methods and programs for improving breeding work with cattle;
- development of scientifically based feed production systems, norms, rations and feeding systems for cattle in the conditions of the North-Western region of Russia;

- development of zonal technologies for the cultivation of agricultural crops;
- development of technologies for the creation, improvement and rational use of hayfields and pastures in the conditions of the North-Western region of Russia;
- development of technologies and technical means for agricultural production in the North-Western region of Russia;
- assessment of biodiversity in the North-Western region of Russia;
- development and implementation of biotechnologies in agricultural production;
- improvement of breeding methods and creation of new varieties of forage crops.

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VoIRC RAS is actively developing its international activities. It is involved in joint international grant projects and regularly holds international conferences and workshops. The Center has Cooperation agreements and Memoranda of understanding with research organizations:

2007 – Cooperation agreement is signed with the 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 – Memorandum of agreement 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 the Institute of Economics of the National Academy of Sciences of Belarus (Minsk, Belarus, 2010).

2011 – Cooperation agreements are signed with National Institute of Oriental Languages and Civilizations (Paris, France, 2011), Institute of Business Economy at Eszterhazy Karoly College (Hungary, 2011), Republican research and production unitary enterprise “Energy Institute of NAS” (Belarus, 2011). Memoranda of understanding 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 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2013). July 2013 – The application for research performance by international consortium involving ISED T RAS within the 7th Framework Programme of European Community.

2014 – Cooperation agreement is signed with Center for System Analysis and Strategic Research of the National Academy of Sciences of Belarus (Belarus, 2014). Memoranda of understanding are signed with Jiangxi Academy of Social Sciences (Mao Zhiyong, China, 2014), National Institute for Oriental Studies INALCO (Julien Vercueil, France, 2014).

2015 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2015). Cooperation agreement is signed with the Institute of Sociology of the National Academy of Sciences of Belarus (Belarus, 2015).

2016 – Cooperation agreements are signed with the Center for the Study of Industrialization Modes of the School of Advanced Studies in the Social Sciences (EHESS) (Paris, France, 2016); Institute of Philosophy, Sociology and Law of NAS RA (Yerevan, Armenia, 2016); Yerevan Northern University (Armenia, 2016), Yerevan State University (Armenia, 2016). Memoranda of understanding are signed with Jiangxi Academy of Social Sciences (China, 2016).

2018 – Cooperation agreements are signed with the Department of Agrarian Sciences of the National Academy of Sciences of Belarus (Belarus, 2018); the Republican Unitary Enterprise “Scientific and Practical Center of the National Academy of Sciences of Belarus for Agricultural Mechanization” (Belarus, 2018). Memorandum of understanding is signed with the European School of Social Innovation (ESSI) (Germany, 2018).

2019 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2019).

2020 – Memorandum of understanding is signed with Jiangxi Academy of Social Sciences (China, 2020).

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Evolving Threats to National Security



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Abstract. June 13, 2023, the President of the Russian Federation held a meeting with war correspondents, at which the following most pressing issues were discussed: the situation on the front line, the state of the Russian military-industrial complex, the effectiveness of personnel “elevators” of the public administration system and many others. The head of state’s public assessment of key aspects of the situation in the country was, among other things, “psychotherapeutic”, which was due to the increase in threats to national security, primarily military and even terrorist: the attack of drones on residential areas of Moscow on May 30, 2023, the beginning of counteroffensive on June 4 by the Armed Forces of Ukraine, the explosion of the dam at the Kakhovka hydroelectric power plant on the night of June 5 to 6, etc. In the course of communication with war correspondents, the President had more than once to admit mistakes and shortcomings in the system of public administration that have accumulated over the past 30 years, primarily due to the presence of a significant part of the elites who are guided by private rather than national interests. Today, work on correcting these mistakes is already underway in forced, extreme

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conditions caused by the nature of the actual wartime. But in order for this process to be effective, so that it gives a real result, it is necessary, as many experts note, to comply with a number of conditions: the political will of the head of state; the unity of society, elites and the President around the nationally oriented agenda of a special military operation; people's awareness of the scale of threats to national security. The article analyzes the key events of recent months (May – June 2023). As an information base, we refer to the assessments of the expert community, official reports of the Ministry of Defense of the Russian Federation, decrees of the President of the Russian Federation, the results of all-Russian and regional sociological surveys, etc.

Key words: special military operation, President of the Russian Federation, threats to national security, public administration system, society, elites.

The special military operation has been going on for 17 months¹. During this period, Russia continued to face a concerted attempt by the Collective West to “tear the Russian economy to shreds”², with necessary tactical retreats on the battlefield³, with organizational “muddle-headedness”⁴, which, apparently, had been accumulating for a long time, but spilled out and stirred up a significant part of society during the partial mobilization.

Today, the prospects for the development of the Russian economy are increasingly associated with the development of the domestic market and cooperation with other countries; as for the qualitative positive changes in the armed forces of the Russian Federation (in management, equipment, tactical training, etc.), even the Western media were forced to admit that they are emerging, as compared to the situation in September 2022.

Bloomberg: “Ideas about the weakness of the Russian army are either outdated or simply erroneous. Moscow has changed tactics and upgraded weapons, and the West could have missed this fact...”⁵

New York Times: “The Russian Army has brought discipline, coordination and air support to a new level... the command of the Russian Armed Forces learns from its mistakes”⁶.

And, perhaps, the main conclusion that Russia has drawn in the course of the SMO is a shift in the semantic accents that characterize the conflict that began on February 24, 2022: what was announced by the Supreme Commander-in-Chief on February 24, 2022 as a “special military operation... to protect people from the genocide of the Kiev regime”⁷, today, is increasingly supplemented with a new meaning – this is a “real war” against the West for the preservation of the Motherland.

¹ At the time of writing this article – from February 2022 to June 2023.

² Quote from the speech of the head of the European Commission Ursula von der Leyen on September 14, 2022. Available at: <https://www.vesti.ru/article/2941494>

³ In particular, in September 2022, in the Kharkov direction for the sake of preserving the personnel and combat capability of the army.

⁴ President's speech at a meeting with elected heads of regions. Available at: <http://www.kremlin.ru/events/president/news/69567>

⁵ Bloomberg: The Russian army has changed its SMO tactics and upgraded weapons. Available at: <https://www.bfm.ru/news/525726?ysclid=lj85gdugw563712664>

⁶ New York Times: The Russian army has learned from its mistakes by changing its tactics for the AFU counteroffensive. Available at: <https://ruposters.ru/news/18-06-2023/rossiiskaya-armiya-viuchilas-svoih-oshibkah-izmeniv-taktiku>

⁷ Vladimir Putin's address to Russians on February 24, 2022 (on the announcement of the beginning of the SMO). Available at: <http://www.kremlin.ru/events/president/news/67843>

“A real war is being waged against our country again but we have countered international terrorism and will defend the people of Donbass and safeguard our security. ...

Their [Western globalist elites] goal – and there is nothing new about it – is to break apart and destroy our country, to make null and void the outcomes of World War II, to completely break down the system of global security and international law, to choke off any sovereign centers of development”⁸.

Threats to national security continue to grow. All the “red lines” have long been crossed; the Collective West is supplying the Kiev regime with tanks and long-range cruise missiles; many experts openly analyze tactical options for expanding the conflict zone to the territories of NATO countries⁹.

On June 13, 2023, the President held a meeting with war correspondents, at which the main results of

the entire period that has passed since the beginning of the SMO were summed up. The expediency of this event was largely due to the course of events in recent months, or rather, **the increase in threats of a military and even terrorist nature.**

Not only in the border territories, but also inside Russia, the “Kiev regime” with the coordination of NATO specialists carries out terrorist attacks against specific Russians – active public figures¹² and heads of regional administrations¹³.

According to the FSB Director A. Bortnikov, in 2022 the activities of **68 clandestine terrorist cells were suppressed on the territory of Russia; 64 terrorist attacks were prevented**¹⁰.

Since February of the last [2022] year, **118 terrorist crimes** have been prevented in Russia; their perpetrators were young people and teenagers; **28 sabotage and terrorist acts** at transport facilities were prevented as well¹¹.

⁸ Vladimir Putin’s speech at the Victory Day Parade on May 9, 2023. Available at: <http://www.kremlin.ru/events/president/transcripts/71104>

⁹ In particular, we are talking about Poland, which is preparing to provide the “Kiev regime” with airfields for basing aircraft expected in the next deliveries of military assistance to Ukraine from NATO.

¹⁰ Russian special services prevented 64 terrorist attacks. Available at: <https://smotrim.ru/article/3090832?ysclid=liwpc86vn405076663>

¹¹ 118 terrorist attacks were prevented in Russia during the year. Available at: <https://rg.ru/2023/04/11/aleksandr-bortnikov-za-god-v-rossii-predotvrashcheno-118-teraktov.html?ysclid=liwplajxq4551573251>

¹² April 25, 2022, the Federal Security Service of Russia prevented a terrorist attack, the victims of which could have been V. Solovyov, M. Simonyan, O. Skabeeva, E. Popov, T. Keosayan (Source: The attempt on Solovyov and other journalists was prepared on the instructions of the SBU. Available at: <https://rg.ru/2022/04/25/pokushenie-na-soloveva-i-drugih-zhurnalistov-gotovilos-po-zadaniiu-sbu.html?ysclid=lj45v607p5299296641>);

August 20, 2022, a journalist, a public activist, the daughter of philosopher A. Dugin, Daria Dugina, was killed as a result of a car bomb attack (Source: Political scientist and journalist Daria Dugina was killed in a car explosion in the Moscow Oblast. Available at: <https://www.itv.ru/news/2022-08-21/436150-v-podmoskovie-v-rezultate-vzryva-avtomobilya-pogibla-politolog-i-zhurnalist-darya-dugina?ysclid=lj45y5zwa9193181435>);

April 2, 2023, as a result of a terrorist attack in a Saint Petersburg cafe, war correspondent V. Tatarsky was killed (Source: War correspondent Vladlen Tatarsky was killed in Saint Petersburg. Available at: <https://lenta.ru/news/2023/04/02/tatarskiyds/?ysclid=lj461sh6q9153141356>);

May 6, 2023 – a terrorist attack was committed against a political and public figure, writer, combatant Z. Prilepin, as a result of which his colleague and personal assistant, a veteran of military operations in the LPR A. Shubin was killed (Source: Statement of the Russian Foreign Ministry in connection with the terrorist attack organized by the Ukrainian special services against the writer Z. Prilepin. Available at: https://www.mid.ru/ru/foreign_policy/news/1867854/).

¹³ September 12, the FSB stopped a series of sabotage and terrorist acts against employees of the military-civil administration of the Kherson Oblast and the government of Crimea (Source: FSB stopped the SBU terrorist attacks against civil servants of the Kherson Oblast and Crimea. Available at: <https://tass.ru/proisshestiya/15722431>).

Many constituent entities of the Russian Federation (the Belgorod, Kursk, Bryansk, Kaluga, Smolensk oblasts, etc.) are being attacked by Ukrainian drones manufactured by NATO. **On May 30, 2023, residential quarters of Moscow were attacked by drones**, which, according to several military experts, was aimed at “making the civilian population of Russia nervous”.

A. Matviychuk (military expert): “Of course, with this terrorist act, the Kiev regime is trying to create **nervousness among the civilian population of Russia**, to make our citizens afraid. Once again they created a media hype”¹⁴.

V. Shurygin (war publicist, member of the Izborsk Club): “The drone attack in Moscow **can be called belated rather than unexpected**. The following conclusions can be drawn: **in Moscow and the Moscow Oblast, as well as in the regions closest to them, there is a sabotage network of Ukrainian intelligence**”¹⁵.

On June 4, 2023, the Kiev regime launched a long-planned counteroffensive. The Minister of Defense of the Russian Federation S. Shoigu noted that “the enemy did not achieve its goals and suffered significant and incomparable losses”¹⁶.

The terrorist activity of the Armed Forces of Ukraine has intensified:

✓ On June 5, “in the area of the settlement of Masyutovka, Kharkov Oblast, a Ukrainian sabotage and reconnaissance group **blowed up the Tolyatti–Odessa ammonia pipeline**”¹⁷;

From the statement of the Minister of Defense S. Shoigu on June 6, 2023: “... **having failed in its offensive actions**, and in order to strengthen its potential, the enemy intends to transfer units and equipment from the Kherson direction to the area of its offensive actions, thereby significantly weakening its positions in the Kherson direction. In order to prevent the offensive actions of the Russian army on this sector of the front, **the Kiev regime carried out a sabotage, in fact, a terrorist act**, which led to the flooding of significant territories and will have severe and long-term environmental consequences”¹⁸.

“Given the unsuccessful start of the AFU counteroffensive, the Pentagon, NATO and the leadership of the Armed Forces, according to foreign and Russian military experts, at the second stage **are preparing a massive use of long-range precision weapons, which should lead to the disorganization of the control system of troops and weapons of the Armed Forces of the Russian Federation, the defeat of aviation and anti-aircraft groups, the defeat of land groups, the disruption of the logistics system and destruction of operational equipment elements in the theater of military operations**”¹⁹.

✓ On the night of June 5 to 6, a “**large-scale sabotage planned in advance by the Kiev regime**” was committed at the **Kakhovskaya HPP**.

¹⁴ Gavrilov Yu. An attempt to provoke a response from Russia. What is known about the attack of Ukrainian drones on Moscow and the Moscow Oblast. Available at: <https://rg.ru/2023/05/30/reg-cfo/drony-ne-dostigli-celi.html>

¹⁵ Ibidem.

¹⁶ Statement by the Minister of Defense of the Russian Federation, Army General S. Shoigu. Available at: https://function.mil.ru/news_page/country/more.htm?id=12469652@egNews

¹⁷ Official Telegram channel of the Ministry of Defense of the Russian Federation. Available at: https://t.me/mod_russia/27177

¹⁸ Statement by the Minister of Defense of the Russian Federation, Army General S. Shoigu. Available at: https://function.mil.ru/news_page/country/more.htm?id=12469652@egNews

¹⁹ Ovchinsky V. What will the next stage of the attack on Russia be. Available at: <https://izborsk-club.ru/24432>

Thus, with a relatively stable, controlled situation at the front²⁰, threats to Russia's national security continue to grow. And this concerns the state of affairs not only on the front line, but also deep in the rear. **Almost the whole country, any constituent entity of the Russian Federation, including the capital, is under threat of terrorist attacks today**; thus, some experts come to the conclusion that the SMO has entered a new and **“psychologically very important”** stage²¹.

“Military actions certainly belong to the strongest factor contributing to changes in social conditions”²². Therefore, the tense situation

developing both on the front line and inside the Russian Federation quite naturally increases the anxious moods in Russian society.

According to the results of sociological assessments, in 2022 the trend of growth in the proportion of people who show signs of anxiety continued: against the background of the COVID-19 pandemic, it has already increased by 7 percentage points (from 25% in 2019 to 32% in 2021); and in 2022, compared with 2021, by 3 percentage points (from 31 to 34%); moreover, it happened in the majority of socio-demographic groups (*Tab. 1*).

Table 1. Dynamics of the spread of anxiety symptoms* in various socio-demographic groups, % of respondents

Population group	2019 (year before the COVID-19 pandemic)	2021	2022	Dynamics (+ /-)	
				2021 to 2019	2022 to 2021
Sex					
Men	23.8	29.4	30.7	+6	+1
Women	26.0	33.7	37.4	+8	+4
Age					
Under 30	17.1	21.4	20.0	+4	-1
30–55	21.0	28.6	28.0	+8	-1
Over 55	33.8	39.6	47.5	+6	+8
Education					
Secondary and incomplete secondary	28.7	33.1	33.6	+4	+1
Secondary vocational	24.8	28.5	35.6	+4	+7
Higher and incomplete higher	21.8	34.5	33.9	+13	-1
Income group					
Bottom 20%	27.5	41.6	37.0	+14	-5
Middle 60%	27.5	33.8	36.6	+6	+3
Top 20%	17.4	15.6	26.0	-2	+10
Territory					
Vologda	18.0	35.1	39.8	+17	+5
Cherepovets	26.0	24.3	32.8	-2	+9
Districts	28.3	34.1	32.2	+6	-2
Oblast	25.0	31.7	34.4	+7	+3
Total number of positive /negative changes in all groups				2 / 12	5 / 9
* The proportion of people showing symptoms of anxiety was determined by the hospital scale of anxiety and depression. The methodology consists of seven questions that were included in the structure of the VoIRC RAS questionnaire for monitoring public opinion. The survey was conducted once a year in the cities of Vologda, Cherepovets, in Babaevsky, Velikoustyugsky, Vozhegodsky, Gryazovetsky, Tarnogsky municipal okrugs and in Kirillovsky, Nikolsky and Sheksninsky municipal districts of the Vologda Oblast. The survey method is questionnaire at the place of residence of respondents. The sample size is 1,500 people aged 18 years and older. The sample is targeted, quota-based. The representativeness of the sample is ensured by observing the proportions between urban and rural populations, the proportions between residents of settlements of various types (rural settlements, small and medium-sized cities), the gender and age structure of the adult population of the oblast. Sampling error does not exceed 3%.					

²⁰ On June 20, 2023, Russian Defense Minister Sergei Shoigu noted: “Since June 4, the AFU has launched 263 attacks on the positions of Russian troops. Thanks to the competent and selfless actions of our units, all of them were repulsed, the enemy did not achieve its goals” (Source: Official website of the Ministry of Defense of the Russian Federation. Available at: https://function.mil.ru/news_page/country/more.htm?id=12470868@egNews).

²¹ A. Dugin's Telegram channel. Available at: <https://t.me/Agdchan/10405>; <https://t.me/Agdchan/10406>

²² Zvonovsky V.B., Khodykin A.V. (2023). Adaptation strategies of opponents and supporters of the special military operation to the current situation (based on residents of Samara Region). *Sotsiologicheskiy Zhurnal=Sociological Journal*, 29(1), p. 9.

The meeting of the President with war correspondents (which was broadcast live on federal TV channels) largely answered the most important questions that concern the entire Russian society today. War correspondents (as noted by E. Poddubny, one of the participants of the conversation) “managed to voice, **perhaps, all the issues that concern the inhabitants of our country: both military personnel and civilians ... Almost all topics are issues of life and death**”²³.

“Today war correspondents are at the cutting edge; they see the whole reality and do not hide it, whatever it may be”²⁴.

“It is important for him [the President] to understand the feeling, it is important for him to catch the nerve that exists among the people”²⁵.

“This is an important aspect for the President to receive information from the field... The President himself highly appreciates this dialogue with war correspondents and will continue it”²⁶.

The topics discussed at the meeting concerned not only the goals of the SMO, the situation on the front line and Russia’s geopolitical relations with

friendly and unfriendly countries, but also many problems of civilian life: the work of the military-industrial complex (MIC), assistance to servicemen and their families, organizational aspects of mobilization, the effectiveness of personnel “elevators” of the bureaucratic system and many others²⁷ (the key theses of the head of state, voiced at the meeting with war correspondents, are presented in *Table 2*; the most important questions of war correspondents and the answers of the Supreme Commander are reflected in *Insert 1*).

“The meeting of the president with war correspondents really attracted attention with its **most confidential nature**. And the questions that were asked were as open and direct as possible; and Vladimir Putin’s answers were meaningful, without any secondary subtext and pitfalls... The President discussed not only the positive aspects and prerequisites for the successful outcome of the special operation, **but also the difficulties that our army is currently facing**”²⁸.

²³ War correspondents shared their impressions of the meeting with the president (opinion of E. Poddubny). Available at: <https://www.vesti.ru/article/3402476>

²⁴ The political scientist spoke about the importance of Putin’s meeting with war correspondents (opinion of political scientist N. Lindigrin). Available at: <https://lenta.ru/news/2023/06/14/voenkory/>

²⁵ War correspondents shared their impressions of the meeting with the president (opinion of A. Sladkov). Available at: <https://www.vesti.ru/article/3402476>

²⁶ Putin will continue the dialogue with war correspondents (opinion of A. Peskov). Available at: <https://www.vedomosti.ru/politics/news/2023/06/19/981179-peskov-putin-prodolzhit-dialog-s-voenkorami?ysclid=lj6wgcwibx180395160>

²⁷ A. Dugin’s Telegram channel. Available at: <https://t.me/Agdchan/10405>; <https://t.me/Agdchan/10406>

²⁸ The political scientist spoke about the importance of Putin’s meeting with war correspondents (opinion of political scientist N. Lindigrin). Available at: <https://lenta.ru/news/2023/06/14/voenkory/>

Table 2. Vladimir Putin's key theses voiced at the meeting with war correspondents

<p>1. On the goals of the SMO: <i>"our goals are fundamental for us. ... by and large, our principles and thus, our goals have not changed since the beginning of the operation"</i>.</p>
<p>2. On the situation on the front line: <i>"This is a large-scale counteroffensive, which uses, as I recently said publicly, reserves that had been stockpiled to this end. It started on June 4... The enemy was not successful in any sector. ...[Further developments] will depend on the potential that is left at the end of this so-called counter-offensive. ... We will wait and see what the situation is like and take further steps based on this understanding. Our plans may vary depending on the situation when we deem it necessary to move..."</i></p>
<p>3. On the introduction of martial law in Russia, including for the purpose of fighting with saboteurs on Russian territory: <i>"I don't think we need to do that now. We just need to improve and expand the work of law enforcement agencies and special services"</i>.</p>
<p>4. On the new "wave" of partial mobilization: <i>"Depending on what goals we set for ourselves, we have to solve the issues of mobilization, but there is no such need today... we have recruited over 150,000 of them (under contract) and, together with volunteers, this number adds up to 156,000.... Things that are happening took even me by surprise: after all, 156,000 people volunteered"</i>.</p>
<p>5. On the state of the Russian military-industrial complex: <i>"Of course, during the special military operation it has become clear, that we do not have enough of many things ... a lot of the groundwork has been done. Now the task is to build it up. If we did not have this special military operation we probably would not have understood how to upgrade our defence industry to make our army the best in the world"</i>.</p>
<p>6. On the personnel promotion of people who proved themselves during the SMO: <i>"Of course, we need to look for such people. There are a lot of them... both the Minister [of Defense] and the Chief of the General Staff fully share my position... We need to look for such people – with their consciousness and with their understanding of justice"</i>.</p>
<p>7. On the role of private business in achieving the goals of the SMO: <i>"We have dozens, hundreds of private enterprises that have never had anything to do with the military-industrial complex that have joined in this work: small and medium-sized enterprises..."</i></p>
<p>8. On the cases of anti-Russian propaganda in the activities of civil servants, university professors, etc.: <i>"Leaving it like this verges on betrayal..."</i></p>
<p>Source: Vladimir Putin's meeting with war correspondents. Available at: http://www.kremlin.ru/events/president/transcripts/71391</p>

Insert 1

Answers of the RF President to the key questions of war correspondents (June 13, 2023)²⁹

Question asked by war correspondents, bloggers	President's answer
1. E. Poddubny: The situation is changing, the position is changing, and probably the goals and tasks of the special military operation are changing as well. Can you tell us how they have changed if at all?	No, they are changing in accordance with the current situation but of course overall we are not changing anything. Our goals are fundamental for us... So, by and large, our principles and thus, our goals have not changed since the beginning of the operation. There has been no change.
2. A. Kots: how does it happen that enemy drones reach the Kremlin? And, having started to liberate Donbass, why are we now forced to evacuate our population from the border areas, which are already being entered by Polish mercenaries, and the Polish language is heard on our territory?	... As a rule, the drones you are talking about, and you are also aware of this, they are made of modern lightweight materials, made of wood, and it is quite difficult to detect them. But they are being detected... we must properly organize this work. And of course, it would be better if this had been done in a timely manner and at the proper level. Nevertheless, this work is being carried out, and, I repeat once again, I am sure that these tasks will be solved.
3. E. Poddubny: How will the Russian state fight the enemy's agents and the enemy's special services operating on the territory of Russia?	... We are fighting, we are, and some results of this work are becoming public, and the public is familiar with it: the detention of agents and special services officers of a neighboring state. The work is ongoing. But I want to point out that we, unlike Ukraine's current authorities, cannot employ terrorist methods: we still have a state, a country, while it is a regime there. They operate, in fact, as a regime based on terror: they have a very tough counterintelligence regime, martial law. I don't think we need to do that now. We just need to improve and expand the work of law enforcement agencies and special services. And in general, it seems to me that the tasks in this regard are also solvable.
4. A. Sladkov: We have sent our mobilized troops to the front.... Do you not think the time will come when they will have to be rotated and replaced...?	We have to proceed from the availability of personnel, from the situation on the frontline, from the progress of the special military operation itself. You know that in fact, and also at my suggestion, we took a decision on regular leaves...

²⁹ Source: Vladimir Putin's meeting with war correspondents. Available at: <http://www.kremlin.ru/events/president/transcripts/71391>

Continuation of Insert 1

Question asked by war correspondents, bloggers	President's answer
<p>5. A. Sladkov: Will there be another round of mobilization?</p>	<p>Some of our public figures claim that there is an urgent need to mobilize a million or even 2 million. This depends on what we want... Our troops were outside Kiev. First, we reached an agreement, which turned out to be a good agreement about how to resolve the current situation peacefully. Even though they tossed it, nevertheless, we used this time to get where we are now which is practically all of Novorossiya and a significant portion of the Donetsk People's Republic with access to the Sea of Azov and Mariupol. And almost all of the Lugansk People's Republic, with a few exceptions. Do we need to go back there or not? Why am I asking this rhetorical question? Clearly, you do not have an answer to it, only I can answer that. But depending on our goals, we must decide on mobilization, but there is no need for that today... Since January, when we began concluding contracts with contract soldiers, we have recruited over 150,000 of them and, together with volunteers, this number adds up to 156,000... Given this, the Defence Ministry says there is no need for mobilization. Things that are happening took even me by surprise: after all, 156,000 people volunteered.</p>
<p>6. A. Sladkov: My second question is about contract soldiers that we are recruiting now... We are waiting for the people to respond to the offer. We invite them but it not time for us to go to the people who can help us and make a plan based on military specialties?...</p>	<p>Contract soldiers. I talked to Mr Burdinsky recently, the work is generally moving forward, it is really going very well. He is in charge of recruiting contract soldiers. One of the deputy defence ministers is in charge of training... Naturally, there are always problems wherever one looks, but overall, the situation is changing for the better... Do technologies need replacing? Perhaps, this must be considered. What is the point? The point is that – you are right, you are absolutely right – we must have targeted recruitment.</p>

Question asked by war correspondents, bloggers	President's answer
<p>7. A. Borodkin: What are we going to do to expand our defence industry...?</p>	<p>... It was probably about eight years ago, maybe even earlier; we launched a programme to upgrade the military industrial complex. We allocated very large funds at the time, and piece by piece began to upgrade our enterprises, build new ones, deploy modern equipment and so on. Thereby, a very significant back-log was created.</p> <p>Of course, during the special military operation it has become clear, that we do not have enough of many things. This includes high-precision munitions, communications systems... aerial vehicles, drones and so on. We do have them but unfortunately, the numbers are not sufficient... We do not have enough Orlan drones, and their quality must be improved, although they perform their function. That is, we need a lot of things. We need modern anti-tank weapons as well as modern tanks...</p> <p>... not enough of everything but a lot of the groundwork has been done. Now the task is to build it up. I mentioned the groundwork, and I should talk about what is happening now. During the year, we increased the production of our main weapons by 2.7 times. As for the manufacture of the most in-demand weapons, we increased this by ten times. Ten times! Some industrial companies work in two shifts and some in three. They practically work day and night and do a very good job... If we did not have this special military operation we probably would not have understood how to upgrade our defense industry to make our army the best in the world. But we will do this.</p>
<p>8. S. Pegov: Unfortunately, the existing bureaucratic system is set up in such a way that those who are good at serving on the parquet floor and are able to play up to their superiors in time are the ones who rise up the career ladder.... here are a lot of talented people now, good daring guys, but the system prevents them from rising the top. How can we resolve this issue so that we get new gems in our military affairs and in the art of war?</p>	<p>Before the special military operation, of course, as in any government agency, there were a lot of carpet knights... the special military operation was initiated and they quickly began to realize that carpet knights, and there are more than enough of them in any army in the world under peacetime conditions everywhere, are ineffective, to put it mildly.</p> <p>On the other hand, and you are absolutely right here, Mr Pegov, there started appearing people who seemed to be in the shadows – they were not visible and not heard, but it turned out that they were very effective and in great demand...</p> <p>Of course, we need to look for people like that. There are many of them, you are absolutely right. The Defense Minister and the Chief of General Staff completely share my position, I have mentioned this issue many times, and they say: “Of course, we must do this.” You are right in saying that, just like in any ministry, they have a multi-layered bureaucracy. Certainly, we need to create social mobility mechanisms, including those that locate such people and elevate them to the required level in the army and society.</p>

Continuation of Insert 1

Question asked by war correspondents, bloggers	President's answer
<p>9. S. Pegov: The second issue, also a sensitive one, concerns payments to the wounded, as well as, unfortunately, for the deaths of servicemen... I do not know a single soldier who has received a payment for a tank that has been destroyed, or for a destroyed fortification. Although it has all been announced, everyone knows it and the guys are even kidding around with each other: why was it promised, but it has not happened.</p>	<p>About the payments. Yes, indeed, there, I do not remember exactly, but, in my opinion, 300 thousand for an aircraft, 100 thousand for a tank should be paid additionally. The fact that they do not pay – this is surprising to me... I will definitely be returning to this right away, today, in talks with the Defense Ministry – absolutely, 100 percent.</p>
<p>10. I. Lyadvin: The subject of payments to contract employees... for example Chuvashia pays 50 [thousand rubles], Chelyabinsk pays 50, but there are small extra payments for children, but Transbaikal pays 150–200, Buryatia 200. There is a point: don't you think there is a gap, so to say, in the regions' level of capabilities, so that someone can pay 200? ...</p>	<p>You are absolutely right, of course: there is a man who is fighting, maybe standing next to another in a trench, covering the wounded, or carrying them off the battlefield, but one gets a slightly higher bonus from the region and the other a lower one – this certainly looks unseemly. I repeat: this does not apply to federal agencies – these are purely regional payments, not obligatory at all. Regions could pay nothing at all, but they do it voluntarily. But, of course, it is better to have some kind of common approach here. I agree, you are right. We will work with the governors.</p>
<p>11. Yu. Podolyaka: on the repletion of the army with advanced weapons systems. Unfortunately, it so happened that before the special operation we did not know that a lot of special equipment and weapons would be needed, and today much of this equipment is being homemade... What is the problem? They prove effective at the front, the soldiers say “yes, this is what we need,” but our bureaucratic system does not allow them to be quickly introduced and used serially. That is, the opportunities that we have are scanty.</p>	<p>The problem is well-known... As you know, in addition to the fact that we have made a good start in the upgrade of the military-industrial complex, and besides the fact that now the production of the most demanded products is growing quite quickly – they have already increased tenfold – there is another very big advantage, frankly unexpected even for me. We have dozens, hundreds of private enterprises that have never had anything to do with the military-industrial complex that have joined in this work: small and medium-sized enterprises... they made, for example, pipes – and it turns out that you can do something else besides pipes. And so, it is surprisingly simple in many areas... Nevertheless, we have not solved all the problems... Believe me, I have already said what you have just said a hundred times. I will come back to this again and I will try to fix it again.</p>
<p>12. I. Ushenin: NATO countries are constantly moving and crossing our red lines. We express our concern and keep saying that this is unacceptable, but never come up with actual answers. Are we going to keep moving our red lines?</p>	<p>Is the special military operation itself not a response to them crossing these lines?... Are strikes on Ukraine's energy system not an answer to them crossing the red lines? And the destruction of the headquarters of the main intelligence directorate of the armed forces of Ukraine outside Kiev, almost within Kiev's city limits, is it not the answer? It is. We will continue to work selectively...</p>

Continuation of Insert 1

Question asked by war correspondents, bloggers	President's answer
<p>13. S. Zenin: private military companies that are supposedly banned in our country de jure but still exist de facto on the frontline. They fight with varying success but sometimes with very good results. What should be done to get rid of this judicial or legal vacuum and return them to the legal field?</p>	<p>You are absolutely right in this respect. I asked both State Duma deputies and the Defense Ministry to bring everything in line with common sense, the established practice and the law. Of course, we should not put people in a false position... To my knowledge, the Defense Ministry is now signing contracts with all those willing to continue their service in the special military operation zone. This is the only way of providing them with social guarantees because if there is no contract with the state, no contract with the Defense Ministry, there are no legal grounds for receiving social guarantees from the state. This must be done as soon as possible.</p>
<p>14. D. Kulko: Sooner or later, the Ukrainian counter-offensive will get bogged down, or rather, our troops will force it to bog down with their heroic efforts. Clearly, no matter what losses Ukraine suffers, the Western countries will continue to supply weapons to it.... what will happen next?</p>	<p>I can only say this face to face... Well, everything will depend on the potential that is left at the end of this so-called counter-offensive. This is the key question... We will wait and see what the situation is like and take further steps based on this understanding.</p>
<p>15. D. Steshin: ... Do we need this [grain] deal? And, if our interests are not being considered, maybe it should be severed?</p>	<p>Frankly, this is a surprise question for me. I did not expect to hear it. But probably those who are fighting on the frontline don't understand why we let Ukraine ship this grain. I understand, and I agree... we are doing this not for the sake of Ukraine but for the sake of friendly countries in Africa and Latin America... There were many terms that the Westerners were supposed to fulfil under UN guidance, but nothing was done. Nevertheless, we have extended these agreements several times – and I'd like to repeat it again – in the interests of friendly countries... we think about terminating our participation in it.</p>
<p>16. I. Kuksenkova: According to open data, up to 100 military satellites are out there working for the enemy. They can see our troops and movements. Our space group is not as strong. V. Putin: Yes. I. Kuksenkova: What can we do about it and how should it be dealt with? This is a systemic issue, correct? Will it take years to improve things?</p>	<p>Without a doubt, we should have been engaging in space activities in a different manner in previous years. But we did not plan...either the events in Crimea, or the events that are taking place now... We must adjust this work accordingly. We will certainly do this. But until then we need something to take its place. What might this be? Different-purpose unmanned aerial vehicles. Our colleague has rightly said that we must increase the number of different drones, including strike and reconnaissance ones, which takes time. I agree with you, you are right, we must do this.</p>

End of Insert 1

Question asked by war correspondents, bloggers	President's answer
<p>17. D. Zimenkin: The Lugansk police who fought in the Kharkov Region last year, and their colleagues from the Kaskad tactical group who are fighting in the Donetsk People's Republic now, do not have this status either. I received a phone call from a field medic today. He has been working behind the line for four months... he is fighting. He has moved 70 men from the battlefield and has had four concussions... He serves in Unit 31135 but is allegedly not fighting. He cannot even receive an order for this reason... I think it's not fair, and the point at issue is not the additional payment, which is not that big.</p>	<p>I am aware of them, and Mr Bortnikov and Mr Kolokoltsev have been asking these questions. But it is the first time that I have heard this about military medics. I will certainly take a look at this problem. It must be a technical problem in some places. If a military medic is actually working behind the line, I do not understand what is happening. I will look into it... As for the other categories of military personnel, especially border guards and partly the police, this issue must certainly be addressed.</p>
<p>18. M. Gazdiev: Our fighters often manage to read the news, even at the frontline. To put it mildly, they are outraged to hear of another scandal where a civil servant or a university professor almost openly tries to sway young people to a pro-Ukraine position. That is, by and large, these people have no caution, they aren't afraid of fines. All right, I know, and you have been very clear that we will not act like the Ukrainian regime: a bag over the head and the person disappears forever. But, given that we are not like them, we are fighting against this, is it not a betrayal of our values to just leave the situation as it is?</p>	<p>Leaving it like this verges on betrayal... the need to promote the fighters, especially those who have proven themselves well on the battlefield, to promote them to higher ranks in the Armed Forces, but not only that. They can be promoted to law enforcement or special services. We need to look for such people – in terms of their consciousness and their understanding of justice – and entrust them with investigating the rogues you mentioned.</p>

As can be seen from the answers of the President shown in Insert 1, the meeting with war correspondents was transparent, and many problems existing both in the armed forces of the Russian Federation and in the civil life of the country were voiced during the meeting.

The President had more than once admit mistakes and shortcomings in various fields (in the space industry, in the work of the military-industrial complex, in the functioning of the bureaucratic system, etc.). Moreover, the Supreme Commander-in-Chief pointed out that it was **“during the special military operation that it became clear that many things were missing”**.

The head of state had to use the following expressions 19 times: *“There is a problem”*, *“we need to work more carefully on some issues”*, *“I agree, we should have prepared better”*, *“yes, of course. It is necessary to adjust this work accordingly”*, *“I am aware of this problem – I have already spoken about it many times at different levels... We will try to do it”*, etc. The head of state even made such statements as *“this is the first time I hear about it”* and *“this is unexpected for me”*³⁰ twice.

We should note that the ability to admit mistakes, especially in such a difficult period for the country, on the one hand, suggests that “Russia has a strong, active, capable, strong-willed leader”³¹, but, at the same time, it indicates that **over the past**

20 years, significant shortcomings have accumulated in the management system that were not eliminated in a timely manner, and therefore today they have to be corrected in the face of real growing threats to national security. This concerns, for example, the absence of any tangible positive dynamics in reducing social inequality, the actual sabotage of presidential decrees on the implementation of national projects, corruption flourishing at all levels of government and many other problems that have long been discussed in the expert community, in the mass media, on social media, etc.³² **All of them have a long-term, accumulating nature, because for the last 30 years the system of public administration has been largely saturated with representatives of elites who are guided by personal, primarily financial, interests, rather than by the national interests of the country.**

This, in particular, is evidenced by the fact that dozens and maybe hundreds of representatives of the public administration system at various levels of the power hierarchy have fled to Western countries after the start of the SMO. We should note that the direct duties of these people included the execution of the instructions of the head of state; many of them had access to state secrets; in fact, the President had to rely on these very representatives of the ruling elites until the special military operation made everything straight.

³⁰ Such answers were given to D. Zimenkin’s question about the fact that people assigned to a military unit are not registered as participants of the SMO and “it is as though they are not even fighting”, although they are actually on the front line, commit heroic deeds, etc.; and also to S. Pegov’s question about the fact that the fighters really do not receive any payments for the destroyed enemy equipment, “although it was all announced, everyone knows it”.

³¹ Prokhanov A. Leopard. Available at: <https://izborsk-club.ru/24441>

³² In our previous articles, we considered expert assessments about the accumulating problems in the public administration system and in society. See, for example:

Ilyin V.A. (2016). The ruling elites: A problem for Russia’s national security. *Economic and Social Changes: Facts, Trends, Forecast*, 4(46); Ilyin V.A., Morev M.V. (2019). Public administration efficiency in 2000–2018 in the assessments of the region’s population. *Economic and Social Changes: Facts, Trends, Forecast*, 12(1), 9–38; Ilyin V.A., Morev M.V. (2021). National Security Strategy – 2021: Positive experiences and conflicting expectations. *Economic and Social Changes: Facts, Trends, Forecast*, 14(4), 9–32.

“First, former Prime Minister Kasyanov and eight (!) former deputy prime ministers fled there [abroad]. Moreover, three more ex-deputy prime ministers and at least one acting deputy prime minister split time between two countries.

Second, if we count the ex-heads of the Presidential Administration (!) – Yumashev, Voloshin and Chubais, as well as all the ministers and their deputies (like Kozyrev, Skrynnik, Vavilov, Chuyan, Reimer, etc.) who fled Russia, then it will be **another 50 people, not to mention dozens of ex-governors and vice-governors and hundreds of officials of the federal government alone.**

Third, if we count those high-ranking officials of the Russian Federation who have sent their children abroad and, therefore, are somehow preparing to go there themselves, then **these are dozens and dozens of personalities.**

Fourth, despite the SMO, ex-deputy prime ministers and ex-ministers continue to flee there unhindered (Chubais, Kudrin), along with the stolen money and state secrets.

The list of former deputy prime ministers includes:

Ilya Klebanov – in Israel,	Alfred Koch – in Germany,	Arkady Dvorkovich – in the USA,
Alexander Khloponin – in Israel,	Yakov Urinson – in Israel,	Maxim Akimov – in Israel,
Anatoly Chubais – in Italy,	Andrey Kudrin – in Israel...	

“**The difficulties and challenges we are facing work as incentives for all of us, incentives to increase the pace and quality of transformations ...**”³⁴, – the head of state noted on June 16 at the plenary session of the Saint Petersburg International Economic Forum. However, the current situation, which is almost wartime, brings certain conditions for the success of the implementation of long overdue transformations: both the growing threats to national security and the need to correct many mistakes of the past in an emergency mode reinforce the importance of the task that many experts have been talking about since the beginning of the SMO – the importance of a radical paradigm shift in thinking and perception of the current moment of time for the entire Russian society and especially its elite. According to experts, “the stakes are extremely high, the question is “to be or not to be”.

“When the Supreme Commander-in-Chief, Russian President Vladimir Putin, launched the special military operation to demilitarize and denazify Ukraine, **the course of history was changed. Irreversibly changed. We are witnessing the case when they say “The die is cast”, “We have crossed the Rubicon” and “There is no way back”...** Now no one is able to influence anything, and no one can do it the way it used to be before... **The stakes are extremely high ... the question is “To be or not to be”**”³⁵.

It is necessary to understand: in order not to lose their “hegemonic” position, the United States and the UK together with their “vassals” (Vladimir Putin noted that “they don’t have allies, they only have vassals”³⁶) will strive to do everything so that Russia cannot emerge victorious from this civilizational conflict.

³³ Ivanov A. Israel, Italy, Germany, the United States, etc. Where the former deputy Prime Ministers of the Russian Federation have fled. Available at: https://zavtra.ru/events/izrail_italiya_germaniya_shtati_i_t_d_kuda_svalili_bivshie_vitse-prem_eri_rf

³⁴ Vladimir Putin’s speech at the plenary session of the Saint Petersburg International Economic Forum. Available at: <http://www.kremlin.ru/events/president/transcripts/71445>

³⁵ Dugin A. Special military operation in Ukraine as Vladimir Putin’s Rubicon. Available at: https://4pera.com/news/feysbuchnye_truth/aleksandr_dugin_spetsialnaya_voennaya_operatsiya_na_ukraine_kak_rubikon_vladimira_putina/

³⁶ Source: Vladimir Putin’s meeting with war correspondents. Available at: <http://www.kremlin.ru/events/president/transcripts/71391>

Therefore, today is not the time for entertainment, for calculating any individual financial benefits or discussions about the future. And this is not the time for complacency about the inevitability of a Russian victory. State Duma deputy K.F. Zatulin rightly noted that “talking about the fact that it is inevitable is just discouraging”.

On the contrary, this is a time when all the strata of society should unite in realizing that any other option, except for Russia’s unconditional victory in this war, will have the most negative impact not only on Russian statehood, but also on the individual life of each individual citizen.

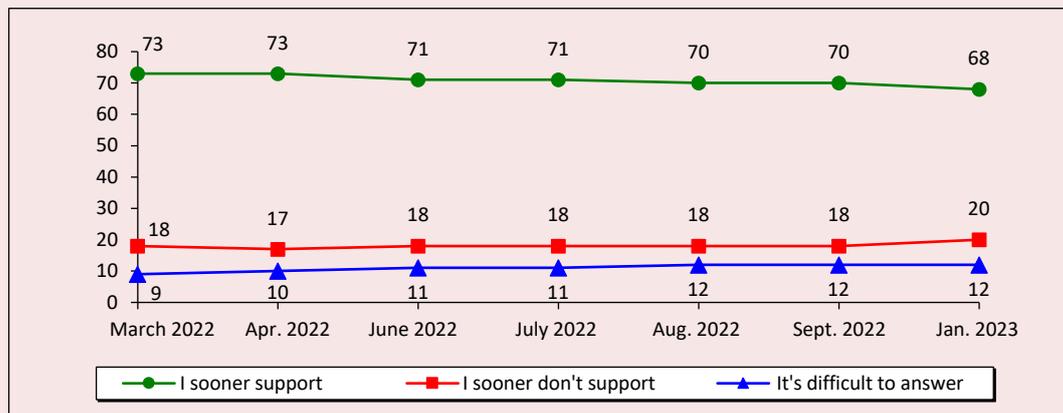
Nevertheless, according to experts, “Russian society has not yet managed to realize the depth, scale and perspective of the growing civilizational crisis in the Russian Federation (and maybe an impending catastrophe)”³⁷. According to VCIOM, the overwhelming majority of Russians (68–73%) from the very beginning support the decision of the President of the Russian Federation to conduct the

“The enemy is dangerous and armed; it can be seen with the naked eye. The question is that, in my opinion, we cannot do enough today. We don’t have enough reasons to be complacent... in fact, we are in a very difficult situation. In a situation where mobilization is required of us. It requires the transfer of not only industry, but also life on military rails, in order to have the victory that we all dream of. Talking about the fact that it is inevitable is just discouraging... we must understand that a number of issues that have not been resolved – they are still, unfortunately, not resolved when it comes to the transition to military rails”³⁸.

“After the drone attack on Moscow, I would like to ask our fellow citizens: what else needs to happen so that you understand that the war will affect everyone?”³⁹

special military operation (*Fig. 1*), but **18–20% of the population do not support the SMO.**

Figure 1. Do you support or not support the decision to conduct the special military operation of Russia in Ukraine?, % of respondents



Sources: Special military operation: Six months later. VCIOM analytical review. September 6, 2022. Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/cpecialnaja-voennaja-operacija-polgoda-spustja>; Special military operation: A year later. VCIOM analytical review. February 20, 2023. Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/cpecialnaja-voennaja-operacija-god-spustja>

³⁷ Lepekhin V. (2023). About the untransformed elite and the “fried rooster”. *Izborsky klub*, 4(112), 18–23.

³⁸ K. Zatulin’s speech at the foresight forum “What kind of Ukraine do we need?”. Available at: <https://zatulin.ru/vystuplenie-konstantina-zatulina-na-forsajt-forume-kakaya-ukraina-nam-nuzhna/>

³⁹ Rublevka was attacked by APU drones, the elite is in shock, the people are self-organizing (opinion of historian E. Nikolaev). Available at: <https://svpressa.ru/war21/article/374657/>

These data confirm the expert opinion that instead of the unity necessary for victory, Russian society is divided into three “parties”:

- 1) “Party for the victory”;
- 2) “Party for Russia’s immediate defeat”;
- 3) “Party for Russia’s deferred defeat”.

The Party for the victory is focused on a direct confrontation with the West, in order to bring the SMO to its logical end and securely consolidate the strategic conditions of a multipolar world in which the hegemony of the West will have no place... **It is represented on a fairly large scale in Russian society; in the ruling elites, on the contrary, until very recently, this party was in an absolute minority...**

The Party for immediate defeat is the “radical liberal opposition”⁴⁰, the main resource for the “Kiev regime” to recruit saboteurs operating on the territory of Russia. For example, they carried out terrorist attacks against V. Tatarsky and Z. Prilepin.

The Party for Russia’s deferred defeat is spread primarily among the ruling elites. These are the

“The party for deferred defeat. **Here we are talking about the part of the Russian elite that professes double loyalty:** on the one hand, this group is loyal to Putin and recognizes the legitimacy of the orientation toward sovereignty and multipolarity, which means that it supports the SMO and is formally aimed at victory. But, on the other hand, **the main orientation of this group is still the modern liberal West, its culture, codes, technologies, practices and trends.** Therefore, this macro-figure considers the break with the West as a catastrophe and wants to end the conflict as soon as possible and begin restoring broken ties”⁴¹.

people who are outwardly loyal to the President and to their goals, but in fact they dream of returning to the past life that was before February 24, 2022. They are entirely oriented toward the West and therefore consider a break with the West as a catastrophe. **The West “counts on these people very much”** because they have power and do not just share the values and lifestyle of the enemy, but have specific family and financial ties with it.

Nothing other than the activities of the Party for deferred defeat can explain the fact that in conditions of unprecedented threats to national security, when the country is actually fighting for survival, it is facing the following:

✓ individual representatives of economic and ruling elites (including the highest level) continue to lobby for the idea of “Privatization 2.0” (*Insert 2*);

On April 11, influential banker A. Kostin (President – Chairman of the VTB Management Board) called for “restarting privatization”.

✓ historical archives are formed with the participation of institutions funded by the government of unfriendly countries;

“Almost all the collections to which the leadership of the Russian State Archive of Modern History was related, contain the following idea: the Soviet period of Russia’s history consists of tragedies, and the Soviet leadership consisted mainly of imbeciles...**behind most of these collections is the German Historical Institute in Moscow, which was funded by the German government for a long time**”⁴².

⁴⁰ Dugin A. Chess of war. Available at: <https://izborsk-club.ru/24292>

⁴¹ Ibidem.

⁴² Ogryzko V. The right to history. Available at: https://zavtra.ru/blogs/pravo_na_istoriyu

✓ as before, the party continues to be in the legal field, openly calling the SMO “the gravest crime” that is “contrary to the national interests of Russia”⁴³;

“... what is a political party like Yabloko doing in our legal field? Why is the party not banned, while it directly and openly **denies the territorial integrity of Russia for 10 years and considers our fight against fascism a crime...?**

Yabloko demands from President Putin an immediate cessation of hostilities... and the start of emergency peace talks with international mediation.

How do we want someone to respect us somewhere, when we ourselves are trampling ourselves into the mud, allowing representatives of forces hostile to Russia to ignore our laws on our territory directly and with impunity for almost a decade?”⁴⁴

✓ despite the results of independent examinations and constant attention from the media⁴⁵, the Yeltsin Center – a state institution that is openly engaged in illegal anti-state propaganda (as the results of an independent examination showed⁴⁶) (*Insert 3*) is still functioning.

Excerpt from the report “Monitoring of the content and form of submission of materials of the Boris Yeltsin Museum, part of the Yeltsin Center”, conducted in September – October 2022 by an interdisciplinary expert group”⁴⁷:

“The Yeltsin Center carries out propaganda activities correlated with the ideological attitudes of liberalism ... **that conflict with the traditional values of Russia as a country-civilization.**

The materials of the Yeltsin Center **contradict the legislation** of the Russian Federation.

Being a **state organization**, the Yeltsin Center in its expositions and materials represents positions that **contradict the state agenda.**

Only on June 15, 2023, Deputy Minister of Justice of the Russian Federation O. Sviridenko said that the Ministry of Justice of the Russian Federation has begun a “deep check”⁴⁸ of the Yeltsin Center Museum on the subject of the activities of a foreign agent.

“We pay dearly for the theft and luxury parties of admirers and defenders of the Yeltsin Center and Yeltsin himself. We pay with blood, with the lives of our children. I think everyone understands what and how to do with the creators and signatories of collective appeals in defense of this legal entity”⁴⁹.

⁴³ Statement of the Federal Political Committee of the party. Official website of the Yabloko Party. Available at: https://www.yabloko.ru/resheniya_politicheskogo_komiteta/2022/02/24

⁴⁴ Delyagin M. The paradox of Russia: Free people are ruled by slaves of the West. Available at: <https://delyagin.ru/articles/1-mirovoy-krizis/109807-paradoks-rossii-svobodnymi-ljud-mi-pravjat-raby-zapada>

⁴⁵ In particular, since the beginning of the SMO, Nikita Mikhalkov in his program “Besogon TV” has criticized the activities of the Yeltsin Center four times, but the facts he provides and the questions he poses remain unanswered so far. See, for example, the following episodes of “Besogon TV”:

1. “Davos is still there” (June 4, 2022);
2. “The bloody liberty of Europe” (June 24, 2022);
3. “The wives of the Marquis of Carabas” (February 10, 2023);
4. “The romance of abomination” (May 5, 2023).

⁴⁶ Bagdasaryan V. “Yeltsin Center”. Expert assessment of activities in the focus of threats to Russia’s national security. Available at: <https://izborsk-club.ru/24093>

⁴⁷ Ibidem.

⁴⁸ The Ministry of Justice has launched a comprehensive check of the Yeltsin Center regarding its recognition as a foreign agent. Available at: <https://www.rbc.ru/politics/15/06/2023/648ac8449a79478cf5738169><https://www.rbc.ru/politics/15/06/2023/648ac8449a79478cf5738169>

⁴⁹ Sorokin N. Wet American dreams and the “counteroffensive” that has failed. Available at: https://zavtra.ru/blogs/triedinstvo_russkoj_istorii

Insert 2

Experts on lobbying for the idea of “Privatization 2.0”

“A tightly knit group of wealthy pro-regime liberals acts as a striking lobbying force. Behind it looms a significant part of our elites, who dream of plundering what they have not stolen under the sauce of a “qualitative breakthrough”, which allegedly “will give an impetus to development in various spheres” and “will allow flexibly solving the complex tasks that the Russian industry is facing today”.

On April 11, in a column for RBK, influential banker A. Kostin (President – Chairman of the Board of VTB, member of the Bureau of the Board of the Russian Union of Industrialists and Entrepreneurs, member of the Supreme Council of the United Russia Party, head of the Boards of Trustees of the Bolshoi Theater and the Russian Gymnastics Federation, full knight of the Order “For Merit to the Fatherland” and knight of the French Order “For Merits”) called for **“restarting privatization”**. He pointed out that **“in recent years, the private sector in Russia has seriously lost its positions”, which is very bad, and means that “today is the time to act”**. Kostin is convinced of the need to **“resume the privatization program”, because “the transfer of state property into private hands <...> is a tool that has repeatedly proven its effectiveness”**...

The first candidate assets for privatization are the **United Shipbuilding Corporation, shares in Russian Railways, Transneft, Russian Post, and some companies belonging to the structures of Rosatom, Rostec, and Rostelecom.**

Deputy Head of the Presidential Administration of the Russian Federation – Press Secretary of the President of the Russian Federation **Dmitry Peskov ... called this point of view “interesting”, and later added that “indeed, in the economic block of the government, many support the idea of privatization”**⁵⁰.

The Commissioner under the President of the Russian Federation for the protection of the rights of entrepreneurs (business Ombudsman) and the leader of the right-liberal Party of Growth **B. Titov called the idea of a new privatization “correct”**.

Deputy Finance Minister of the Russian Federation A. Moiseev at the 11th Saint Petersburg International Legal Forum said that **“in fact, no one is against privatization..., a large privatization should take place, but we need to understand who to sell to”**.

On May 12, in an interview with Radio 1, the proposal for a new large-scale privatization was fully supported by the **ex-chairman of the Supervisory Board of VTB Bank Sergey Dubinin**⁵¹.

On June 14, in an interview with RBK, chairman of Sberbank G. Gref said that **“the sale of some pieces of state property” “may well be considered”**⁵².

On June 15, at the Saint Petersburg Economic Forum, head of the Central Bank E. Nabiullina noted: **“I believe that, of course, it is necessary to privatize, and we have something to privatize, without infringing on strategic interests”**⁵³.

She was supported by Presidential Aide M. Oreshkin, who stated that **he supports the idea of privatization, not a large-scale privatization, but the privatization of inefficiently used enterprises with benefits for the state**⁵⁴.

⁵⁰ Peskov appreciated Nabiullina’s idea to introduce a privatization policy in the Russian Federation. Available at: https://aif.ru/money/economy/peskov_ocenil_ideyu_nabiullinoy_vvesti_v_rf_politiku_privatizacii?utm_source=yxnews&utm_medium=desktop

⁵¹ Ivanov A. Head of the Investigative Committee of Russia: “Let’s follow the path of nationalization”. Available at: https://zavtra.ru/events/glava_skr_davajte_poidyom_puti_nacionalizacii_otvet_silovikov_razduharivshimsya_privatizatoram

⁵² German Gref to RBK: “I had to learn how to plan and live for the day”. Available at: https://www.rbc.ru/economics/14/06/2023/648050839a79477c585f6318?utm_source=yxnews&utm_medium=desktop

⁵³ Planned economy and new privatization. The main takeaway from Nabiullina’s speech at the SPIEF-2023. Available at: <https://www.gazeta.ru/business/2023/06/15/17139644.shtm?ysclid=iiwzuykay57403337296>

⁵⁴ <https://vz.ru/news/2023/6/15/1216692.html>

The presented facts confirm the expert opinion that a significant part of the Russian elite today is actually “anti-national”⁵⁵. At the same time, it is futile to count on the fact that a part of the elite that has sworn allegiance to the West will somehow suddenly change by itself, and a revolution from above” in the conditions of the SMO is impractical, since in such a situation “the administrative apparatus can only be destroyed, and completely destroying the state apparatus means destroying the state”⁵⁶.

“... We cannot recognize the terrorist state of Ukraine as a terrorist state, ... **because then the domestic bureaucracy will not be able to pursue its policy of “here we fight – here we trade”...** there is a firm feeling that a **critically significant** part of the Russian government still considers the events after the fascist coup in Ukraine, and the entire presidency of Vladimir Vladimirovich Putin, as **some kind of misunderstanding that you just have to wait out so that everything goes back to normal** – to the 1990s, blessed for them and bloody for everyone else, when Russia was a colony not only economically, as it is now, but also politically and administratively...”⁵⁷

In this regard, the pessimistic views of some experts about the renewal of the management system and the country as a whole (and, therefore, about the country’s successful resolution of the

current confrontation with the Collective West) look quite understandable and justified.

“Currently, experts do not see that the Russian “elite” contains **any significant group** that would offer the country an adequate program of transformation and would be seriously aimed at its implementation ... Speaking in the language of political science, **there are no objective prerequisites for positive changes in today’s Russia**”⁵⁸.

But we should also note that after the start of the SMO, the President and the Government actually make managerial decisions on an operational basis aimed at limiting the possibilities of the Party for deferred defeat.

✓ This, in particular, concerns the **nationalization of the property of oligarchs and assets of unfriendly countries** – a topic that was virtually taboo until February 24, 2022, and today is appearing more and more often in the public space (and among the highest-level officials) and has real precedents as well.

✓ This also applies to the measures taken by the Mishustin Government (in pursuance of the Presidential Decree) to de-offshorize the Russian economy, the measure which is hardly noticeable to ordinary citizens, but which has important political significance – **from May 30, companies that have offshore companies among their beneficiaries will not be able to receive financial support from the state.**

⁵⁵ Rambler News (the opinion of the diplomat Ya. Kedmi). Available at: <https://news.rambler.ru/other/42643777-yakov-kedmi-zayavil-chto-rossiyskaya-elita-stoit-na-kolenyah-pered-zapadom-i-perekachivaet-tuda-prirodnye-resursy/>

⁵⁶ Averyanov V. Request for commissars. Available at: <https://izborsk-club.ru/24349>

⁵⁷ Delyagin M. The paradox of Russia: Free people are ruled by slaves of the West. Available at: <https://delyagin.ru/articles/1-mirovoy-krizis/109807-paradoks-rossii-svobodnymi-ljud-mi-pravjat-raby-zapada>

⁵⁸ Lepekhin V. (2023). About the untransformed elite and the “fried rooster”. *Izborsky klub*, 4(112), 18–23.

“The topic of nationalization was taboo until February 24 last year, when the special military operation began in Ukraine, followed by a powerful sanctions war of the Collective West against Russia. That’s when calls for nationalization sounded from the mouths of many politicians and public figures”⁵⁹.

On June 30, 2022, the President of the Russian Federation signed a decree “On the application of special economic measures in the fuel and energy sector in connection with the unfriendly actions of some foreign states and international organizations”. **It provided for the nationalization of Sakhalin Energy Investment Company, Ltd.,** operating within the framework of the well-known Sakhalin-2 project.

Later, another precedent arose – **the nationalization of various objects of movable and immovable property of Ukrainian oligarchs in Crimea by the decision of the Crimean State Council...**

In November 2022, State Duma deputies from the Just Russia party reported **on the preparation of draft laws on the nationalization of assets of foreign legal entities and individuals.**

On May 13, at the Saint Petersburg International Legal Forum, the chairman of the Investigative Committee of Russia A. Bastrykin proposed **nationalizing the main sectors of the country’s economy. This is the first time that an official of such a high rank has spoken out on the issue of nationalization, and unequivocally in favor of it”⁶⁰.**

“The State Duma very reasonably forbade providing any kind of state support to offshore companies. However, the offshore business simply did not pay attention to this, having achieved through the obedient “majority party” an elegant formulation according to which state support could not be provided only to an offshore company directly.

If an offshore company conducted business in Russia through a domestic “gasket” (like all retail food chains, except for “Magnit”), all restrictions were not only removed, but were not even implied: “what are you driving at, how dare you suspect conscientious oligarchs... I mean, entrepreneurs, this is a flawless Russian company!”

Mishustin’s government stopped this bureaucratic anti-Russian perversion by introducing an insignificant at first glance, formally editorial clarification, thanks to which, from May 30, companies with offshore companies among their beneficiaries will not be able to receive financial state support (no matter how many “pads” these offshore companies have as their cover)”⁶¹.

⁵⁹ Lepekhin V. (2023). About the untransformed elite and a “fried rooster”. *Izborsky klub*, 4(112), 18–23.

⁶⁰ Katasonov V. Finally, we heard the word “nationalization” from a high-ranking government official. Available at: https://zavtra.ru/blogs/nakonetc_mi_uslishali_slovo_nacionalizatsiya_ot_visokopostavlenogo_gosudarstvennogo_chinovnika

⁶¹ Delyagin M. An important step toward de-offshorization. Available at: https://zavtra.ru/blogs/pravitel_stvo_mishustina_sdelalo_vazhnij_shag_na_puti_deofshorizatsii

May 29, according to the Presidential Decree⁶², the presidium of the Board of the Military-Industrial Commission was formed, which included presidential envoys in the federal districts. According to experts, the President thus “purposefully involves” his plenipotentiaries “in the realities of the military political agenda, covertly, emphasizing a more active public position of the plenipotentiaries with the help of the military-industrial complex”⁶³.

According to the decree, Presidential plenipotentiaries should ensure coordination of the activities of government agencies at different levels “to solve problems related to the implementation of investment projects to ensure the production of samples of weapons, military, special equipment, clothing and equipment, assistance to organizations of the military-industrial complex in attracting labor resources and increasing the level of social guarantees for employees of such organizations”⁶⁴.

The above facts indicate that the President and the Government are actively taking measures not only to organize the life of the country during the SMO (*Insert 3*), but also purposefully create conditions for limiting the possibilities of influencing the work of the public administration

system for those representatives of the ruling elites who still remain in the liberal past, do not want or cannot rebuild on a nationally oriented agenda set by the beginning of the SMO. And, what is very important, this work is being carried out painstakingly, without panic and without any revolutionary upheavals for both the public administration system and society as a whole.

The situation at the front “defines socio-political processes, dictates the need to abandon any liberal-collaborationist historical and historiographical concepts and, in addition, indicates the urgent need to implement long overdue personnel decisions”⁶⁵.

The Russian army, which continues to keep the situation on the front line under control, thus providing time for solving internal issues, for the internal mobilization of the country, regarding not only the military-industrial complex, but also the system of public administration, economy, and culture and society as a whole, gives the opportunity to solve current internal problems in this way, while minimizing risks to the state...

⁶² On certain issues of the activities of the Military-Industrial Commission of the Russian Federation and plenipotentiary representatives of the President of the Russian Federation in federal districts: Presidential Decree 390, dated May 29, 2023.

⁶³ Putin included Presidential Plenipotentiary Envoy to the Ural Federal District Vladimir Yakushev in the presidium to control the military-industrial complex (opinion of political scientist I. Ananyev). Available at: <https://ura.news/news/1052653535>

⁶⁴ On certain issues of the activities of the Military-Industrial Commission of the Russian Federation and plenipotentiary representatives of the President of the Russian Federation in federal districts: Presidential Decree 390, dated May 29, 2023.

⁶⁵ Sorokin N. Wet American dreams and the “counteroffensive” that has failed. Available at: https://zavtra.ru/blogs/triedinstvo_russkoj_istorii

Monitoring of key decisions adopted by the President of the Russian Federation (April 19 – June 20, 2023)⁶⁶

April 25 – Decree “On the temporary management of some property”. According to the document, if any unfriendly country deprives our state, company or citizen of property, and also commits actions against the national, economic or energy security of Russia, then our country takes over the management of business or movable property, as well as securities of such unfriendly countries. As some experts noted, “our country has finally realized its threat to respond to the expropriation of our assets abroad by unfriendly countries: the long-awaited decree of the head of state and the mirror arrest of foreign property followed”⁶⁷.

April 28 – Federal Law “On amendments to Articles 3.5 and 14.552 of the Code of Administrative Offences of the Russian Federation”. Administrative liability is established for the nonfulfillment or improper fulfillment of an agreement concluded for the purpose of fulfilling a state defense order. An administrative fine in the amount of 3 to 5 million rubles is imposed on legal entities.

April 28 – Federal Law “On amendments to the Criminal Code of the Russian Federation and Article 151 of the Criminal Procedure Code of the Russian Federation”. The law is aimed at strengthening criminal liability for terrorist activities, sabotage and treason, as well as improving activities to counter these types of crimes. Life imprisonment is established for committing particularly serious crimes against the foundations of the constitutional system and the security of the state, as well as for treason. The term of imprisonment for a terrorist act has been increased (previously – from 10 to 15 years; now – from 10 to 20 years). More severe punishment has been established for facilitating terrorist activities, participating in a terrorist community, sabotage, an attack on persons or institutions that enjoy international protection, an act of international terrorism.

May 10 – Decree “On the procedure for entry into and exit from the Russian Federation of Georgian citizens”. The decree cancels the visa regime for Georgian citizens.

⁶⁶ The Insert is a continuation of the monitoring of management decisions of the authorities, which we have been conducting since June 2022.

All monitoring issues are presented in the articles:

1. Ilyin V.A., Morev M.V. (2022). A difficult road after the Rubicon. *Economic and Social Changes: Facts, Trends, Forecast*, 15(3), 9–41.
2. Ilyin V.A., Morev M.V. (2022). On the way toward crossing the inner Rubicon. *Economic and Social Changes: Facts, Trends, Forecast*, 15(4), 9–31.
3. Ilyin V.A., Morev M.V. (2022). The special military operation reveals new features of civil society. *Economic and Social Changes: Facts, Trends, Forecast*, 15(5), 9–32.
4. Ilyin V.A., Morev M.V. (2022). A framework for a new Social Contract is being formed in Russia. *Economic and Social Changes: Facts, Trends, Forecast*, 15(6), 9–34.
5. Ilyin V.A., Morev M.V. The President called on the officials of all levels to “stop fooling around”. *Economic and Social Changes: Facts, Trends, Forecast*, 16(1), 9–34.
6. Ilyin V.A., Morev M.V. (2023). Unusual clarity. Russia is no longer the West. *Economic and Social Changes: Facts, Trends, Forecast*, 16(2), 9–34.

⁶⁷ Russia has begun to take away Western assets on its territory. Available at: <https://www.gazetametro.ru/articles/rossija-nachala-otnimat-u-zapada-ego-aktivny-na-svoej-territorii-26-04-2023>

May 15 – Decree “On amendments to Presidential Decree 690, dated September 30, 2022 “On granting the citizenship of the Russian Federation in a simplified manner to foreign citizens and stateless persons who have signed contracts for military service”. The decree simplifies the procedure for admission to Russian citizenship of foreigners who have signed contracts for military service in the Armed Forces of the Russian Federation.

May 29 – Federal Law “On denunciation by the Russian Federation of the Treaty on Conventional Armed Forces in Europe”.

It was decided to withdraw Russia from the Treaty on Conventional Armed Forces in Europe, which was signed in Paris on November 19, 1990 and limited the number of conventional weapons and equipment in the armed forces of the participating states of two military-political unions: the Warsaw Pact Organization and the North Atlantic Treaty Organization (combat tanks, armored fighting vehicles, artillery, shock helicopters, combat aircraft).

Commenting on the essence of this decision of the President, some experts noted: “Many countries that have started to join NATO have not ratified the treaty, including the United States, Lithuania, Latvia, Estonia. Russia was put at a disadvantage when Russian quotas could be controlled by the countries included in this treaty, and the Russian Federation could not do this. It turned out that they had the opportunity to check, but we did not, because those countries did not ratify the treaty”⁶⁸. According to the expert with the Association of Military Political Scientists A. Koshkin, by denouncing the treaty on conventional armed forces in Europe Russia “throws off the dead weight”⁶⁹; “denunciation should restore order in international law, balance what is necessary and remove what does not work”⁷⁰.

May 29 – Federal Law “On amendments to Article 333 of Part Two of the Tax Code of the Russian Federation”. The participants of the SMO are exempt from paying the state fee for issuing a passport of a citizen of the Russian Federation and a national driver’s license in exchange for the lost or unusable ones.

May 29 – Presidential Decree 390, dated May 29, 2023 “On certain issues of the activities of the Military-Industrial Commission of the Russian Federation and plenipotentiary representatives of the President of the Russian Federation in federal districts”. The Presidium of the Board of the Military-Industrial Commission of the Russian Federation was formed. It is entrusted with “the authority to make operational decisions aimed at ensuring the implementation of tasks and functions assigned to the jurisdiction of the Board of the Military-Industrial Commission of the Russian Federation”. The Presidium includes plenipotentiary representatives of the President in the federal districts of the Russian Federation.

⁶⁸ Russia is withdrawing from the Treaty on Conventional Weapons in Europe: what it means (opinion of military expert V. Litovkin). Available at: <https://news.ru/russia/rossiya-vyhodit-iz-dogovora-ob-obychnyh-vooruzheniyah-v-evrope-cto-znachit/?ysclid=ij4cev3vxxu362718330>

⁶⁹ Federal News Agency. Available at: https://riafan.ru/24041620-_skidivaem_mertvii_gruz_politolog_koshkin_o_denonsatsii_dogovora_ob_obichnih_vooruzhenih_silah_v_evrope?ysclid=ij4cenrqlg885616698

⁷⁰ Political scientist Koshkin said that the termination of the CFE Treaty will restore order in international law. Available at: <https://tvrvezda.ru/news/20235101322-Ebod2.html>

End of Insert 3

<p>June 13 – Federal Law “On amendments to certain legislative acts of the Russian Federation”. According to the document, the norms of some legislative acts on social guarantees for military personnel are extended to citizens participating in the SMO as part of volunteer formations. This concerns the guarantees of medical and psychological rehabilitation, the provision of free vouchers according to the conclusion of the military medical commission, as well as the burial of the deceased. In addition, the participants of the SMO, their family members are exempt from the accrual of penalties in case of late and (or) incomplete payment for housing and utilities, and from paying a contribution to the overhaul of common property in an apartment building.</p>
<p>June 6 – Presidential Resolution 174-rp, dated June 6, 2023 “On additional measures of social support for military personnel, persons who have signed a contract to stay in a volunteer formation that contributes to the fulfillment of tasks assigned to the Armed Forces of the Russian Federation, persons serving in the National Guard of the Russian Federation, and their family members”. New measures are envisaged to support the participants of the SMO. In particular, free land plots in state or municipal ownership in all constituent entities of the Russian Federation, except Moscow, Saint Petersburg and Sevastopol (these constituent entities are recommended to adopt regulatory legal acts providing for the provision of other social support measures).</p>
<p>June 13 – Federal Law “On amendments to the Federal Law “On the procedure for leaving the Russian Federation and entering the Russian Federation”. The law provides for the transfer of a foreign passport for storage to the issuing authority for those who are restricted from leaving the country in connection with conscription for military or alternative civil service. According to the same scheme, it is planned to transfer for storage the passports of those discharged from military service in the FSB for up to five years from the date of dismissal.</p>
<p>An official or diplomatic passport may be declared invalid if it is not returned within five working days after the completion of a business trip. Also, the grounds for invalidating the passport will be the termination of the passport holder’s citizenship, the cancellation of the decision to acquire citizenship, as well as the establishment of the fact of the absence of citizenship of the Russian Federation based on the results of verification.</p>
<p>June 13 – Federal Law “On amendments to the Code of Administrative Offences of the Russian Federation”. Administrative liability has been established for the mass distribution of extremist materials or for their production or storage for the purpose of mass distribution.</p>
<p>June 13 – Federal Law “On amendments to Article 20 of the Federal Law “On free legal aid in the Russian Federation”. The list of categories of citizens entitled to receive free legal aid includes the participants of the SMO. The list of cases of providing free legal assistance has also been expanded.</p>
<p>June 13 – Federal Law “On amendments to Article 11 of the Federal Law “On days of military glory and memorable dates of Russia”. A new memorable date has been set: November 21 is the Day of the Military Oath (excerpt from the certificate of the State Legal Department: “The establishment of a new memorable date will contribute to the patriotic education of citizens of the Russian Federation and the formation of a respectful attitude toward the defenders of the Fatherland”).</p>

In fact, the situation on the front line and the success of achieving the goals of the SMO define the conditions and the time period for which the country should “restart, reset, and, if necessary, replace the already nonfunctioning regulators with those that meet the requirements of modernity”⁷¹.

But such a “restart of regulators” of public life (especially in today’s almost military conditions) can only be carried out by a strong reformer, which means that the President will have to show political will more than once and make more than one difficult decision.

“SMERSH is not just needed, it was needed the day before yesterday. And today we need a working SMERSH. Today SMERSH would have to operate throughout Russia and have special powers in the territories that are adjacent to the combat zone, and those that have recently joined Russia. SMERSH is something without which we will not be able to fight effectively... we have the FSB, we have military counterintelligence agencies. But SMERSH is an organization that has special powers. If SMERSH says that it is necessary to evict 20 thousand people from a certain area for a month, then this decision must be implemented. If it is necessary to disconnect all communication, then it is done with one click. If it is necessary, then it is done. Because this is the front, and life depends on it. SMERSH should deal with all this, since it should have the right to do so”⁷².

In particular, many experts (quite reasonably, given the terrorist attacks taking place on the territory of Russia and the significance of developments on the front line) actively advocate the re-establishment of SMERSH, an organization with special powers dictated in fact by wartime and the unprecedented nature of threats to national security.

At the same time, we should note that such proposals to strengthen intelligence and counter-terrorism measures and, in general, to create tougher conditions in the country in order to ensure national security are supported not only by many specialists, but also by broad segments of the population. Thus, the results of a sociological survey conducted by VolRC RAS in May – June 2023 showed that **from 50 to 60% of people** support the proposals made by the experts of the Izborsk Club⁷³ – on the introduction of martial law on the territory of new constituent entities of the Russian Federation and the regime of counter-terrorism operations in other regions of Russia, on the abolition of the moratorium on the death penalty, on the granting of special powers to units of the National Guard and Military Police, etc.⁷⁴ (*Tab. 3*). The idea of recreating SMERSH, in particular, was supported by more than half of the surveyed population in the majority (in 11 out of 14) of the socio-demographic groups (*Tab. 4*).

⁷¹ Sorokin N. Wet American dreams and the “counteroffensive” that has failed. Available at: https://zavtra.ru/blogs/triedinstvo_russkoj_istorii

⁷² The expert explained the main differences between SMERSH and other special services (opinion of military analyst V. Shurygin). Available at: <https://voennoedelo.com/posts/id45569-ekspert-razjasnil-glavnye-otlichija-smersh-ot-drugih-spetssluzhb>

⁷³ The Izborsk Club is a club of experts established in September 2012 in the city of Izborsk, Pskov Oblast. As noted on the official website of the Izborsk Club, one of its main tasks is “to create and present analytical reports to the authorities and society of Russia; the reports are aimed at the formation of an updated patriotically oriented state policy in all spheres of national life”. Permanent members of the Izborsk Club are, for example, A. Prokhanov, S. Glazyev, M. Delyagin, V. Averyanov, A. Dugin, A. Fursov, V. Ovchinsky, etc.

⁷⁴ Statement of the Izborsk Club of May 6, 2023. Available at: <https://izborsk-club.ru/24286>

Table 3. Attitude toward measures to strengthen the set of operational search, intelligence and counterintelligence measures, % of respondents*

Answer option	I fully and mostly support	I fully and mostly don't support
Introduction of martial law in the new Russian territories (Donetsk People's Republic, Lugansk People's Republic, Kherson and Zaporozhye oblasts), as well as in the territories being shelled by the armed forces of Ukraine	63.3	11.9
Introduction of a counter-terrorism operation regime throughout the Russian Federation, except for regions where martial law is established	58.0	13.6
Severance of diplomatic relations with any countries organizing attacks on Russian embassies	57.9	14.5
The Federal Law "On operational search activities" should include a section on the specifics of the implementation of operational search activities in the combat zone during the period of work under martial law, state of emergency, counter-terrorism operations. Operational investigative measures should be carried out in these conditions without court decisions.	56.3	13.6
In the combat zone and frontline regions, to create complex operational intelligence units (departments, groups) from representatives of various subjects of operational search activity according to the SMERSH type	55.6	13.9
Create operational search units in the Military Police, which performs, among other functions, the protection of military facilities	55.5	13.1
Amendments to the Criminal Code, the Criminal Procedure Code and the legislation on judicial proceedings in order to create military tribunals	53.2	14.9
To make a number of units of the National Guard of Russia – military intelligence units and special rapid response units – the subject of operational search activity	52.8	15.1
Conducting trials in absentia against the organizers of sabotage with the imposition of death sentences in absentia and the execution of these sentences on enemy territory	51.7	16.4
Lifting the moratorium on the death penalty (primarily for any murders as a result of terrorist attacks and sabotage)	51.1	19.3

Source: VoIRC RAS data.

* The survey was conducted in May – June 2023 in the Vologda Oblast; 1,500 respondents over the age of 18 were interviewed in the cities of Vologda and Cherepovets; in Babaevsky, Velikoustyugsky, Vozhegodsky, Gryazovetsky, Tarnogsky municipal okrugs, and in Kirillovsky, Nikolsky and Sheksninsky municipal districts of the region. The survey method is a questionnaire at the place of residence of respondents. The sample is targeted, quota-based. The representativeness of the sample is ensured by observing the proportions between urban and rural populations, the proportions between residents of settlements of various types (rural settlements, small and medium-sized cities), the sex and age structure of the adult population of the oblast. Sampling error does not exceed 3%.

Ranked in descending order of the proportion of those who answered "I support". The wording of the question: "In May 2023, the members of the Izborsk Club made a statement about the need to take a number of measures at the state level to strengthen the complex of operational search, intelligence and counterintelligence measures to prevent sabotage and terrorist acts. Do you support the proposed measures?" (the share of those who "found it difficult to answer" for each of the proposed answer options was 25–30%).

Table 4. Do you support the creation of integrated operational intelligence units (departments, groups) in the combat zone and front-line regions from representatives of various subjects of operational search activity like those resembling SMERSH?, % of respondents

Characteristic	I support	I don't support
Sex		
Men	58.5	13.1
Women	53.3	14.6
Age		
Under 30	48.6	8.4
30–55	55.6	14.5
Over 55	58.1	15.2
Education		
Secondary and incomplete secondary	57.2	8.9
Secondary vocational	53.9	16.1
Higher and incomplete higher	55.5	17.4
Income group		
Bottom 20%	49.6	11.0
Middle 60%	56.1	12.5
Top 20%	62.9	20.6
Territory		
Vologda	44.0	22.4
Cherepovets	64.0	14.3
Districts	57.4	8.9
Oblast	55.6	13.9
Source: VolRC RAS data. The survey was conducted in the Vologda Oblast in May – June 2023.		

Thus, the expediency of a substantive discussion of measures to strengthen the set of operational search, intelligence and counterintelligence measures is explained not only by the actions of the enemy, but also by a significant number of our own internal problems. Including those which

were discussed on June 13 at the meeting of the RF President with war correspondents and which, in fact, have to be solved today in an “emergency” mode, under pressure from external and internal, virtually uncontrollable, circumstances.

Today’s time is still called wartime with reservations, but it absolutely cannot be called peaceful, and this requires appropriate changes in the consciousness and behavior of all strata of Russian society, including (or rather, first of all) its “elite” groups: **the country should be sensitive to the challenges of the time, and the elite should be in unity with the Supreme Commander-in-Chief, otherwise the state cannot avoid a full-scale catastrophe.**

“Ignoring the links between the state of public life and the state of law is a manifestation of monstrous shortsightedness...

If the country is not ready to respond sensitively to the challenges of the time ...

If the elite resists the political leader who has caught these challenges and is filled with a desire to build a new type of relations between the elite and the people ...

If the intelligentsia is only able to discredit everything that comes from the leader, and at the crucial moment it turns out to be unable to solve the urgent tasks either in a reformist or revolutionary way...

How, in the presence of all these destructive “if” to avoid a full-scale state catastrophe? And who is responsible for it? ...

Only a strong reformer, limiting the arbitrariness of the authorities, can prevent an explosion and “let those healthy elements that dwell in the heart of the Russian land breathe”⁷⁵.

⁷⁵ Zorkin V. Reformer – elite – people. Available at: <https://rg.ru/2023/05/12/put-prava-v-rossii.html>

* * *

Authors' note: this article was prepared before the attempt of an armed rebellion organized by E. Prigozhin on June 24, 2023. The analysis of this event is still ahead; any conclusions can be drawn only after its assessment by the President, legislative authorities, and society as a whole.

Therefore, here we present the opinion of three experts who, in our opinion, most objectively and accurately reflected the essence and significance of the events that took place on June 24, 2023: military and political figure of the Donetsk People's Republic A.S. Khodakovsky, Russian political scientist, philosopher, active public figure A.G. Dugin, and publicist V.P. Semenko:

A.S. Khodakovsky: “We prayed to God that the enemy would not take advantage of the situation and throw all the resources into battle – there would be almost no chance. **It's not easy for us as it is, but yesterday everything hung on a very thin thread.** And those who understood what was at stake and how close we came to defeat will never understand those who shouted glory to Wagner Group members, rejoicing that someone challenged the authorities... **Those who hold the front have been stabbed in the back.** Those whose lives depend on holding the front – experienced the darkest hours yesterday, despite the fact that these people are already under the influence of the war every day. **Millions of people were horrified yesterday by the thought that everything they have endured over the past years will be crossed out in one day**”⁷⁶.

A.G. Dugin: “**There is only one systemic solution: the immediate and real patriotic ideologization of the ruling class and the rotation of the elites.** Only an ideologized elite can be required to be heroic and behave appropriately in an emergency situation. It is useless to expect this from the current elite. We need a sovereign elite. Otherwise, everything will happen again. **The weaknesses of our system were fully revealed yesterday.** But we also saw Putin's will, Lukashenko's true friendship, and the full and uncompromising support of our President from all true patriots”⁷⁷.

V.P. Semenko: “The fact that a big disaster impending on Russia was prevented at the last moment in Putin's trademark style by peaceful means is undoubtedly very gratifying... **However, the brilliant “resolution” (once again) of an acute situational problem does not cancel out the vices of the system itself, which made this mutiny possible. For in it, let's not be afraid of tautology, corruption is systemic in nature, replacing ideals and values for the current elites.** To many officials, there are simply no other incentives to work, except for “sawing”. Prigozhin's actions indicate that “it is becoming increasingly difficult to sort out the situation. Oligarchs, especially those with a power resource, are starting to get out of control. It's time to move on to the rotation of the elites, there is no other way out”⁷⁸.

⁷⁶ Official Telegram channel of A. Khodakovsky. Available at: https://t.me/aleksandr_skif/2747

⁷⁷ Official Telegram channel of A. Dugin. Available at: <https://t.me/Agdchan/10753>

⁷⁸ Semenko V.P. The fire is going according to plan. Available at: https://zavtra.ru/blogs/pozhar_idet_po_planu

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Social Contract: Historical and Contemporary Realities in Soviet/Russian Society



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Abstract. The article provides an analysis of the currently little used concept – the social contract. For this purpose, a brief historical digression was carried out: an assessment was made of the contribution of thinkers of the Enlightenment, who were the first to substantiate the proposal to consider the relationship between the state and the people through the prism of reaching agreement on the arrangement of public and private life, calling it a social contract. After a break, interest in this phenomenon revived in the 20th century, which is given more detailed information on the example of the consideration of the essence and content of the social contract by foreign and Russian researchers. On this basis, it is concluded that the social contract is an independent scientific and social phenomenon that embodies various forms of social consent between the people and the state, given that they are not only open, but also latent, reflecting the underlying processes taking place in public consciousness. The article defines the criteria inherent in the social contract – goals, means of achieving them, ideological support, the effectiveness of feedback and participation of the people in managing the affairs of society and the state. A comparative analysis of the process of its functioning in the Soviet and modern Russian society is given, estimates and conclusions are made about the problems of its implementation at various stages of historical development. It is especially noted that the social contract has both explicit and latent characteristics, which, through the analysis of the state, trends and problems of social development, allows us to speak about the degree of its effectiveness and efficiency in preserving and strengthening the state.

Key words: social contract, state, society, people, public consciousness, consent, trust, USSR, Russia.

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Problem statement

All countries, without exception have the following common trends: their governments have to organize interaction with people, search for ways in which the ruling class exists, convince people of the reliability of management decisions, involve them in active participation in the implementation of formulated projects and/or development programs.

To this end, the state adopts declarations, laws, resolutions, decrees and other policy documents. The pinnacle of these intentions and aspirations is the Constitution, which reflects the fundamental provisions on the basis of which the life of society is built in all its aspects.

In reality, the process of development and functioning of the state is embodied in the regulation (design or planning) of processes taking place in the economic, social, political, spiritual and cultural spheres of society. In other words, decisions are made, which in most cases are aimed at achieving the stated goals in a variety of ways: in the economy – regulating the market and its individual components; in the social sphere – ensuring a balanced state of the social structure, in the political sphere – providing support for political goals and eliminating social tension, in the spiritual and cultural sphere – creating ideological unity, promoting moral cohesion.

Despite the importance of the above directions in the life of the state and society, such a phenomenon as social contract does not always exist or adhered to; social contract makes it possible to identify and embody the deep, vital aspirations of the people; as a result, political power embodied by the state gets the right to exist, becoming a historically justified phenomenon.

In accordance with these provisions, the article aims to reveal the scientific and applied potential of the social contract, substantiate its relevance and reveal its role in the life of the Russian state and society. The social contract is not an official state document – it is a social construct that contains explicit and latent characteristics. The importance of the issue under consideration is also due to the ongoing events in the life of the country caused by the special military operation and unprecedented sanctions that test the strength of not only the economic and military system of Russia, but also the cohesion of the Russian people.

A brief historical insight

The first experiences of understanding social contract were reflected in the works of English and French educators (Hobbes, 1991; Locke, 1988; Holbach, 1963; Montesquieu, 1955; Rousseau, 2000). Although scientists interpreted its essence and content in different ways, they all paid attention to the conditions of the stability of the state, believing that in addition to formal acts of building political life, there is an objective need to establish certain rules of interaction with the people, ensuring their agreement on the current and future directions in the development of the state and society. Their works substantiated a new scientific concept of “society”, which was of great practical importance and which defined the need to consider it as an independent social force. It was from the 18th century that the emerging trade unions, new political parties, and various voluntary associations began to personify society. The significance of a new phenomenon – society – needed to be understood, which was reflected in the ideas of social contract.

Considering the interpretations of social contract proposed by the thinkers of the Enlightenment, we can argue that they viewed social contract as a product of the reasonable will of the people, a human institution, or even an invention (result) of creative search, including spontaneous. At the same time, such an interpretation is often associated with the idea of the mechanical origin of social contract, which acts as an artificial construction of the conscious will of people who have agreed to unite for the sake of ensuring freedom and order that satisfies them.

At the same time, similar judgments appeared among Russian scientists, who drew attention to the possibility of a contractual agreement between the state and the authorities. Thus, A.N. Radishchev (1749–1802) believed that the state does not arise as a result of some divine providence, but as a consequence of an open or tacit agreement of members of society in order to jointly protect the weak and oppressed. In his reasoning, he proceeded from the fact that “the conciliar power of the people is the original power” (Radishchev, 1952, p. 10).

Later, in the 19th century, the ideas concerning social contract were developed to a certain extent by A. Tocqueville (1805–1859). Reflecting on the fate of the revolution, he wrote: “The main goal of a good government is to achieve the welfare of the people rather than establish some kind of order among the poor”. He criticized the American and then the French authorities for their policies that did not take into account the interests of all segments of society. At the same time, Tocqueville saw the basis of democracy in the traditions of the Puritans who stood at the origins of the New World colonies, so he considered equality of opportunities for all residents of the country to be the main advantage of any society (Tocqueville, 2008).

After the rise of interest in social contract in the 18th century, attention to this topic decreased, although some ideas about building a rational interaction between the people and the authorities

were not only substantiated, but even implemented on certain issues. It is worth mentioning that some European countries, for example, Germany under Bismarck, developed and implemented legislative acts on labor insurance.

However, it was only in the 20th century that the ideas of social contract were revived in full under the influence of the labor movement, which demonstrated its strength and showed that the existence of states is impossible without the participation of the people in deciding the fate of the country. The revival of interest in social contract was also due to the experience of the Soviet Union, which convincingly proved the possibility of realizing social progress on the basis of combining the interests of the people with the goals of the ruling Bolshevik party.

Among the newly formulated concepts of social contract, the most interesting are the ideas of J. Rawls (1921–2002), who considers the activity of individuals as rationally thinking people in the process of creation and functioning of the state they are creating on the principles of social welfare. According to this interpretation, public institutions formed as a result of such a contract are guided by the need to observe justice, and the people included in them build their relationships on the conditions to which they agreed, being equal in social and natural aspects (Rawls, 1995).

R. Nozick (1938–2002) challenged Rawls' ideas from a liberal standpoint. He defended the need for a “minimal state” (“night-watchman” state) and criticized the theory and practice of the “welfare state” for violence against individuals (Nozick, 2008).

The original contribution to the development of the problems of social contract was made by J. Buchanan (1911–2013) and O.T. Bogomolov (1927–2015). According to Buchanan, all people, regardless of whether they are private individuals or public figures, make decisions and act based on the rational pursuit of personal gain. If personal

interests contradict the interests of society, a person usually gives priority to personal interests, as a result of which the social contract may cease to exist¹. The Russian scientist and academician O.T. Bogomolov proves that various noneconomic forces have a direct impact on the economic policy of each country. Therefore, the social contract is, in fact, a state construct which contains a description of the actions of the state in relation to its citizens (Bogomolov, 2010).

M. Olson (1932–1998) interprets the ideas of social contract in a peculiar way. He suggests that theoretically people can negotiate among themselves without coercion, but in such a situation there is a “stowaway problem” when people are ready to use the public good, but often do not want to participate in its creation or in every way avoid it (Olson, 2012).

Olson’s ideas are shared to a certain extent by the Russian economist A. Auzan, who believes that “two types of social contract are being formed” in the modern world. The first type is horizontal, “when people hire the state as an agency for the production of services, defense and justice”. In this case, as history shows, people can do without the state in the very public affairs (security, organization of new forms of management, creation of military institutions and even private prisons). The second type of contract is characterized by the fact that “no one hired anyone”, and the state “manages and creates the rules on its own”. This is due to the emergence and expansion of the circle of authoritarian states, the number of which, according to the World Bank, increased by more than 50% at the end of the 20th – beginning of the 21st century; and, most importantly, their effectiveness is not inferior to that of “democratic” states (Auzan, 2017). However, despite the originality of these statements, it is difficult to agree with them, since

¹ *Nobelevskie laureaty po ekonomike. Dzheims B'yukenen* [Nobel Laureates in Economics. James Buchanan]. (1997). Moscow: Taurus al'fa.

they reduce the interaction of the people and the authorities to only one, albeit the most important, function – protection against encroachments on property rights and individual freedoms.

Considering the evolution of theoretical concepts, let us pay attention to the fact that in the practice of implementing the social contract a significant role is performed by those groups that formulate its principles and are in most cases associated with the intelligentsia (according to the Russian tradition) or intellectuals (according to the Western tradition), but only if they have political power or significant public influence.

To sum up, we can argue that *social contract, as a form of social consent between the people and the state, characterizes the goals, means of achieving them, ideological support, the effectiveness of feedback and participation of the people in the management of society and the state.*

In our opinion, the social contract, its condition and its problems are one of the most important indicators of the stability of the state, what it really is, what its strengths and weaknesses are in the existing reality.

Let us focus on this in more detail on the example of Soviet/Russian history.

Realities and lessons of the social contract in the Soviet Union and Russia

The basis that regulates the state structure is the Constitution, which formulates the foundations of existence of the state and society. In the history of the Soviet Union, there were three versions of the Constitution: 1924, 1936 and 1977 (if we do not mention their predecessor, the 1918 Constitution of the RSFSR). It is worth noting that, according to universal recognition, including even the opponents of the Soviet system, the Constitution of 1936 was acknowledged as a standard of proclaimed human rights and freedoms, at that time having no analogues in the world.

Modern Russia lives according to the Constitution of the Russian Federation adopted by popular

vote on December 12, 1993 with amendments approved during the all-Russian vote on July 1, 2020. The Constitution has the highest legal force, consolidating the foundations, powers of representative, executive, judicial authorities and local self-government, human and civil rights and freedoms.

Therefore, it is quite natural that the social contract is based (or should be based) on the Constitution of the country. However, according to a sociological survey conducted by VCIOM in December 2017, only 61% of Russians considered the Constitution of the Russian Federation to be a document that fully or rather fully meets the needs of the country and its people. At the same time, a significant number of people believe that this fundamental document does not fully or at serious cost solve their civil and personal problems, that they doubt the ability of the government to provide for and meet their needs and interests. This means that there is a discrepancy between what the state considers important and necessary for its existence, and what the people think about this importance and necessity. In other words, in reality there are disagreements between the state and part of the people. This means that the state, represented by political authorities, needs not only to comprehend this discrepancy, to know about it, but also to minimize it, so as not to bring the situation to social tension, conflict and even a possible social explosion.

In this regard, in order to coordinate the interests of the state and the people (its main classes, communities and groups), there is the social contract – the product of *conscious coordination of the actions of two main forces – the state represented by political power and the people represented by nongovernmental associations, movements, the effectiveness and efficiency of which is manifested not only at the open, but also latent level in the form of trust, consent, the desire to build a “common destiny”*.

Social contract is an independent social phenomenon, which is characterized by a special structure. In order to present the social contract in action, we will consider its operation in the Soviet Union and Russia, carry out a comparative analysis of its criteria, reserves and resources, as well as the possibility of its effective existence in the present and future. We consider it very important to review the lessons, both positive and negative, accompanying the implementation of this strategically important phenomenon.

First, the essence of the social contract is represented by a goal that unites the fundamental, main aspirations of the people and the intentions of the state. On the one hand, it reflects the aspirations of the people, which nurture the beliefs of the majority of people on the desired structure of society, the achievement of group and personal welfare. On the other hand, the state, represented by the political power, develops its goals, claiming not only to solve urgent, current tasks, but also those it will face in the future. Therefore, the more majestic and at the same time more concrete the goal of the development of society and the state, the more people accept it, agree with it and are even inspired by it. At the same time, it should be real, perceived by people as achievable, even in a problematic situation. The goal also means that it holds together and coordinates what the main classes, social communities and groups wanted (want) and strive for, and what the authorities offered (are offering), without excluding possible costs and miscalculations in the process of its implementation. The state has a high responsibility to formulate a strategy for the development of the country that would satisfy the people not only in reality, but also allowed them to see their future life, the idea of which would seal this agreement. I.e., the ability to formalize mutual aspirations and intentions in the current reality and for the future is the key to the sustainable existence of the social contract and, respectively, society and the state.

Let us recall that when coordinating the interests of political power and the value orientations of the people, Hobbes' goal was security, Locke's – freedom, Rousseau's – democracy, Montesquieu's and Radishchev's – social equality, Rawls' – justice. In other words, social contract is designed to ensure constant, regular and mobile social agreement based on the achievement of the main goal, as well as to offer means and methods for its implementation in order to achieve mutual understanding and support.

The history of the existence of the Soviet Union shows that the Bolsheviks who came to power managed to convince and captivate the majority of the people with the idea of a new just society. It was embodied in the call for the construction of a socialist (and then communist) society unknown to history, in which the principle that was clear to many was formulated as follows: “From each according to his ability, to each according to his work”. This formulation of the way of life and, first of all, labor relations satisfied the majority of workers and peasants, although there were a lot of costs in the process of implementation, such as, for example, in the form of equalization in the remuneration of workers in different industries and different professions or the ratio of wages of a worker and an engineer in the early 1980s in the proportion of 1 to 1.04.

The importance of coordinating the goals of the state and the people was shown at the stage of the collapse of the social contract in the Soviet Union, which occurred during the so-called perestroika. The goals of perestroika, which were met almost with delight, quickly faded in people's minds, as they were immediately followed by hastily formulated subgoals for solving dramatic problems of the economy, social and political life. These subgoals reflected the ideas and intentions of those in power, but not the people and not even the scientists, its responsible representatives. And it is quite natural that the people began to demand significant adjustments to the officially conducted

policy. At the same time, we note that criticism of the Soviet government meant demands not for its liquidation (as the neoliberals convince us), but for its reform, according to the results of the All-Union referendum in March 1991 (but the same neoliberals do not like to mention this), when 76.1% of the population voted for the continuation of the existence of the USSR, but with serious changes in its policy.

As for modern Russia, the coordination of the goals of the state and the people is largely uncertain. It is still unclear to many Russians what kind of state, what kind of society they are building. The welfare state proclaimed in the Constitution of the Russian Federation, whose policy is aimed at creating conditions that ensure decent life and free human development (Article 7.1), and means a certain general mindset that is not specified so as to be understood and implemented in current daily life. In this regard, let us provide an example of modern China, where, against the background of a common goal – construction of socialism with Chinese characteristics – the principle of achieving average prosperity in comparison with world standards was proclaimed. More specifically, this meant that an average-income society is a stage of development between solving the problem of food and clothing for the population and achieving full prosperity. This has not only satisfied, but also inspired millions of ordinary Chinese, about 100 million of whom have stepped out of the poverty zone over the past 10 years (Zhang Tian, Romanenko, 2009).

In Russia, attempts to overcome the low level of welfare still remain unsuccessful: since 2012, the number of Russians living below the poverty line remains about the same – about 20 million people, or 12% of the population. The intentions recorded in national projects and aimed at solving such pressing socio-economic problems as labor productivity, employment, reducing unemployment and poverty have not been implemented. Moreover, many decisions in the fields of education, science,

and culture turned out to be erroneous, which was fully or partially recognized at the official level. References to following the requirements of the fourth industrial revolution and the sixth economic paradigm are still found in speeches, resolutions and other documents, which, for all their importance, do not correlate with the basic target aspirations of people and the actual socio-economic situation. As a result, according to Rosstat, while labor productivity in 2012–2018 was intended to have grown by 50% (in the years of the first national programs), it turned out to be only 5% in reality (Aganbegyan, 2019).

These and similar concrete results of development of the Russian society allow us to assert that the goals that would bring the people and the state together to the maximum extent have not yet been fully found.

Second, social contract specifies the means of achieving the formulated goals; this is reflected primarily in the instrumental methods, directions and ways of its implementation. The set of these means depends on the current state of affairs, the socio-historical situation in the country. In Soviet Russia during the civil war, the main means was armed struggle against various supporters of the tsarist regime and foreign intervention, during the NEP years – implementation of the slogans proclaimed during the revolution, “factories to the workers”, “land to the peasants”. Then there were five-year plans aimed at creating a socialist economy, the years of the Great Patriotic War aimed at defeating German fascism. In the post-war years, there were attractive and promising means to foster pride (or just involvement, direct or indirect) for participation in space exploration, achieving parity in the nuclear confrontation, as well as in solving more specific economic problems: plowing up virgin soil, constructing new cities and enterprises in Siberia and the Far East, exploring oil and gas fields. All these projects required millions of new workers, provided an opportunity to show

one’s worth (this relates to young people as well) and, most importantly, to feel part of a common great cause, instilling confidence in the successful achievement of not only common, but also personal goals. We would like to emphasize the latter, since personal understanding of what is happening and its acceptance as concerning one’s life created a latent socio-psychological ground that embodies confidence in the future and makes a person a participant in the social contract.

In modern Russia, the social contract has long been based on a liberal attitude: the state should limit itself to the role of “night watchman” as much as possible, and the person themselves is responsible for their present and future life. Capital, financial means or simply the money was proclaimed the main means of achieving welfare. At the same time, no economic and social projects were proposed that would testify to the importance and role of Russia. Moreover, neoliberal policies have destroyed such industries as machine tool construction, aircraft construction, automotive and others that occupy leading positions in the global economy. As a result, significant human, social, scientific and technical potential was lost, which led to a dramatic weakening of the Russian state and by the end of the 1990s called into question its existence, there was a threat of collapse, as happened with the USSR. And although in the early 2000s this trend was partially reversed, but not as successfully as the objective needs of social development demanded. Russia is still facing the urgent issue of radical change in economic policy and the social unity of the people associated with it, without which the social contract cannot exist. The fact that the social contract requires improvement is indicated by the data of All-Russian studies conducted by sociologists from the Russian State University for the Humanities in 2018–2022 in various sectors of the economy and socio-cultural life (industry, construction, transport, agriculture, services, healthcare, culture, education and science). They showed that from 42.5 to 50% of

the population believe that the country is developing in the right direction, almost every fifth (from 18 to 22.9%) – that development is going in the wrong direction, and every third (up to 35%) preferred not to answer (Intelligentsia ..., 2023, p. 263). Such actions carried out by the state as privatization, the tax system, and the growth of social inequality are seriously criticized. They are rejected by more than every second Russian. All this allows us to conclude that the means of implementing economic and social policy call into question the strength of the existing social contract. Obviously, drastic changes need to be made in politics, which is what not only many representatives of scientific thought, but also practical workers say² (Glazyev, 2011).

Third, the most important structural element of social contract is the ideology, which in the Soviet Union was embodied in the concept of the “common destiny” of the people and the state on the basis of the unity of ideological and socio-political guidelines for the organization of public and private life. The Soviet ideology was embodied in the policy of forming such theoretical and practice-oriented innovations as the “Soviet people” and the “Soviet individual”. It was a unique historical experiment, the idea of which was previously demonstrated by the great bourgeois revolutions, which also set the task of creating a new type of person and forming such qualities as conviction, pride, hope, confidence, traditionalism, taking into account the interests of the main social communities and groups. The implementation of this experiment in Soviet times provided a solution to the toughest economic problems and at the same time formed the ideological and worldview foundation that made the state a responsible body for fulfilling its historical mission (Toshchenko, 2021).

² Babkin K.A. (2008). Reasonable industrial policy, or How we get out of the crisis. Available at: <https://www.kakprosto.ru/kak-980254-konstantin-babkin-biografiya-tvorchestvo-karera-lichnaya-zhizn#ixzz81KWjWHMG>

Regarding the specifics of ideology in the Soviet Union, we should note that the ideology was aimed at implementing the principle of serving the people, although this process was ambiguous, with serious costs and even mistakes. But, despite the miscalculations, the orientation of the Soviet government toward the interests of the main classes – workers and peasants – contributed not only to the assimilation of the socialist worldview by the majority of people, but also to the development of fundamentally new attitudes – the cult of labor and the cult of education.

Speaking about the *cult of labor*, let us pay attention to the process of its inclusion in the ideology of “common destiny”. On the one hand, the glorification of labor was based on folk traditions of deep respect for creative activity, high appreciation of its bearers, criticism of those who were not involved in its implementation. On the other hand, orientation toward labor became increasingly highly appreciated and encouraged not only within the framework of specific industries, but also (which is fundamentally important) by the state. This was reflected in the official state support and encouragement of such initiatives as *udarnichestvo* (exemplary performance in labor discipline; with the beginning of industrialization), the Stakhanov movement (during the first five-year plans, starting in 1935 after the labor feat of A. Stakhanov who over-fulfilled the coal mining plan by 14 times). In the late 1950s, the desire to get the title of a participant in the movement for a communist attitude toward labor became widespread.

Such as attitude toward labor began to consolidate in connection with the course on improving its conditions and organization (Russia launched a mass movement on the scientific organization of labor, the movement of innovators and inventors). At the same time, a system of incentives was introduced and subjected to numerous experiments in the form of various

methods of material remuneration and moral encouragement (honors boards at all enterprises and at the place of residence; awarding diplomas, certificates of honor, etc.). We should point out that the glorification of labor was brought to the state level, manifested in constant attention and improvement of the practice of awarding state awards. We should note that such measures were initiated already at the end of the civil war: the 8th All-Russian Congress of Soviets on December 28, 1920 established the Order “Red Banner of Labor” of the RSFSR, and somewhat later similar orders were established in other Soviet republics. In the 1920s, it was widely practiced to award Red Banners to production teams that showed outstanding labor performance. In 1928, the Order of the Red Banner of Labor was introduced. Then, with the beginning of the first five-year plans, medals and orders for achievements in labor were established. The year 1938 was marked by the appearance of the title of Hero of Socialist Labor, as well as the medals “For Labor Valor” and “For Distinguished Labor”. In the summer of 1945, the medal “For Valiant Labor in the Great Patriotic War” was established. In 1970, in connection with the centennial anniversary of the birth of Vladimir Lenin, the medals “For Valiant Labor” were established. Later, the Order of Labor Glory (1974) was created. In general, the award system of the USSR was democratic, every citizen of the Soviet Union could receive any, even the highest, award for valor and perseverance in work.

As part of the labor policy, the emphasis was placed (along with the focus on achieving high production indicators) on developing a sense of duty and responsibility to society. This was facilitated by various forms of incentives and awards for high achievements in labor; this convinced people of the importance of such an attitude toward labor, which strengthened the sense of personal dignity. However, with a high assessment of the role and importance of labor, we must not forget that in the 1960s and 1980s, imbalances in the use of human

resources were revealed, which led to a slowdown in solving problems related to labor productivity growth. Awareness of these obstacles in the context of changes in public life led to the fact that the Decree of the Presidium of the Supreme Soviet of the USSR of May 24, 1955 established the State Committee of the Council of Ministers of the USSR on Labor and Wages. The Labor Scientific Research Institute and the Central Bureau of Labor Standards were established under the Committee. It was a new and fundamentally important step to improve labor relations, an attempt to strengthen social contacts between the state and all workers. In the 1960s, there was a revival of interest in the scientific organization of labor: scientific conferences were held with discussions of the goals and objectives of labor organization, a network of relevant departments at enterprises was created, numerous experiments were carried out, for example, at the Shchelkovsky plant, at the Iliysky state farm, etc. (Kravchenko, 1987; Changly, 1973).

Unfortunately, this trend faded quite quickly as a result of the cancellation of the so-called Kosygin economic reform, which began to be carried out, when state bodies decided to follow a well-worn development track that justified itself in the 1930s, but turned out to be erroneous in the 1960s and 1970s with difficult to predict consequences. In such conditions, dissatisfaction with the policy in the field of labor organization increased, which manifested itself in the emergence of apathy, discontent and an increase in critical attitude toward political power (Toshchenko, 2005).

In modern Russia, there have been no significant qualitative changes in relation to labor, despite the introduction of private property and proclamation of opportunities to use market relations. Labor productivity is still not growing or is growing weakly. The attitude of the majority of employees toward labor has not changed. We should also note that in the 2000s, the priorities of the work of the Labor Scientific Research Institute changed

dramatically. While earlier it was engaged in the scientific organization of labor, now the problems of unemployment (“employment of the population”), poverty (“standard of living”) and insecurity of people (“social insurance”) are coming to the fore. In other words, the ground for social tension in the labor sphere remains, which does not contribute to the effective functioning of the social contract.

As for the *cult of education*, it was launched after the 111th Congress of the Komsomol in 1920, during which Lenin called on the people to “study, study, study”. Thus, starting with the policy of eliminating illiteracy and deployment of primary, secondary and higher education, Russia managed to achieve a high level of literacy compared to countries that had a more developed economic base.

It was the education system that played a significant role in strengthening the social contract, as it created significant multimillion social communities – the Soviet intelligentsia and skilled workers, who in fact became convinced that education was becoming a powerful means of social and professional mobility that provided them with a new and higher standard of living and better lifestyle (see, for example: Sitarov, 2019).

Speaking about ideology in modern Russia, we should note the following: traumatization of the modern spiritual and moral sphere of Russian society is largely explained by the provision contained in the Constitution of the Russian Federation: there is no state ideology in Russia. The negative attitude toward the word “ideology” may be due to the fact that only one ideology was officially recognized in the Soviet Union – the socialist one. Therefore, associating the concept of “ideology” with the word “socialist” (in some cases “communist”) has formed a prejudice against it, sometimes turning this word almost into a swear word. However, as life shows, many disagree with this position. “How can one live without ideology, without clear public administration? After we decided to free ourselves from the Soviet past, we

created nothing but ephemeral hopes” (Shirvind, 2022, p. 101).

The real historical process shows that ideology, no matter what, returns (Slavin, 2009), while the absence of a state ideology has become one of the vices of the emerging Russian statehood. This omission was noticed already under Boris Yeltsin. But, not wanting to return to the rejected notion of “ideology”, the authorities put forward a proposal – to find a national idea. The meaning of what has been undertaken is obvious – the people must be united around socially significant landmarks that are understandable to everyone and arouse the desire to participate in their implementation. As a result, a whole boom of initiatives broke out in the 1990s, starting with quoting the words of Uvarov (Minister of Education of the Russian government in the mid-19th century) “Orthodoxy. Autocracy. Nationality” to endless searches to find cherished appeals that suit everyone. However, it was a search that was doomed to failure in advance. These were the ideas of individual seekers of truth, scientists, politicians, just ambitious individuals. But their limitations and conditionality were determined by the lack of appeal to the opinion of the people, to their understanding of what should be achieved and how to build relationships in the existing society. This was reflected in the following: the situation in the country was described in many different ways, for example, “managed democracy”, “conservative modernization”, etc.

If we consider the current situation in Russia, we see that the real political and spiritual life of Russian society is like a kaleidoscope with a conglomerate of various ideological orientations, which reflect the aspirations of various social groups and communities in the most bizarre ways.

At present, it is extremely important to overcome the denial of state ideology as such. In fact, any state ideology is a formulation of the strategic goals of the state, which are shared by the masses; it is a value guideline that generates not only

acceptance, but also a desire to defend it. We emphasize that ideology exists in every state, regardless of whether it is proclaimed or not. *De facto*, it exists in Russia. As the results of sociological research show, the majority of the Russian population wants to have a strong, prosperous and influential state.

The absence of a strategic goal in the form of ideology in the state and society gives rise to various specific and controversial ideas about the “militarization of consciousness” (A.S. Tsipko) or about the transformation of the middle class from a pillar of society into a source of its division and destabilization (A. Shchipkov). We should point out obsessive and incomprehensible attempts and aspirations to build a “Slavic-Orthodox political culture” in Russia and to establish an “assembly and veche morality” (A.N. Asopov).

Thus, the analysis of opportunities for the consolidation of the Russian society shows that social contract is under threat if there is no state ideology and at the same time there exist ideological currents that reflect, as a rule, the interests, value orientations and attitudes of various social classes, communities, groups. The real situation requires formulating the strategic goal of Russia’s development, which finds its expression in the state-public ideology, with a clear designation of the means and methods to achieve it. Without such an ideology, Russia cannot fully recover from the traumatic state (Toshchenko, 2020).

Fourth, social contract is a two-way road, which implies the existence of feedback between the government and the people, a constant check of its effectiveness and efficiency. This means that the political power not only listens to the people, but also hears them. The fulfillment of these requirements was facilitated by the form of existence of the Soviet government – the soviets of people’s deputies. This form of coordination of interests, born during the 1905 revolution, proved itself during the revolution, during the civil war,

and then at all stages of socialist construction. Its effectiveness manifested itself in various forms of contacts understandable to the people: in addition to elections, these were regular reports and speeches by officials, the labor movement, systematic work with appeals to the authorities, analysis of workers’ letters and, most importantly, mandatory official reaction to all proposals, signals and criticism from the field. However, gradually, especially in the 1950s and 1980s, the functions of the soviets began to be replaced by the actions of the apparatus of the CPSU, which contributed to the weakening of people’s influence on the affairs of society and the state and, accordingly, the growth of discontent with state policy. Moreover, the work increasingly acquired the features of formalism, and was carried out without proper control from the public.

N.A. Berdyaev writes about how important it is to listen and hear the people and then act according to their wishes. Being critical of the October Revolution, he at the same time saw the essence of why the people followed the Bolsheviks. “Lenin could not have carried out his plan of revolution and seizure of power without a revolution in the soul of the people. This revolution was so great that the people, who lived by irrational beliefs and submitted to irrational fate, suddenly became almost obsessed with rationalizing their whole life, believed in the possibility of rationalization without any irrational residue, believed in the machine instead of God” (Berdyaev, 2004, pp. 274–275).

The Soviet government demonstrated the ability to communicate with the people for a long time; however, during the period of perestroika, the government was unable to detect significant changes in people’s consciousness, in understanding their pressing aspirations.

Thus, the essence of the feedback between the people and the government is that the state takes into account main orientations and needs of the people and on this basis creates the “rules of the game” – guarantees the conditions for a decent

existence of the people and ensures their fulfillment. The people, in turn, agree to the requirements related to the protection of their identity, rights and freedoms. At the same time, there is often a voluntary submission to restrictive laws if people see that their basic interests and needs are taken into account or at least taken into consideration and fulfilled to some extent.

The loss of permanent ties with the people is a loss of connection with reality and a threat to the existence of a political regime. It will necessarily manifest itself in the emergence of points of tension, which was clearly felt during certain periods of the USSR's existence (during the policy of *prodrazverstka*, during the years of collectivization, as well as during *perestroika*).

The feedback between the authorities and the people in modern Russia in the early 1990s was based on radical and outwardly attractive promises. But huge social costs – rising inequality, falling living standards, rising unemployment, weakening of social protection – became apparent, and trust began to decline.

The inability and unwillingness to take into account the demands of the population manifested itself in such conflict situations as the monetarization of benefits (replacement of benefits in kind with monetary compensation) in 2005, pension reform initiated in 2019, optimization of education and healthcare, dismantlement of the former organization of science since 2013, and other conflict situations, including in the regions.

One of the indicators for measuring feedback is trust assessed with the help of opinion polls. Currently, according to the All-Russian research of 2021–2022, it looks like this: the president, depending on the branch of economy and culture (industry, construction, transport, agriculture, services, healthcare, education, science), is trusted by 38 to 63% of the population (not trusted by 8.2 to 13%); the government – from 16.5 to 41.2% and from 14.5 to 28.8%, respectively; the State Duma

– from 10.7 to 26.8% and from 30.9 to 49.5% (Intelligentsia..., 2023, pp. 293–296). It is obvious that such a socio-psychological indicator as trust is formed on the basis of many circumstances of people's lives, but primarily through awareness of their social status. In other words, the reserves for strengthening the social contract are still considerable.

Fifth, social contract also seals such a criterion as the involvement of the people in the management of the affairs of society and the state. Moreover, this characteristic should not be understood literally, only as the personal participation of each individual in the activities of management bodies at various levels of the social organization of society. Therefore, in addition to direct participation in the work of governing bodies, in our opinion, it is worth talking about the possibility of influencing the decision-making of all governing bodies without exception. At the same time, it is the awareness of being part of and the actual involvement in the management process that makes people themselves more responsible in their social and working life. In our opinion, the course of the Soviet government to attract as many people as possible to the administration through a wide network of soviets of people's deputies (in the early years of Soviet power – soviets of workers', soldiers' and peasants' deputies) contributed to strengthening mutual trust. We also note such a way of strengthening harmony between the people and the state as mass involvement of the grassroots to (co)participate in governance. This demand, expressed in Lenin's appeal, has so far been actively ridiculed by representatives of liberal circles and anti-Soviets: the Bolsheviks recognized (or declared) that “a cook can run the state”. Although a careful reading of Lenin's words suggests that he focused the efforts of the Soviet government on the need to “teach” people, including the cook, to participate in the management of state and public affairs: “*We are not utopians. We know that any worker and any cook*

are not capable of running the state right away... We demand that the training in the cause of public administration should be conducted by conscious workers and soldiers and that it should be started immediately, i.e. all the working people, all the poor, should be immediately involved in this training” (Lenin, 1981, p. 315).

There is a lot of talk about attracting Russians to various forms and methods of management in modern Russia. However, as the all-Russian sociological studies of 2020–2022 show, even with such a “gentle” formulation: “Can you influence decision-making?”, mostly negative answers were received: 90.5% of respondents say that it is impossible to influence at the state level, 89.3% – at the level of republican, krai, and regional authorities, 83.9% – at the city, district level and 57.8% – at the level of an industrial organization (Toshchenko, 2022, p. 103).

Sixth, social contract implies ensuring consensus and a balance of interests not only between the people as a whole and the authorities, but also between the strata, social communities and groups within any society that make up this people, in other words, taking into account the diversity of interests. Moreover, this consent is intended to be implemented not only at the political, economic and social levels, but, most importantly, at the *moral and spiritual level*, as it is the most fundamental one, ensuring the true essence and nature of social contract. Such moral unity arises in the course of observing and maintaining trusting relationships that eliminate all attempts at confrontation, rivalry, prejudice and are built on the basis of the fundamental value orientations of the main social forces, the coordination of which largely depends on the responsibility of the state authorities. However, this does not mean that value orientations remain unchanged: the search for agreement in the whole society and between its main actors is a constant requirement for the preservation and maintenance of a social contract.

Finally, it is important to take into account the interests of territorial, including ethno-national and confessional, features and their role in strengthening the social contract at each stage of the country’s historical development. In this regard, it is relevant to assert that forgetting the interests of institutional entities leads to a loss of connection with reality, contributes to the emergence of tension points and, as a result, creates a threat to the existence of the state and its political regime (see, for example, Uskova et al., 2022).

When interpreting the essence and content of social contract, it should also be taken into account that a social contract cannot remain unchanged for a long time. It is constantly in need of refinement, reconfiguration in accordance with changing living conditions. This is evidenced by the development experience of all countries, including Russia, when the reference points of the social contract were changed, clarified or replaced by other criteria. The demands to ensure the observance of social justice, the sovereignty of the individual, as well as people’s confidence in their future and the future of their children are becoming increasingly important.

Conclusion

Social contract is a unique social phenomenon. In modern conditions, it guarantees the existence of the state, provides an opportunity to effectively solve economic, political, social, spiritual and moral problems. The two sides of social contract – the state and the people – should ideally be its equal participants, otherwise two mutually exclusive processes may occur – either the growth of authoritarianism (totalitarianism), which leads to the deformation of human freedoms and rights, or the establishment of ochlocratic tendencies, which, as a rule, are used by destructive forces. In modern Russian reality, the social contract has significant reserves for its improvement in terms of coordinating development goals, means of achieving them, ideological support, establishing regular feedback

and, finally, effective participation of all social communities and groups in managing the affairs of society and the state. However, at present, solutions to specific state and social problems in a considerable number of cases represent deformed processes and phenomena that do not always embody equal unity, which leads to various forms of tension reflecting the weakness of the existing social contract.

An analysis of the content of the social contract at all stages of Soviet/Russian history shows that its stability was influenced by the observance of such an important landmark as justice, because in the public consciousness, people's perception of their lives according to specifically perceived laws of justice always (often implicitly) retains its value. This was especially clearly manifested in the people's idea of social equality, the possibility of achieving it, or its partial absence, but for reasons understandable to most. It is the violation, especially egregious, that serves as the reason and cause of all the conflicts that have occurred or are brewing, when real gaps in the social status of higher and lower communities, strata and groups have been created or are emerging in society.

The existence of social contract depends on whether people have the opportunity to compare their aspirations and interests with understanding and acceptance of where the state calls them to go, and how much they agree with what they need to do and what to strive for. In this regard, the statement of A. Tocqueville deserves attention: in all critical processes of the development of the state, the people will prefer the achievement of social equality rather than democracy.

All of the above allows us to conclude that the concept of "social contract" has never been formalized as an official document. It is the most important theoretical and applied construct for analyzing and explaining the evolutionary or revolutionary development of the state and/or society. This concept includes a policy coordinated with the people to transform the surrounding socio-economic and political environment, approved methods and forms of state and political governance, acceptable ideological impact on public consciousness. Ultimately, in the process of implementing the social contract, ideas, beliefs and actions are formed to achieve the common goals of the people and the state.

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Analyzing the Industry Structure and Dynamics of Commodity Exchange between Russia, China, the USA and the EU under Trade Restrictions



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Abstract. In the context of large-scale economic sanctions against Russia, it becomes an urgent task to design model complexes for assessing their impact on the economies of various countries. To this end, we use an agent-based approach and select China, the United States, the European Union, and the rest of the world as the main participants in trade relations with Russia. We design the trade wars model with the help of analyzing available data on the economies of the abovementioned countries and trade relations between them, and by assessing the imposed sanctions restrictions in quantitative and sectoral aspects. The information content of the developed model faced difficulties caused by the coordination of data on cross-industry supplies, imports and exports of goods in different countries. The article presents an

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algorithm that determines the sequence of processing the initial statistical data and bringing them to a unified form with detailed elaboration necessary for the model. The formation of arrays of initial data is carried out on the basis of the Federal State Statistics Service of Russia, Federal Customs Service, Eurostat, U.S. Bureau of Economic Analysis, National Bureau of Statistics of the People's Republic of China and the World Bank. To unify the information of these agencies, eleven enlarged industries are created in the model; each of the industries corresponds to one or more industries or commodity groups. The target result of applying the algorithm is construction of cross-country tables of industry supplies of intermediate and investment goods, containing data on trade in Russia, the USA, the EU, China and the rest of the world. In the course of data processing, we also analyzed the sectoral structure of international commodity exchange in 2021, which indicates a close relationship between the economies of the European Union and Russia before the introduction of large-scale sanctions, and relatively low indicators of commodity exchange between Russia and the United States. An analysis of the dynamics of trade exchange between Russia and the countries that imposed sanctions restrictions in 2022 showed that Russia's imports from the EU countries fell by 38%, and exports in value terms increased by 24%, which is primarily due to a sharp increase in energy prices. For the United States, the drop in exports and imports with Russia was 70% and 50%, respectively.

Key words: international commodity exchange, trade wars, economic sanctions, input-output tables, agent-based model.

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Introduction

With the beginning of the special military operation (SMO) in Ukraine, Russia faced the imposition of unprecedented financial, trade and transport sanctions against it (Timofeev, 2022). A distinctive feature of the West's sanctions policy in relation to Russia is the double-edged nature of the restrictions, not only as a result of retaliatory measures, but also due to the provoked shortage of resources on world markets and price shocks (Afontsev, 2022). Under the circumstances, it becomes urgent to analyze the impact of the imposed sanctions and possible strategies for Russia's economic development (Belozеров, Sokolovskaya, 2022; Tenyakov et al., 2022).

An effective tool for solving this problem is computational economic models that allow

integrating data on production, employment and economic relations between countries. Such models are developed most often according to the methodology of the Global Trade Analysis Project (GTAP) (Aguiar et al., 2016; Corong et al., 2017) and include from two to thirty countries participating in world trade. The most well-known examples of implementation of the GTAP methodology are WorldScan model (Bollen, Rojas-Romagosa, 2018), GLOBE multisectoral economy model¹ (McDonald, Thierfelder, 2014) and MIRAGRODEP model (Bouët, Laborde, 2017). Within the framework of these models, the

¹ McDonald S., Thierfelder K. (2014). GLOBE v2: A SAM based global CGE model using GTAP data. Available at: http://cgemod.org.uk/globev2_2014.pdf

USA and China are considered key participating countries, and EU countries, Canada, Japan and Mexico may also be considered. WorldScan defines Russia as a participant in international trade, but the available publications lack the results of calculations that would allow us to assess the impact of the sanctions imposed against it. For this reason, it becomes necessary to develop model complexes that consider Russia as a key player in trade wars. This model, developed by a team of researchers at the Central Economic Mathematical Institute RAS with the use of agent-based approach, considers trade interactions between Russia, the European Union, China, the USA, and the united rest of the world (Mashkova, Bakhtizin, 2021; Mashkova, 2023).

The purpose of the work is to analyze the most recent data on the economies of the countries participating in the model and trade relations between them, as well as to assess the imposed sanctions restrictions in quantitative and sectoral aspects for the information content of the developed agent-based model of trade wars.

Much attention has been paid to the analysis of imports and exports of various sectors of the Russian economy in recent years; in particular, researchers assess the dependence of exports of services, high-tech and agricultural products on the volume of investments and expenditures on R&D (Lyubimov, 2021; Borisov, Pochukaeva, 2021; Altiner et al., 2022; Derunova et al., 2021); dependence on equipment imports (Kolpakov, Saenko, 2023; Golikova, Kuznetsov, 2021) and the effectiveness of import substitution mechanisms (Partsvaniya, 2022), as well as the implications of restricting grain exports (Kheifets, Chernova, 2022). Of particular interest were the prospects for Russia's exports to the EU countries in connection with its planned transition to green energy (Bashmakov, 2022; Chupina, 2022).

Relatively few more publications consider the dynamics of Russia's international trade since the beginning of the SMO, they are mainly related to

the changes that have occurred and are expected in the export of resources (Andreyev, Polbin, 2023; Gordeev, Pyzhev, 2023). The impact of the imposed sanctions for entrepreneurship is considered in the work (Egorova, Chepurensko, 2022), and the need for expanding investments, including public ones, that emerged as a result of the sanctions, is investigated in the works (Kovalin, 2022; Shirov, 2023).

The above works analyze the structure and dynamics of imports and exports of individual sectors of the Russian economy, while the unification of data on cross-industry supplies, imports and exports of products of various industries in the countries under consideration presents the greatest difficulty for the information content of the trade wars model. The key source of such data is input-output tables, which are widely used both for forecasting economic processes within individual countries (Chernyavsky, 2021; Edinak et al., 2022) and for the analysis of international trade (Strizhkova et al., 2022; Vnukov et al., 2023).

The use of input-output tables to form arrays of initial modeling data is fraught with several difficulties. First, the industry classifiers used to form the tables differ across countries, therefore it is impossible to directly compare industries and goods. Second, the time periods for which the input-output tables are presented are also different. Third, countries reflect the structure of their commodity exchange to varying degrees. Another task is to reproduce the economy of the rest of the world (with the exception of the USA, China, the EU and Russia), considered in the model as a whole.

In order to harmonize the available information on international trade, we propose an algorithm that determines the sequence of bringing the initial statistical data to a unified form with the degree of detail necessary for the model. The target result of the algorithm is cross-country tables of intermediate and investment industry supplies containing data on trade in Russia, the USA, the EU, China, and the rest of the world.

Practical significance of our research lies in creating an information base necessary for the analysis and forecast of the dynamics of international trade under sanctions restrictions, taking into account the existing structure and volumes of import and export flows between countries. The initial information structured with the help of the method we propose makes it possible to model, with a high degree of accuracy, the change in production volumes when restrictions imposed by unfriendly countries on trade in various types of goods.

Scientific novelty of the work lies in the development of a method for unifying data on international trade and a way to present the information obtained in cross-country tables of industry supplies, reflecting the structure of commodity exchange between countries in relation to the sectoral structure of the production needs of their economies.

Materials and methods

We form initial information arrays for the agent-based model of trade wars on the basis of data from official statistical agencies: Federal State Statistics Service of Russia², Eurostat³, U.S. Bureau of Economic Analysis⁴, National Bureau of Statistics of China⁵, and World Bank⁶. Samples by key parameters and their uploading in Excel document format are available for all the countries under consideration, except for China, since the National Bureau of Statistics of China publishes statistical yearbooks in the form of images of the corresponding pages.

The main source of data on production relationships are the input-output tables published for each of the countries represented in the model (Russia, China, USA), as well as the countries of the European Union, considered both individually and as a whole. Also, the input-output tables provide information on the volume of exports and

Table 1. Comparison of the structure of production, import and export data in different countries

Data type	Russia	EU	USA	China
Number of industries in the input-output model	60	63	71	17
Units of measurement	Million rubles	Million euro	Million USD	Million yuan
Detailing the input-output structure of import supplies	Available	Available	Available	Not available
Detailing the sectoral structure of import and export with individual countries	Available for a number of countries, including the USA, China, EU countries	Available for all countries of the world	Available for a number of countries, including China, EU countries; not available for Russia	Not available
Commodity codes representing the structure of import-export with individual countries	Commodity nomenclature for foreign economic activities (TN VED)	Standard international trade classification (SITC)	Industry structure (similar to the input-output balance)	Not available
Compiled according to: Federal State Statistics Service of Russia, Eurostat, U.S. Bureau of Economic Analysis, National Bureau of Statistics of China.				

² Federal State Statistics Service of Russia. Available at: <https://rosstat.gov.ru/> (accessed: April 28, 2023).

³ Eurostat. Available at: <https://ec.europa.eu/eurostat> (accessed: April 22, 2023).

⁴ U.S. Bureau of Economic Analysis. Available at: <https://www.bea.gov/> (accessed: April 25, 2023).

⁵ National Bureau of Statistics of China. Available at: <http://www.stats.gov.cn/english/> (accessed: March 24, 2023).

⁶ World Bank. Available at: <https://www.worldbank.org/en/home> (accessed: March 25, 2023).

imports for each industry. For Russia, the USA, and the EU, the structure of import cross-industry supplies is additionally detailed; the National Bureau of Statistics of China publishes only general information on the volume of imports of goods for each industry.

Data from statistical agencies are used to reflect commodity flows between countries, if they provide such information (Eurostat and the U.S. Bureau of Economic Analysis); in Russia, such data are published by the Federal Customs Service.

Table 1 presents a comparison of the structure of information on production, import and export published by official statistical agencies in different countries.

The classifiers of the European Union and Russia have a lot in common, while the USA and China differ significantly from them. Also, the branches of the model are compared with the standard international trade classification (SITC) and the commodity nomenclature for foreign economic activities (TN VED) to aggregate data on imports and exports.

Data for 2019 are available for all countries except China, for which the latest input-output tables refer to 2017. In order to ensure the use of the most up-to-date information for all countries, data on the output and supply of industries are updated until 2021 using GDP growth coefficients for the corresponding period.

Countries reflect the structure of commodity exchange with each other to varying degrees: China – only the volume of imports and exports by country, Russia and the USA – the commodity structure of commodity exchange with individual countries, and only the EU – with all countries of the world.

The unification of the presented data on international trade is carried out within the framework of an algorithm that determines the sequence of their processing with the degree of

detail necessary for the model. The algorithm includes the following steps:

1. Establishing relationships between different nomenclatures and the industry structure of the model. The data in input-output tables are presented in various industry classifiers in different countries: 63 industries in the EU countries, 60 industries in Russia, 71 industries in the USA and 17 industries in China.

To unify these data, 11 aggregate industries are created in the model, each of which corresponds to one or more industries or commodity groups: (1) agriculture, food production; (2) mining; (3) fuel production; (4) public sector; (5) chemical production; (6) production of materials; (7) manufacture of equipment and transport; (8) light industry; (9) services; (10) trade; (11) construction. Appendix shows an example of bringing various classifiers to the aggregate industry “Equipment and transport”.

2. Transformation of the most relevant input-output balance sheets of countries to the base year of the modeling according to data on the sectoral structure of GDP. The year 2021, immediately preceding the introduction of large-scale sanctions against Russia, was chosen as the base year of modeling. The most relevant input-output balances for Russia, the EU, and the USA are presented for 2019, for China – for 2017. Data on the output and supply of industries are updated until 2021 based on the GDP growth coefficients of industries in each country. For Russia, the reduction formula is as follows:

$$x_{ij}^{RU-2021} = x_{ij}^{RU-2019} * \frac{va_i^{RU-2021}}{va_i^{RU-2019}}, \quad (1)$$

where i, j – branches of the Russian economy in the input-output balance; $x_{ij}^{RU-2019}$ – supplies of industry i for the organization of industry j according to the input-output balance data for 2019; $va_i^{RU-2021}$ and $va_i^{RU-2019}$ – added value of industry i in 2019 and 2021, respectively.

3. Bringing the input-output balances for countries to the sectoral structure of the model. All sections of the balance sheet are being transformed: the first quadrant of cross-industry supplies (domestic and imported), the second quadrant of final goods (including export and investment columns), the third quadrant of conditionally net goods (wages, amortization and profit).

We should note that during the implementation of transformations, the system of coefficients changes: standard coefficients i and j corresponding to the supplier and buyer industries in the input-output balances of countries are replaced by coefficients k and l corresponding to the aggregate supplier and buyer industries in the model, while each aggregate industry includes one or more source industries. Thus, the values in the first quadrant of the transformed balance have a set of indices kl , in the second quadrant – k , in the third quadrant – l .

For the first quadrant, the reduction formula is as follows:

$$x_{kl} = \sum_{i=1}^n \sum_{j=1}^m x_{ij}, \quad (2)$$

where k – aggregate industry in the model, including a number of economic branches $j = \overline{1, n}$; l – aggregate industry in the model, including a number of economic branches $j = \overline{1, m}$; x_{kl} – supplies of the organization of aggregate industry k for the organization of aggregate industry l ; x_{ij} – supplies of industry i for the organization of industry j according to the data of the input-output model.

The reduction of matrix of import cross-industry supplies imp_{kl} is conducted in a similar way.

Let us look at the reduction in the second quadrant using the example of the export column:

$$exp_k = \sum_{i=1}^n exp_i, \quad (3)$$

where k – aggregate industry in the model, which includes a number of economic sectors $j = \overline{1, n}$; exp_k – export of goods of aggregate industry k ; exp_i – exports of goods of industry i .

We show the reduction in the third quadrant using the example of the value-added line:

$$va_l = \sum_{j=1}^m va_j, \quad (4)$$

where l – aggregate industry in the model, which includes a number of economic sectors $j = \overline{1, m}$; va_l – added value of aggregate industry l ; va_j – added value of industry j .

4. Compiling a table of investment supplies. Due to the fact that the second quadrant of the input-output balance is just a common column of investment dom_inv_i , reflecting the volume of production of industries and used as the means of production, the estimation of the distribution of these investments carried out in their industries will be conducted with the use of the data on the amortization allocations in the context of producing industries:

$$dom_inv_{kl} = dom_inv_k * d_amort_l, \quad (5)$$

where dom_inv_k – volume of investment of aggregate industry l in the means of production produced by industry k ; dom_inv_k – volume of production of aggregate industry k used as a means of production; d_amort_l – share of amortization allocations of aggregate industry l in the total amount of amortization allocations in the country.

Having fulfilled step 4, we obtain a square matrix of investment supplies of organizations that coincides in structure with the first quadrant of cross-industry supplies. Similarly, we obtain a matrix of imports of investment products according to the original column imp_inv_k .

5. Distribution of import and export flows of industries between trading partner countries and the rest of the world. For each country c_n , the following actions are performed in the model:

5.1. If there is data on the commodity structure of import-export by partner countries, then:

5.1.1. If the structure of the available information coincides with the sectoral structure of the input-output balance, then the reduction

formulas from paragraph 3 are used; otherwise (the information is presented in the context of commodity groups) the following reduction formulas are used:

$$\exp_k^{c_n-c_m} = \sum_{t=1}^n \exp_t^{c_n-c_m}, \quad (6)$$

where k – aggregate industry in the model, which includes a number of commodity groups $t = \overline{1, n}$; $\exp_k^{c_n-c_m}$ – export of goods of aggregate industry k from country c_n to country c_m ; \exp_i – export of goods of industry i country c_n to country c_m .

$$\text{imp}_k^{c_n-c_m} = \sum_{t=1}^n \text{imp}_t^{c_n-c_m}, \quad (7)$$

where k – aggregate industry in the model, including a number of commodity groups $t = \overline{1, n}$; $\text{imp}_k^{c_n-c_m}$ – import of goods of aggregate industry k to country c_n from country c_m ; imp_i – import of goods of industry i to country c_n from country c_m .

5.1.2. Converting the data on trade flows into the currency of partner countries by changing the flow directions accordingly:

$$\text{imp}_k^{c_m-c_n} = \exp_k^{c_n-c_m} * \text{CurrencyRate}^{c_n-c_m}, \quad (8)$$

where $\text{imp}_k^{c_m-c_n}$ – import of goods of aggregate industry k in country c_m from country c_n ; $\exp_k^{c_n-c_m}$ – export of goods of aggregate industry k from country c_n to country c_m ; $\text{CurrencyRate}^{c_n-c_m}$ – exchange rate of the currency of country c_n to the currency of country c_m .

$$\exp_k^{c_m-c_n} = \text{imp}_k^{c_n-c_m} * \text{CurrencyRate}^{c_n-c_m}, \quad (9)$$

where $\exp_k^{c_m-c_n}$ – export of goods of aggregate industry k from country c_m to country c_n ; $\text{imp}_k^{c_n-c_m}$ – import of goods of aggregate industry k in country c_n from country c_m ; $\text{CurrencyRate}^{c_n-c_m}$ – exchange rate of the currency of country c_n to the currency of country c_m .

Otherwise (if the necessary data for the country are not available), the data on the sectoral structure of imports and exports obtained as a result of processing the data on partner countries are used.

5.2. Calculating import-export volumes with the rest of the world (RW):

$$\text{imp}_k^{c_n-RW} = \text{imp}_k^{c_n} - \sum_{m=1}^3 \text{imp}_k^{c_n-c_m}, \quad (10)$$

where $\text{imp}_k^{c_n-RW}$ – import of goods of aggregate industry k in country c_n from the rest of the world; $\text{imp}_k^{c_n}$ – total import of goods of aggregate industry k in country c_n ; $\sum_{m=1}^3 \text{imp}_k^{c_n-c_m}$ – import of goods of aggregate industry k in country c_n from three countries c_m represented in the model.

$$\exp_k^{c_n-RW} = \exp_k^{c_n} - \sum_{m=1}^3 \exp_k^{c_n-c_m}, \quad (11)$$

where $\exp_k^{c_n-RW}$ – export of goods of aggregate industry k from country c_n to the rest of the world; $\exp_k^{c_n}$ – total export of aggregate industry k from country c_n ; $\sum_{m=1}^3 \exp_k^{c_n-c_m}$ – export of goods of aggregate industry k from country c_n to three countries c_m represented in the model.

5.3. Converting data on trade flows into the currency of rest of the world (US dollars) by changing the flow directions accordingly:

$$\text{imp}_k^{RW-c_n} = \exp_k^{c_n-RW} * \text{CurrencyRate}^{c_n-RW}, \quad (12)$$

where $\text{imp}_k^{RW-c_n}$ – import of goods of aggregate industry k in the countries of rest of the world from country c_n ; $\exp_k^{c_n-RW}$ – export of goods of aggregate industry k from country c_n to the rest of the world; $\text{CurrencyRate}^{c_n-RW}$ – exchange rate of the currency of country c_n to the currency of the rest of the world.

$$\exp_k^{RW-c_n} = \text{imp}_k^{c_n-RW} * \text{CurrencyRate}^{c_n-RW}, \quad (13)$$

where $\exp_k^{RW-c_n}$ – export of goods of aggregate industry k from the rest of the world to country c_n ; $\text{imp}_k^{c_n-RW}$ – import of goods of aggregate industry k in country c_n from the rest of the world; $\text{CurrencyRate}^{c_n-RW}$ – exchange rate of the currency of country c_n to the currency of the rest of the world.

Table 2. Structure of the cross-country table of industry supplies

Supplier country \ Buyer country	Industry	Russia				EU				USA				China				Rest of the world			
		1	2	...	11	1	2	...	11	1	2	...	11	1	2	...	11	1	2	...	11
Russia	1	CIS inside Russia				EU imports from Russia / Russia's exports to the EU				U.S. import from Russia / Russia's export to the USA				China's import from Russia / Russia's export to China				Import of the rest of the world from Russia / Russia's export to the rest of the world			
	2																				
	...																				
	11																				
EU	1	Russia's import from the EU / EU export to Russia				CIS inside the EU				U.S. import from the EU / EU export to the USA				China's import from the EU / EU export to China				Import the rest of the world from the EU / EU export to the rest of the world			
	2																				
	...																				
	11																				
USA	1	Russia's import from the USA / U.S. export to Russia				EU import from the USA / U.S. export to the EU				CIS inside the USA				China's import from the USA / U.S. export to China				Import of the rest of the world from the USA / U.S. export to the rest of the world			
	2																				
	...																				
	11																				
China	1	Russia's import from China / China's export to Russia				EU import from China / China's export to the EU				U.S. import from China / China's export to the USA				CIS inside China				Import of the rest of the world from China / China's export to the rest of the world			
	2																				
	...																				
	11																				
Rest of the world	1	Russia's import from the rest of the world / export of the rest of the world to Russia				EU import from the rest of the world / export of the rest of the world to the EU				U.S. import from the rest of the world / export of the rest of the world to the USA				China's import from the rest of the world / export of the rest of the world to China				CIS inside the rest of the world			
	2																				
	...																				
	11																				

Source: own compilation.

5.4. Calculating the share of partner countries in the import of country c_n by industry:

$$d_imp_k^{c_n-c_m} = \frac{imp_k^{c_n-c_m}}{imp_k^{c_n}}, \quad (14)$$

where $d_imp_k^{c_n-c_m}$ – share of country c_m in the import of aggregate industry k in country c_n ; $imp_k^{c_n-c_m}$ – import of goods of aggregate industry k in country c_n from country c_m ; $imp_k^{c_n}$ – total import of goods of aggregate industry k in country c_n .

5.5. Calculating import volumes of cross-industry supplies by customer sector, commodity group and supplier country:

$$imp_{kl}^{c_n-c_m} = imp_{kl}^{c_n} * d_imp_l^{c_n-c_m}, \quad (15)$$

where $imp_{kl}^{c_n-c_m}$ – import of the goods of aggregate buyer industry k from country c_n at supplier industry l from country c_m ; $imp_{kl}^{c_n}$ – total

import of the goods of integrated buyer industry k from country c_n at supplier industry l ; $d_imp_l^{c_n-c_m}$ – share of country c_m in the import of aggregate industry l in country c_n .

The calculated volumes of import cross-industry supplies (CIS) by customer sector, commodity group and supplier country are entered in the general cross-country table of industry supplies (Tab. 2). The cells in the cross-country table of industry supplies are grouped into quadrants – square matrices for 11 industries, so each quadrant consists of 121 cells. The quadrants on the main diagonal correspond to the first quadrants of domestic intermediate supplies of input-output balances of the respective countries, reduced to the sectoral structure of the model. The quadrants in one row, except for the main diagonal, reflect the export of intermediate and final goods from the country in the corresponding row to other countries.

The quadrants in one column, except for main diagonal, reflect imports of intermediate and final goods to the country from other countries.

A table similar in structure is built for domestic and international supplies of investment products.

6. Reducing trade flows between countries in the table of international input-output balance to the units of base prices. For the reduction, we use a base price of one US dollar, the exchange rates of national currencies to the US dollar and the coefficient of additional trade margin, which we assume to be equal to 1.2 for developed countries (USA and EU) and 1 for developing countries (Russia, China, and the rest of the world). The reduction formula is as follows:

$$\begin{aligned} & \text{UnifyingCoefficient}_{c_b}^{c_s} = \\ & = \text{CurrencyRate}^{c_b-USD} / \text{PriceCoefficient}^{c_s}, \end{aligned} \quad (16)$$

where $\text{UnifyingCoefficient}_{c_b}^{c_s}$ – coefficient of reduction to standard values in the quadrant of buyer country c_b and supplier country c_s ; $\text{CurrencyRate}^{c_b-USD}$ – exchange rate of country c_b to USD; $\text{PriceCoefficient}^{c_s}$ – coefficient of additional trade margin of supplier country c_s .

Step 1 of the algorithm (comparing industry classifiers of countries with the industry structure of the model) is performed for all countries simultaneously at the beginning of data processing. Further, for each country, in accordance with the algorithm, the input-output balance for 2019 (2017 for China) is reduced to 2021 based on data on the country's GDP, imports and exports for 2021 according to formula (1) (step 2). Then the updated balance sheet is brought to the industry structure of the model according to formulas (2)–(4) (step 3), and a table of investment supplies is compiled according to formula (6) (step 4).

Since information about the import and export of countries is presented with varying degrees of detail, the further procedure for processing according to the described algorithm is important. The most detailed data on international trade are

presented for the EU, so they are converted first. In step 5.1, formulas (6) and (7) are used, commodity groups t are SITC classifiers. The data obtained are converted to the currency of the partner countries and serve as the initial calculations for them (formulas (8) and (9)). Data on imports and exports with the rest of the world are formed according to formulas (10)–(13), then the shares of partner countries in imports are calculated according to formula (14) and the volume of import cross-industry supplies in the context of supplier countries are calculated according to formula (15).

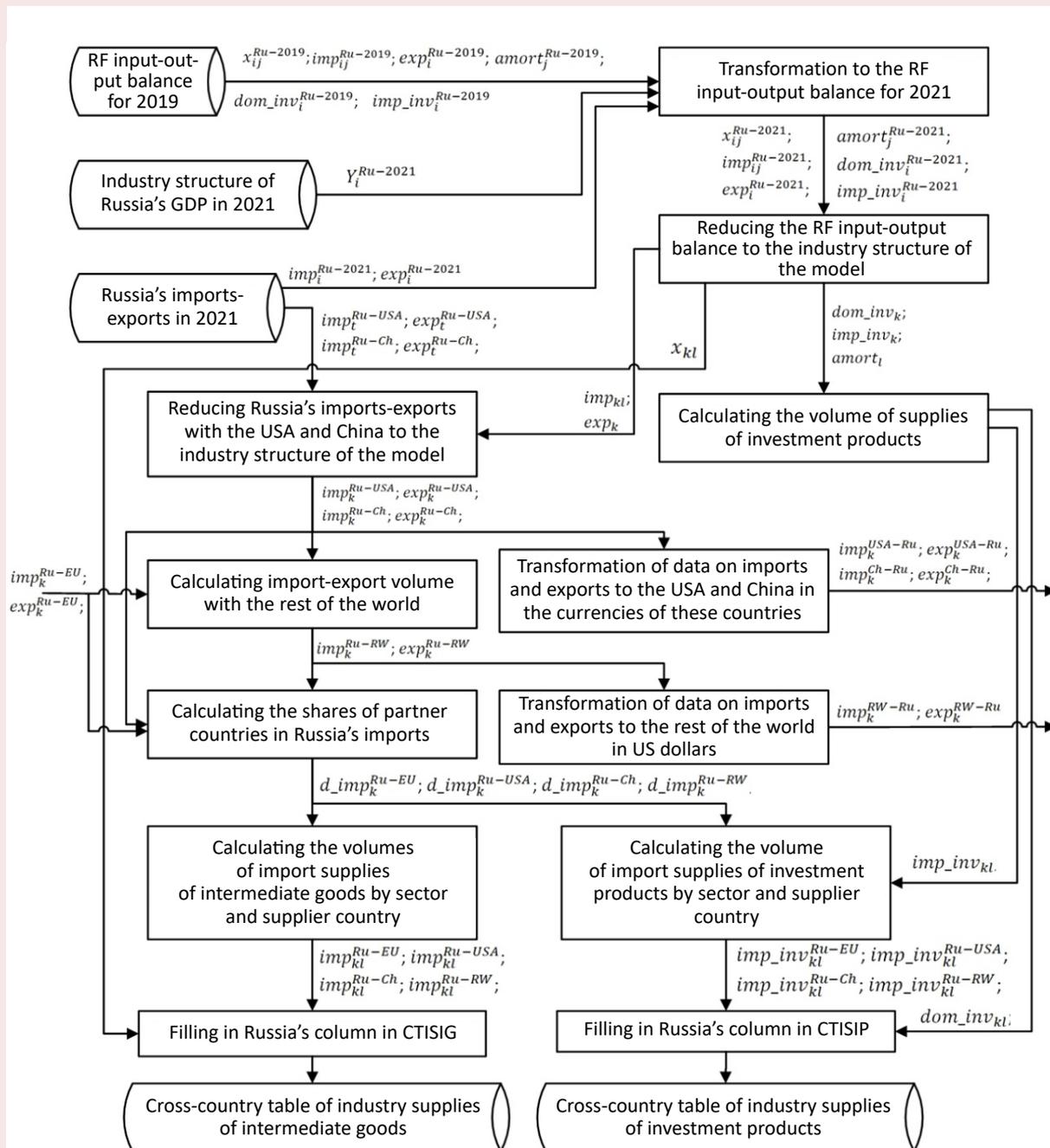
The transformation of data for Russia is a general case of the algorithm, since one part of the import and export data is obtained from previous calculations for the EU, and the other (for trade turnover with the USA and China) is based on the original Russian data converted according to formulas (6) and (7); commodity groups t are TN VED classifiers. The sequence of data processing for Russia is shown in the Figure.

For the USA, the data on trade turnover with the EU and Russia are received as pre-calculated, and the data on trade with China are converted from the initial ones according to formula (3), since the information on imports and exports is presented in an industry structure similar to the input-output balance.

In the calculations for China, all information about the sectoral structure of trade turnover with partner countries is transmitted from the calculations carried out for the EU, Russia and the USA, the output is only data on imports and exports with the rest of the world (formulas (10)–(13)).

GDP of the rest of the world is calculated based on World Bank data as the difference between global GDP (94 trillion USD in 2021) and GDP of the countries considered in the model (55.4 trillion USD). We consider the sectoral structure of the economy of the rest of the world and the coefficients of inter-industry supplies to be similar to these parameters for the Chinese economy, which is

Sequence of processing the data on production and trade in Russia



Source: own compilation.

the largest among developing countries. Based on these data, the input-output balance of the united rest of the world is built in the industry structure of the model, and data on imports and exports with the countries represented in the model come from previous calculations.

Upon completion of calculations for individual countries and the rest of the world as a whole, the obtained data on intermediate and investment supplies are entered into the corresponding columns of the cross-country table of industry supplies of intermediate goods (CTISIG) and the cross-country table of industry supplies of investment products (CTISIP), which are then reduced to base prices in US dollars according to formula (16).

Results and discussion

As the first result, let us consider the analysis of the industry structure of international commodity exchange in 2021, carried out in steps 5.1–5.4 of the presented algorithm. *Table 3* shows data on the sectoral structure of EU imports and exports to Russia, the USA, China, and the rest of the world. The initial information for calculations is

presented on the Eurostat website in the SITC commodity nomenclature. When comparing the SITC nomenclature with the industry structure of the model, a number of nuances should be taken into account. First, groups 6 and 8 are presented in the Eurostat tables as a pair, and the shares of countries in imports and exports are considered the same for the corresponding aggregate industries (for example, Russia's share in EU exports of materials (sector 6) and light industry products (sector 8) is 3.9%. However, the application of this approach in the subsequent comparison of Eurostat data with data from other countries may reveal contradictions, for example, the estimated volume of exports to one country may exceed the total volume of exports for a certain industry, which requires additional mutual adjustments of the shares of countries. Thus, as a result of adjustments to EU import data, Russia's share in sector 6 was 8.6%, and in sector 8 – 0.7%. No discrepancies were found for the USA and China, and the share of these countries in the import of sectors 6 and 8 are equal (7.3% for China and 31.1% for the USA).

Table 3. Sectoral structure of EU imports and exports with partner countries and the rest of the world in 2021

#	Aggregate industry in the model	EU exports					EU imports				
		Total, billion euro	Share of countries in exports, %				Total, billion euro	Share of countries in imports, %			
			Russia	USA	China	Rest of the world		Russia	USA	China	Rest of the world
1	Agriculture, food production	175.5	3.3	12.3	8.6	75.8	117.1	1.8	5.6	4.1	88.5
2	Mining	70.8	3.7	9.6	15.6	71.1	106	59.3	11.0	3.5	26.2
3	Fuel production	104.2	0.8	12.6	1.4	85.2	385.8	12.2	8.6	0.3	78.9
4	Public sector	0.5	15	20.7	7.3	57.0	3.4	0.6	13.6	3.7	82.1
5	Chemical production	456.2	4.4	25.3	7.2	63.1	270.7	2.5	21.3	12.7	63.5
6	Production of materials	288	3.9	17.5	8.8	69.8	220.5	8.6	7.3	31.1	53.0
7	Manufacture of equipment and transport	831.5	4.7	17.6	14.0	63.7	671.8	0.3	12.0	39.3	48.4
8	Light industry	208.6	3.9	17.5	8.8	69.8	304.5	0.7	7.3	31.1	60.9
9	Services	35.2	3.2	27.0	7.3	68.8	9.3	66.3	27.2	3.7	2.8
10	Trade	10.2	0.7	0	7.3	71.3	28.2	48.5	5.7	3.7	42.1
11	Construction	0.5	29.9	0	7.3	42.1	1.3	48.6	0	3.7	47.7
Total, billion euro		2181.1	89.3	399.7	223.6	1468.5	2118.4	162.5	232.6	472.8	1250.5

Source: own compilation.

Second, the industry classification in the model is more detailed in relation to the public sector and the service sector. Four branches of the model (public sector, trade, services, industry) are not reflected in the SITC nomenclature, and their share in imports (exports) is defined as the difference between total imports (exports) and the amount of imports (exports) in real sector industries. The shares of countries in imports and exports for these four industries are also considered the same, except for adjustments caused by contradictions in the processing of the data from other countries. So, for the European Union, it was necessary to adjust Russia's shares and reset the U.S. share in the export of trade and construction services, since for the USA, imports of these industries are indicated in statistics as zero.

There was also a discrepancy between the SITC classifiers and the industry structure of Russia's exports in terms of minerals and fuels. Oil and gas in the Russian classifiers fall into aggregate industry 2, and industry 3 contains only refined products; in the SITC classifier, oil and gas fall into group 3 (mineral fuel), which corresponds

to aggregate industry 3. Therefore, the flow of oil and gas exports from Russia was divided between sectors 2 and 3 in such a ratio that allowed avoiding contradictions in the volume of trade exchange between the countries and Russia's total exports.

As a result of these adjustments, Russia's share in EU imports of minerals in 2021 amounted to about 60%, most of which accounted for oil and gas. Also, fuel (12.2%) and materials (8.6%) occupied significant shares in EU imports from Russia, while in other industries, including agriculture, the shares did not exceed 2.5%. Thus, the EU dependence on Russia was limited to the sphere of oil and gas resources, but in this area it was extremely profound. In technological industries, China (more than 30% in the production of materials and light industry, almost 40% in equipment and transport) and the USA (21% in chemical production, 12% in equipment and transport) are more significant suppliers to the EU.

Data on the sectoral structure of Russia's imports and exports to the European Union, the USA, China, and the rest of the world are presented in *Table 4*. The adjusted Eurostat data were used as

Table 4. Industry structure of Russia's imports and exports with partner countries and the rest of the world in 2021

#	Aggregate industry in the model	RF exports					RF imports				
		Total, billion rubles	Share of countries in exports, %				Total, billion rubles	Share of countries in imports, %			
			EU	USA	China	Rest of the world		EU	USA	China	Rest of the world
1	Agriculture, food production	2224.1	8.3	0.4	9.3	82.0	2610.3	19.3	1.3	4.2	75.2
2	Mining	10245.3	53.4	3.2	18.1	25.3	444.5	51.2	1	1.7	46.1
3	Fuel production	5476.6	75.0	3.3	17.3	4.4	342.1	20.2	1.2	1.6	77.0
4	Public sector	21.3	8.4	3.6	0	88.0	42.2	14.3	4.1	25.7	55.9
5	Chemical production	3347	17.6	4.1	6.6	71.7	3940.9	44.3	6.6	14.9	34.2
6	Production of materials	6470.3	25.5	5.4	8.9	60.2	1912.9	51.6	2.8	23.6	22,0
7	Manufacture of equipment and transport	2388.2	7.1	2.3	9.0	81.6	9592.5	35.4	5.1	33	26,5
8	Light industry	268.6	68.2	1.7	0.6	29.5	2280.8	31.3	0.8	45.4	22,5
9	Services	3886.7	13.7	3.9	16.8	65.6	3672.5	2.3	4.1	25.7	67,9
10	Trade	2880.8	41.3	0	16.8	41.9	14.6	41.3	10.0	25.7	23,0
11	Construction	422.1	12.6	0	16.8	70.6	507.2	2.4	1.0	25.7	70,9
	Total, billion rubles	37631	14132	1211	5232	17056	25360	7754	1019	6458	10129

Source: own compilation.

initial data on the industry structure of trade with the European Union, and data from the Federal Customs Service of Russia were used for trade with the United States and China. Additional adjustments at this step were required by data on trade exchange with the United States in industries 4,6,8, 9,10,11.

In the structure of Russia's imports in 2021, there is a strong dependence on the EU in terms of supplies of materials (51.6%), chemical products (44.3%), equipment and transport (35.4%) and light industry (31.3%), as well as services in the field of exploration and mining (51.2%), i.e. practically in all high-tech areas. The second place in imports was occupied by China with shares in the listed industries from 15% to 33%, while the share of the United States was from 1% to 6%.

The European Union also played a leading role in Russia's exports; the volume of product supplies to European countries was almost three times higher than supplies to China (14 trillion rubles compared to 5 trillion rubles), and almost equaled the total supplies to the rest of the world (17 trillion rubles).

Table 5 shows data on the sectoral structure of U.S. imports and exports to the European Union, Russia, China, and the rest of the world. The data processed above by Eurostat and the Federal Customs Service of Russia were used as the initial data on the sectoral structure of trade with the European Union and Russia, data from the U.S. Bureau of Economic Analysis were used to analyze the sectoral structure of trade with China. No additional adjustments were required at this step, since data on U.S. imports and exports with individual countries are published in an industry structure compatible with the aggregate model industries without loss of accuracy.

Of the countries considered in the model, the most significant trading partners for the United States are China and the EU countries, but their total share in exports is about 20%, and in imports – about 30%, which indicates a high degree of diversification of U.S. trade relations.

The sectoral structure of China's imports and exports to the European Union, Russia, the USA, and the rest of the world is calculated on the basis of

Table 5. Industry structure of U.S. imports and exports with partner countries and the rest of the world in 2021

#	Aggregate industry in the model	U.S. exports					U.S. imports				
		Total, billion USD	Share of countries in exports, %				Total, billion USD	Share of countries in imports, %			
			EU	RF	China	Rest of the world		EU	RF	China	Rest of the world
1	Agriculture, food production	179.5	4.3	0.3	11.0	84.4	188.3	13.5	0.1	2.0	84.4
2	Mining	131.1	10.6	0	6.5	82.9	153.2	5.3	2.9	3.0	88.8
3	Fuel production	132.8	29.5	0	7.0	63.5	71.7	21.7	3.4	.06	68.9
4	Public sector	6.4	8.5	0.4	0	91.1	7.5	1.5	0.1	0	98.4
5	Chemical production	278.2	24.5	1.3	7.0	67.2	420.8	32.5	0.4	10.0	57.1
6	Production of materials	130.8	14.6	0.6	6.8	78.0	267.6	22.3	1.8	10.0	65.9
7	Manufacture of equipment and transport	526.4	18.1	1.3	7.2	73.4	1137.7	15.2	0.1	17.0	67.7
8	Light industry	63.8	41.3	0.4	4.0	54.3	343.2	12.6	0	24.0	63.4
9	Services	609.3	0.5	0.3	4.8	94.4	265.0	3.3	0.8	5.8	90.1
10	Trade	2.5	76.8	0.8	0	22.4	0	0	0	0	0
11	Construction	0.1	0	68.3	0	31.7	0	0	0	0	0
Total, billion USD		2060.9	275.3	13.9	135.7	1636	2854.9	470.5	16.5	372.6	1995.3

Source: own compilation.

Table 6. Sectoral structure of China's imports and exports with partner countries and the rest of the world in 2021

#	Aggregate industry in the model	China's exports					China's imports				
		Total, billion yuan	Share of countries in exports, %				Total, billion yuan	Share of countries in imports, %			
			EU	RF	USA	Rest of the world		EU	RF	USA	Rest of the world
1	Agriculture, food production	633.9	5.7	1.5	3.8	89.0	1381.6	8.3	1.3	9.1	81.3
2	Mining	64.6	43.9	1.0	45.4	9.7	2710.3	3.1	6.0	2.0	88.9
3	Fuel production	887.7	0.9	0.1	3.1	95.9	1102.1	1.0	7.5	5.4	86.1
4	Public sector	304.4	0.3	0.3	0	99.4	-	-	-	-	-
5	Chemical production	1270.0	20.5	4.0	21.2	54.3	1219.6	20.4	1.6	10.2	67.8
6	Production of materials	1345.9	38.6	2.9	12.7	45.8	1031.4	18.5	4.9	5.5	71.1
7	Manufacture of equipment and transport	9377.6	21.3	2.9	13.2	62.6	6362.5	13.8	0.3	3.8	82.1
8	Light industry	4099.3	17.5	2.2	12.8	67.5	905.6	15.3	0	1.8	82.9
9	Services	773.0	0.3	10.6	12.6	76.5	1868.1	1.0	3.0	10.0	86.0
10	Trade	2864.3	0.3	0	0	25.2	721.0	5.6	42.1	0	0
11	Construction	109.4	0.3	10.4	0	62.0	67.9	0.3	6.2	0	0
Total, billion yuan		21730.0	3576.2	561.5	2380.8	15211.5	17370	1691.1	454.9	866.9	14357.1

Source: own compilation.

the data processed above by Eurostat, the Federal Customs Service of Russia and the U.S. Bureau of Economic Analysis; the calculation results are presented in *Table 6*. China's trade relations, like those of the USA, are quite diversified: countries not considered in the model account for 60–90% of exports and 70–80% of imports of most industries.

The second result of the work carried out is the formation of cross-country tables of industry supplies of intermediate and final goods (based on information from the first quadrants, columns of exports and final goods of input-output balances of individual countries) and investment products (based on columns of exports and investments from the second quadrants).

The initial data of the countries' input-output balances were processed in accordance with steps 1–4 of the algorithm proposed in the article and brought to the form of cross-country tables of industry supplies using the data presented above on the shares of countries in the import and export of industries (step 5.5). To load the data into the model, the tables are reduced to the base prices

in US dollars (step 6). The dimension of each of the tables is 3,025 cells (square matrix 55*55). A fragment of the table obtained as a result of the calculations, reflecting the supply of intermediate and final goods between Russia and the EU, as well as supplies within these countries, is presented in *Table 7*.

The first quadrant represents cross-industry supplies of domestic goods in the Russian economy, the second – Russia's exports to the EU (EU imports from Russia), the third – Russia's imports from the EU (EU exports to Russia), the fourth – cross-industry supplies of domestic products in the EU economy (in accordance with the proposed structure of the cross-country table of industry supplies presented in Table 3).

To forecast the dynamics of international trade, it is necessary to assess the scale of the sanctions imposed on goods of various industries by the EU and the United States. To solve this problem, data on the volume of imports and exports with Russia published by Eurostat and quarterly data from the U.S. Bureau of Economic Analysis were used.

Table 7. Fragment of the cross-country table of industry supplies for 2021 (trade turnover of intermediate and final goods and services between Russia and the EU, in base prices)

ind.#	RF											EU										
	1	2	3	4	5	6	7	8	9	10	11	1	2	3	4	5	6	7	8	9	10	11
1	75417	59	0.5	3020.3	230.5	3452.2	14.1	284.4	4721.3	109419	195.4	794.3	0.2	1.3	18.5	30.4	11.4	2.3	14.2	204.6	1000.5	3.3
2	90.7	15217	66726	54.2	2279.7	13251	48.1	337.9	13090	4003.3	2233.4	587.5	764.8	32657	468.6	4656.8	4390.1	757.3	202.1	13749	3982.9	1360.8
3	4257.7	5130.8	22020	1420.5	8111.2	4875.6	563.9	64.4	17741	22131	3533.6	1378.2	1037.5	4295.1	1110.6	3717.2	849.4	607.9	173.6	17677	15130	1379.8
4	292.8	347	181.2	227338	199	379.2	311.1	37.4	2226.6	24311	251.8	0.1	0	0	5.7	0.1	0	0.1	0	6.6	6.8	0.7
5	6655.4	968.6	1756.9	3634.6	19309	4212	4167.9	1041.5	4811.7	11964	17720	352.7	13.8	68.9	849.8	1972	287.6	520.5	154.3	932.5	1028	400.6
6	4213.2	1845.6	100.3	1304.9	4361	44890	17320	2063.3	11958	5519.8	16740	371.1	41.6	61.2	260.5	730.7	7071.5	4351.1	627.1	1438.8	1295.8	1664.1
7	3190.2	4018.3	200.5	1632.7	1366.4	4676.1	24873	132.2	16095	18320	4472.5	7.7	2.3	2.9	39.7	14.2	26.1	566	11.1	199.9	314.9	61.3
8	173.4	129.6	22	859.8	388.8	160.1	351.6	1720	873.6	10861	116.6	10.1	0.4	0.8	42.4	29.1	22.8	55.1	245.8	186.1	1165.6	21
9	19801	33014	21831	58925	22584	33465	15727	2757.8	233050	299800	18864	89.9	6.5	17.1	339.5	281.8	92.9	339.8	42.6	2823.8	1064.1	105.8
10	11181	2685.9	4178.9	5944.5	8305.6	13889.0	11188	1682.2	23679	163931	9942.7	897.1	13.6	64.1	272.8	628.2	415.5	1884.1	390	3211.5	4971.2	621.1
11	620.3	3911	752	9971.6	677.8	1201.7	541.6	49	12107	928.5	4728	2.5	0.4	0.4	36.3	2.6	11.4	7.2	0.4	85.1	15	262.5
1	1341.1	0.2	0	88.4	43.4	1.9	0.3	10.6	163.7	3132.8	0.2	369761	170.2	667.6	11443	11762	15869	1779.6	3609	139147	509233	2089.1
2	3.6	120.4	36.8	0.2	134.2	924.8	0.6	44.3	78.7	0.9	70	1658.7	5305.9	29162	1130.7	10308	5076	822.9	269.4	18303	5845.2	8876
3	53.9	2.4	86	4.1	26	60.6	0.5	0	425.6	0.6	1.7	8316	24698	32036	4106.1	13284	4577.5	2572.4	616	55635	80810	8734.3
4	0.7	1.3	0.3	28.8	0.6	1.2	1.5	0.1	14.7	7.9	0.8	3825.4	326.2	1238.4	2168726	5158.1	3812.9	9078.3	1181.6	165443	426279	7522
5	895.9	223.7	371.6	1888.3	3754	923.4	1098.1	314.2	757.8	4657.9	1366.5	39537	2084.9	9908.1	45105	181342	32616	69575	17083	92597	113019	105576
6	342.1	212.3	9.9	82.5	321.9	3107.7	1161.6	207.5	846.3	767.7	1502.9	21311	1459.8	2553.6	19947	25602	226969	182559	23022	103647	70344	89454
7	316.2	437.4	102.6	310.3	131.8	586.8	6761.3	21.6	2716.1	6254.3	908.3	15968	4215.5	4914.2	22510	15980	28436	403976	6839.6	145778	252307	46884
8	24.6	7.9	0.8	247.9	49.2	14.3	53.1	410.5	146.1	5415.7	17	1349.5	79.3	137.6	5870.1	3415.7	2802.5	7030.5	39924	26844	125786	4436
9	34.4	38.5	14	40	29.1	36.5	31.3	3.2	346	157.6	42.3	178826	15050	41405	625288	180562	169515	271555	53106	3120984	3686036	231732
10	0	0.1	0	15.2	3.5	3.5	1.6	0.1	1	28.4	0	114029	3913.9	11655	65812	66577	63243	167906	32583	281821	1060052	88473
11	0.2	1.8	0.3	18.9	0.3	0.5	0.2	0	6.9	4.3	2.2	6946.3	1279.5	1689.8	33091	6162.5	7015.5	12271	1828.8	197284	56041	307363

Source: own calculation.

Table 8. Dynamics of commodity exchange between the EU and Russia in 2022 relative to the values of 2021

SITC	EU imports from Russia, million euro			EU exports to Russia, million euro		
	2021	2022	dynamics, %	2021	2022	dynamics, %
Food, beverages and tobacco	2123.1	2402.9	13.2	5781.6	5770	-0.2
Crude materials	7273.7	-	-	2617.3	-	-
Mineral fuels	104005.9	148151.3	42.4	789.7	485.4	-38.5
Chemicals	6796.7	7114.8	4.7	20012.9	18235.5	-8.9
Other materials and goods	21046.8	18496.2	-12.1	19538.7	11876.1	-39.2
Machinery and transport equipment	1953.4	1277.8	-34.6	39437.5	16117.8	-59.1
Other groups	20447.0	-	-	1015.0	-	-
Total imports/exports	163646.6	203578.7	24.4	89192.7	55161.8	-38.2

Source: own compilation.

Since Eurostat publishes data on international trade in the context of commodity groups, it is possible to estimate the dynamics of EU imports and exports with Russia for each of them (*Tab. 8*). The exception is the SITC 2+4 commodity group, representing minerals, for which the details of turnover with Russia are no longer published on the Eurostat website (the data for 2021 presented in Table 8 were uploaded in November 2022; this information was unavailable when accessed in March 2023). The lack of data for group 2+4 also makes it impossible to estimate the volume of trade for other groups of goods, which is defined as the difference between the total volume of imports (exports) and the amount of imports (exports) for the selected groups.

According to the data in Table 8, Russia's imports from EU countries fell by 38%, the most significant drop in industry 7 (equipment and transport) – 59%. There are noticeable changes in the import of materials and light industry products (39%), while the import of agricultural and food products remained virtually unchanged. Changes in Russia's exports to the EU in 2022 are of even greater interest. Despite the unprecedented number of sanctions imposed, exports to the EU increased by 24%, while fuel exports (industry 3) increased by 42%. This indicates that with the reduction of energy supplies in physical terms, buyers from the EU paid much more for them in value terms. If we estimate a 50% decrease in physical energy

supplies relative to 2021, then Eurostat data indicate an actual price increase of 3 times (more accurate figures will be available after the publication of expanded data on Russia's international trade for 2022). At the same time, exports of high-tech products to the EU decreased by 34% in equipment and transport, and by 12% in materials and light industry products.

Due to the fact that at the time of writing this article, the Federal State Statistics Service and the Federal Customs Service have not yet published data on Russia's trade with the United States in 2022, it is necessary to rely on data from the U.S. Bureau of Economic Analysis to assess its dynamics (*Tab. 9*). The data are published quarterly, which allows for a more detailed assessment of the pace of changes compared to annual reports; however, data on U.S. trade with Russia are not detailed by industry, so only the dynamics of total imports and exports will be evaluated.

Changes in trade relations between Russia and the United States are more predictable than with the European Union, but here, too, the decline in U.S. exports to Russia is more significant (70%) than the decline in imports from Russia (51%). We can also note that exports to Russia decreased almost instantly in the second quarter of 2022, while imports gradually decreased by 51% in the second quarter, by 84% in the third quarter, and then partially recovered in the fourth quarter of 2022.

Table 9. The dynamics of commodity exchange between the United States and Russia in 2022 relative to the values of 2021

Indicator	Year	Period				
		I quarter	II quarter	III quarter	IV quarter	Total for the year
U.S. imports from Russia, million USD	2021	6219	7918	8390	7111	29638
	2022	7285	3872	1340	1966	14463
Import dynamics in 2022 relative to 2021, %		17.1	-51.1	-84.0	-72.4	-51.2
U.S. exports to Russia, million USD	2021	1477	1780	1588	1621	6466
	2022	1035	293	287	303	1918
Export dynamics in 2022 relative to 2021, %		-29.9	-83.5	-81.9	-81.3	-70.3

Source: own compilation.

In general, we can conclude that as a result of the sanctions imposed, the EU countries were the most affected; they not only faced a shortage of energy carriers in 2022, but also paid a higher price for fewer of them than for the full volume of supplies in the previous year. Thus, Russia's revenues from energy exports to Europe turned out to be high in the end, and the greatest difficulties were the substitution of imports of materials, machinery and equipment previously supplied from the EU in a significant volume. For the United States, on the contrary, the costs of severing trade ties with Russia turned out to be relatively small, since the volume of imports and exports with Russia is less than 1% for them.

Conclusion

In this paper, the goal was to analyze the available data on trade relations between Russia, China, the EU, the USA, and the rest of the world and bring them to a unified form for uploading to an agent-based model of trade wars. In order to achieve this goal, the following objectives were addressed:

1. The structures of industry and commodity nomenclatures in various countries were analyzed and a scheme for their unification in 11 aggregate branches of the model was proposed.

2. An algorithm was proposed that determines the sequence of processing the initial statistical data to the form necessary for their loading into the model.

3. The data of the input-output tables for various countries were updated to the values of 2021 based on information on GDP, imports and exports, and reduced to the industry structure of the model.

4. Data on imports and exports of countries were reduced to the industry structure of the model and detailed in the context of partner countries using the proposed algorithm. In the process of solving this problem, an analysis of the sectoral structure of international commodity exchange in 2021 was also carried out, which showed a high level of interconnection between the economies of the European Union and Russia before the introduction of large-scale sanctions, and relatively low indicators of commodity exchange between Russia and the United States.

5. The structure of cross-country tables of industry supplies was proposed; based on the data obtained, tables were formed reflecting the flows of intermediate and investment products both within and between the participating countries of the model.

6. The analysis of the dynamics of trade exchange between Russia and the countries that imposed sanctions restrictions was carried out, which showed that Russia's imports from the EU countries fell by 38%, and exports increased by 24%, in particular fuel exports – by 42%. These data are presented in value terms and under the conditions of the imposed sanctions indicate a significant increase

in prices (about 200%) with a halving of supplies in kind. With regard to the trade exchange between Russia and the United States after the imposition of sanctions, we can note that the decrease in imports to Russia amounted to 70%, and exports – about 50%.

The obtained data sets were used to carry out calculations with the help of an agent-based model of trade wars, in which the dynamics of trade relations in a three-year period under various scenarios of state investment policy were studied. The results of the experiments are presented in the paper (Mashkova, 2023) and show that the degree of impact of investments on the economy is

directly proportional to the severity of the sanctions imposed, and while maintaining the imposed trade restrictions, the implementation of large-scale investment programs can accelerate economic recovery by an average of 0.5% of GDP per year. The further experimental research plan includes an assessment of the sensitivity of the economic systems of various countries to the restructuring of world trade relations, in particular, the speed of recovery of the economies of the countries involved in the conflict, taking into account their ability to replace the resources and goods that have fallen under the restrictions.

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Appendix. Comparison of industry and commodity classifiers of different countries

Aggregate industry in the mode/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
(1) Agriculture, food production	Crop production, animal husbandry, hunting and provision of services in these areas	Live animals	Agriculture, hunting and related service activities	Food and live animals	Agriculture, forestry, fishing, and hunting	Agriculture, forestry & fishery
	Forestry and logging	Meat and edible meat offal	Forestry, logging and related service activities	Beverages and tobacco	Food manufacturing	Food products and tobacco
	Fishing and fish farming	Fish and crustaceans, mollusks	Fishing, fish farming and related activities	Animal and vegetable oils and fats	Beverage manufacturing	
	Manufacture of food, beverages, tobacco products	Dairy products; poultry eggs; natural honey	Manufacture of food products and beverages		Tobacco product manufacturing	
		Products of animal origin	Manufacture of tobacco products			
		Live trees and other plants				
		Vegetables and edible roots				
		Edible fruits and nuts				
		Coffee, tea, mate, spices				
		Cereals				
		Products of the milling and cereal industry				
		Oilseeds and fruits; other seeds, fruits and grains				
		Shellac; gums, resins, vegetable juices and extracts				
		Plant materials for the manufacture of wicker products				
		Fats and oils of animal or vegetable origin				
		Finished products from meat, fish or crustaceans				
		Sugar and sugar confectionery				
		Cocoa and its products				
		Finished products from cereals, flour, starch or milk				
		Processed products of vegetables, fruits, nuts				
	Miscellaneous food products					
	Alcoholic and non-alcoholic beverages and vinegar					

Continuation of Appendix

Aggregate industry in the model/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
		Residues and waste from the food industry; ready-made animal feed				
		Tobacco and industrial tobacco substitutes				
(2) Mining	Mining	Salt; sulfur; earth and stone; lime and cement	Mining of coal and lignite; extraction of peat	Crude materials, inedible, except fuels	Oil and gas extraction	Mining
		Ores, slag and ash	Extraction of crude petroleum and natural gas;	Mineral fuels, lubricants and related materials	Mining, except oil and gas	
			Mining of uranium and thorium ores		Support activities for mining	
			Mining of metal ores			
			Other mining and quarrying			
(3) Fuel production	Production of coke and petroleum products	Mineral fuel, oil and products of their distillation	Manufacture of coke, refined petroleum products and nuclear fuel	Mineral fuels, lubricants and related materials	Petroleum and coal products	Manufacture of coke, refined petroleum products
(4) Public sector	Public administration and military security, social security	-	Public administration and defence; compulsory social security	Commodities and transactions not classified elsewhere in the SITC	Federal general government (defense)	Public administration and defence; social security
	Education		Education		Federal general government (nondefense)	Education
	Health care activities		85 Health and social work		State and local government educational services	Health and social work
	Residential care activities				State and local government hospitals and health services	
(5) Chemical production	Manufacture of chemicals and chemical products	Products of inorganic chemistry; compounds of rare earth metals	Manufacture of chemicals and chemical products	Chemicals and related products	Chemical products	Manufacture of non-metallic mineral products
	Production of medicines and materials	Organic chemical compounds	Manufacture of rubber and plastic products		Plastics and rubber products	
	Manufacture of rubber and plastic products	Pharmaceutical products	Manufacture of other non-metallic mineral products		Nonmetallic mineral products	
	Production of other non-metallic mineral products	Fertilizers				
		Extracts; dyes, pigments; paints and varnishes				
		Essential oils and rubbers; cosmetics				

Continuation of Appendix

Aggregate industry in the mode/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
		Soap, detergents				
		Explosives				
		Photo and film products				
		Other chemical products				
		Plastics and products made of them				
		Rubber and products made of it				
(6) Production of materials	Metallurgical production	Ferrous metals	Manufacture of basic metals	Manufactured goods classified chiefly by material	Primary metals	Manufacture of basic metals and fabricated metal products
	Production of finished metal products, except machinery and equipment	Ferrous metal products	Manufacture of fabricated metal products, except machinery and equipment		Fabricated metal products	Manufacture of wood and paper products; publishing and printing
	Wood processing and manufacture of wood and cork products	Copper and its products	Manufacture of textiles		Textile mills and textile product mills	
	Production of paper and paper products	Nickel and its products	Manufacture of wood and of products of wood and cork,		Wood products	
	Printing and copying of media	Aluminum and its products	Manufacture of pulp, paper and paper products		Paper products	
		Lead and its products	Publishing, printing and reproduction of recorded media		Printing and related support activities	
		Zinc and its products				
		Tin and its products				
		Other base metals; cermets				
		Raw hides and tanned leather				
		Natural and artificial fur				
		Wood and products made from it				
		Cork and its products				
		Paper and cardboard; products made of them				
		Silk, wool, cotton				
		Chemical fibers and filaments				
		Cotton wool, felt; twine, ropes				
	Lace; tapestries					
	Knitted fabrics					

Continuation of Appendix

Aggregate industry in the model/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
(7) Manufacture of equipment and transport	Manufacture of computers, electronic and optical products	Nuclear reactors, boilers, equipment and mechanical devices; parts thereof	Manufacture of machinery and equipment n.e.c.	Machinery and transport equipment	Machinery	Manufacture of machinery and equipment, transport
	Manufacture of electrical equipment	Electrical machines and equipment, their parts, etc.	Manufacture of office machinery and computers		Computer and electronic products	
	Manufacture of machinery and equipment not included in other groupings	Railway locomotives or tram motor cars, rolling stock and parts thereof, etc.	Manufacture of electrical machinery and apparatus n.e.c.		Electrical equipment, appliances, and components	
	Manufacture of motor vehicles, trailers and semi-trailers	Means of land transport, except railway, their parts and accessories	Manufacture of radio, television and communication equipment and apparatus		Medical equipment and supplies manufacturing	
	Manufacture of other vehicles and equipment	Vessels, boats and floating structures	Manufacture of medical, precision and optical instruments, watches and clocks		Motor vehicles, bodies and trailers, and parts	
		Optical, photographic, measuring, medical instruments and apparatus; their parts and accessories	Manufacture of motor vehicles, trailers and semi-trailers		Other transportation equipment	
		Watches of all kinds and their parts	Manufacture of other transport equipment			
(8) Light industry	Manufacture of furniture and other finished products	Leather goods; travel accessories, bags	Manufacture of furniture; manufacturing n.e.c.	Miscellaneous manufactured articles	Furniture and related products	Other manufactured products
	Manufacture of textiles, clothing, leather and related products	Products made of straw, alpha; basket products and wicker products	Recycling		Other miscellaneous manufacturing	Manufacture of textiles, wearing apparel, leather, footwear
		Printed books, newspapers, reproductions and other products of the printing industry	Manufacture of wearing apparel; dressing and dyeing of fur		Apparel and leather and allied products	
		Carpets and other textile floor coverings	Tanning and dressing of leather; manufacture of luggage, handbags			
		Clothing items				
		Other finished textile products				
		Shoes, gaiters				
		Hats				
		Umbrellas, sun umbrellas, walking sticks				

Continuation of Appendix

Aggregate industry in the mode/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
		Products made of stone, gypsum, cement, asbestos, mica				
		Ceramic products				
		Glass and its products				
		Pearls, precious stones, coins; jewelry				
		Musical instruments				
		Furniture; bedding; lamps				
		Toys, games and sports equipment				
		Various finished products				
		Works of art				
(9) Services	Provision of electric energy, gas and steam; air conditioning	-	Electricity, gas, steam and hot water supply	Commodities and transactions not classified elsewhere in the SITC	Electric power generation, transmission, and distribution	Electricity, gas and water supply
	Water intake, purification and distribution		Collection, purification and distribution of water		Accommodation	Hotels and restaurants
	Activities of hotels and catering establishments		Hotels and restaurants		Food services and drinking places	
	Land and pipeline transport activities		Land transport; transport via pipelines		Transportation and warehousing	transport, storage and post
	Water transport activities		Water transport		Broadcasting and telecommunications	Information Transmission, software and information technology
	Air and space transport activities		Air transport		Finance and insurance	Finance
	Warehousing and auxiliary transport activities		Supporting transport activities; activities of travel agencies		Real estate and rental and leasing	Real Estate
	Postal communication and courier activities		Post and telecommunications		Data processing, internet publishing, and other information services	Research and technical services
	Financial and insurance activities		Financial intermediation, except insurance and pension funding		Professional and business services	Leasing and business services
	Real estate transactions		Insurance and pension funding, except compulsory social security		Arts, entertainment, recreation, accommodation, and food services	Management of water conservancy, environment

Continuation of Appendix

Aggregate industry in the mode/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
	Rent and leasing		Activities auxiliary to financial intermediation		Information (publishing, motion pictures)	Culture, sports and entertainment
	Telecommunications activities		Real estate activities		Other services, except government	Repair and other services
	Computer software development		Renting of machinery and equipment without operator and of personal goods			
	Activities in the field of architecture and engineering design		Computer and related activities			
	Research and development		Research and development			
	Advertising activities and market research		Other business activities			
	Other professional, scientific and technical activities; veterinary activities		Sewage and refuse disposal, sanitation and similar activities			
	Employment and recruitment activities		Activities of membership organizations n.e.c.			
	Activities of travel agencies		Recreational, cultural and sporting activities			
	Security and maintenance activities for buildings and territories		Other service activities			
	Activities in the field of law and accounting					
	Waste water collection and treatment; waste collection, treatment and disposal					
	Activities of nongovernmental organizations					
	Activities in the field of creativity, art and entertainment organization					
	Activities in the field of sports, recreation and entertainment					
	Publishing activity					
	Production of movies; activities in the field of television and radio broadcasting					

End of Appendix

Aggregate industry in the mode/	Industries in Russia	TN VED	Industries in the EU	SITC	Industries in the USA	Industries in China
	Repair of computers, personal items and household goods					
	Activities for the provision of other personal services					
(10) Trade	Wholesale and retail trade in motor vehicles and motorcycles and their repair		Sale, maintenance and repair of motor vehicles and motorcycles; retail sale of automotive fuel	Commodities and transactions not classified elsewhere in the SITC	Wholesale trade	Wholesale and retail trade
	Wholesale trade, except wholesale trade in motor vehicles and motorcycles		Wholesale trade and commission trade, except of motor vehicles and motorcycles		Retail trade	
	Retail trade, except retail trade in motor vehicles and motorcycles		Retail trade, except of motor vehicles and motorcycles; repair of personal and household goods			
(11) Construction	Construction		Construction	Commodities and transactions not classified elsewhere in the SITC	Construction	Construction
Source: own compilation.						

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Institutional Erosion and Economic Growth



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Abstract. The paper investigates the phenomenon of institutional erosion, which is understood as a decrease in the effectiveness of institutions due to the complication (or, conversely, simplification) of the economic system. Thus, the article substantiates and verifies a hypothesis regarding the impact of economic growth on the quality of institutions. We dwell upon the idea that the possibilities of preventing institutional erosion through timely reforms are limited. This is due to the emergence of institutional friction caused by resistance to reforms on the part of certain social groups and due to the rule of increasing damage. In addition, we consider the process of erosion of human capital under the influence of reforms in the context of cognitive and psychophysiological mechanisms. We put forward a basic and an extended version of the economic growth model that includes the effect of institutional erosion. We conduct computational experiments for the basic model, which made it possible to reveal the effect of economic overheating: a less intensive mode of investment in the long term turns out preferable compared to a more stressful mode of capital accumulation due to the gradual zeroing of the results of explosive growth. We describe the mechanism of degeneration of institutions (i.e., loss of the quality of institutions and the inversion of goals) caused by their internal dialectic. We discuss the significance of a new model of economic growth with institutional erosion for explaining the processes of both ascending and descending branches of social dynamics. We also give an interpretation of some important events of our time in the terms of the new theory.

Key words: institutions, economic growth, reforms, crisis, capital.

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Introduction

In 2022, Russia launched a special military operation in Ukraine, which became a catalyst for the deglobalization of the world economy. These events have made many previously hidden processes more explicit and almost visually observable. This new round of geopolitical confrontation exposed the fact that the model of Western institutions was not as effective as it had been commonly believed. At the same time, it turned out that alternative institutional models, for example, in China, Iran and Russia, turned out to be quite workable and competitive compared to their Western counterparts. These new events and phenomena have raised at least three important and theoretically significant questions, to which no exhaustive answers have been given so far.

The first – geopolitical – aspect is connected with a need for a comprehensive explanation of the periodical change of the world capital accumulation center (WCAC). So far, the institutional foundations of capital accumulation cycles have not found adequate consideration in the literature. At the same time, it is clear that the very change of one leading state to another is associated with a drop in institutional effectiveness in the former to a certain critical level, when the former leader can no longer maintain its privileged position. Elaborating on the subject, we can say that we need to understand why the world economic superiority of the Netherlands in the 18th century was replaced by the imperial rule of Great Britain at the end of the 19th century, and this, in turn, was succeeded by the quasi-imperial hegemony of the USA in the 20th century; similarly, we need to understand why today, at the beginning of the 21st century, the old the leader – the United States – is losing its geopolitical positions and ceding them to China.

The second – macroeconomic – aspect requires an understanding of the periodic decline in the efficiency of state institutions in various countries and regions without reference to capital accumulation cycles. For example, we still do not have clear answers to the question about the nature of the phenomenon of “decline of the West”, which is now being fully manifested. We have no theory explaining the reversal in the development of Japan, which, after several decades of economic miracle in the 1990s, witnessed an equally long period with a regime closely resembling depression. The third – microeconomic – aspect covers local phenomena within different countries and is associated with the search for an answer to the question why certain progressive institutions cease to be such over time. Why, for example, has Lomonosov Moscow State University (MSU), working superbly in the Soviet Union, lost its effectiveness in modern Russia? Or, for example, why has the “melting pot” of European culture and the United States ceased to fulfill its role in relation to current migrants? Or, finally, why is the institution of ordinary schools losing its effectiveness everywhere?

The listed issues have quite obvious specifics: they require disclosure of the mechanism of institutional degradation. While earlier the attention of researchers was mainly focused on the ascending line of societal development, then at present we propose to focus on the downward trend, without which a complete picture of social evolution cannot be obtained. The purpose of the article is to find answers to the above three groups of questions. The major idea of the analysis is the premise regarding the presence of an inseparable mutual connection of the processes of institution building and economic growth.

A brief overview of institutional issues

The purpose of this section does not consist in providing an exhaustive overview of institutional topics, but rather to outline those milestones that lead us to the need to take a new step in its development. In this regard, we will indicate only some fundamental ideas to proceed from.

As part of the microeconomic direction we find it necessary to indicate the works devoted to institutional traps – inefficient, but stable institutions. A set of works in this area (Polterovich, 1999; Polterovich, 2001; Polterovich, 2007) has demonstrated that when certain conditions arise in the system, there emerge completely different institutional configurations that lower the level of its institutional effectiveness. Subsequently, these conclusions were extended to the market of production technologies and equivalent properties were established for technological traps – inefficient but stable technological paradigms (Balatsky, 2003; Balatsky, 2012); moreover, it was shown that under unsuccessful initial conditions, even within the framework of mixed institutional and technological strategies, a less effective alternative may prevail (Balatsky, 2005). The research in this direction has produced a simple model explaining the role of intensive economic growth for the destruction of institutional and technological traps. At the same time, the issue concerning the interdependence of economic conditions and institutions at any given time has not been fully resolved.

The macroeconomic direction goes back to the works of D. North, who emphasized the universality of market institutions and the system of impersonal exchange (North, 1997; North, 2010). Subsequently, these ideas were supplemented by considering the phenomenon of alienation and its implications for human mental health (Balatsky, 2011; Fromm, 2005; Jung, 2010). Further development of North's ideas led to the birth of the concepts of institutional trajectory, which is understood as the trajectory of changes in institutions over time, as well as final and intermediate (auxiliary) institutions (Polterovich,

2006a; Polterovich, 2006b). These concepts helped to realize and thoroughly explain the fact that effective institutional trajectories must take into account restrictions of various kinds; otherwise, the goal in the form of a certain final institution will not be achieved – the final institution may be significantly distorted in comparison with its designed standard. These ideas found their refined expression in the principle of consistency, according to which the pace of economic growth depends not only on the effectiveness of technologies, institutions and culture, but also on the degree of consistency of achievements in these areas (Balatsky, 2021b; Balatsky, Yurevich, 2022). Nevertheless, the reverse effect of economic growth on the combination of factors that determine it remained outside the area of the consistency principle.

The deepening of ideas about the nature of institutions allowed us to formulate an important thesis for quantitative research: institutions themselves do not possess any immanent effectiveness, but acquire it only as a result of coupling with specific economic, technological and cultural realities; if institutions are understood as social technologies, then their effectiveness, as well as that of production technologies, depends on who uses them and how, and what kind of material they “process” (Balatsky, Ekimova, 2019). Implicitly following this logic, institutional bestsellers of D. Acemoglu and J. Robinson consider the mechanism of building effective economic and political institutions in the process of competition between the elites (state) and the masses (population) (Acemoglu, Robinson, 2015; Acemoglu, Robinson, 2021); similar conclusions were drawn even earlier by D. North and co-authors in a slightly different terminology and with a different meaningful connotation (North et al., 2011; North et al., 2012). However, Acemoglu and Robinson's focus on the progressive evolution of institutions did not allow them to reveal a reverse process – the involution (degradation) of institutional systems. In this context, D. Zolo's concept of complexity

was an important addition to the above ideas. Zolo, which is based on the dialectical nature of the political process (Zolo, 2010). According to the new interpretation, politics is a delicate balancing of polar values – personal security and freedom, protection of the political regime and maintenance of social diversity, effective governance and respect for human rights. Consequently, democracy consists in ensuring a reasonable balance between these polar values, whereas the narrow interpretation of democracy as a specific form of elections, representative government and the organization of institutions of power no longer reflects the full depth of this concept. Zolo's idea of the dialectical nature of the political process echoes North's idea of the dual nature of institutions (North, 2010). The simplest model of the political process using the curve of freedom and the curve of security gives an equilibrium (intersection of the curves), which is interpreted as a state of democracy; evolutionary shocks of complexity shift the initial security curve to the origin of the coordinates, which means the destruction of democratic institutions and transition to authoritarian regimes (Balatsky, 2013). Thus, the outcome is that the complication of the social world leads to the destruction of original democratic institutions. However, within the framework of this direction, the idea of economic growth was not explicitly reflected and has remained on the sidelines of the main issues.

Another line in the macroeconomic direction is connected with an idea concerning the destructive impact of institutional reforms on human capital; the idea immediately received a symmetrical formulation for the technology factor (Balatsky, 2021a). In this case, progress in the efficiency of institutions and technologies leads to the destruction of the workforce efficiency, which can turn into a paradox of reforms, when visible improvements in two groups of factors can provoke an economic downturn. However, the mutual influence in this scheme is limited only by the factors of economic growth, while growth itself does not affect them.

In the framework of the geopolitical direction, attention should be paid to G. Arrighi's theory of cycles of capital accumulation (Arrighi, 2006), which reveals the logic of the WCAC moving in time and space. The theory of Arrighi's cycles was empirically developed in the recent work by R. Dalio on the cycles of the world order (Dalio, 2023), which considers generalized indices of wealth and power for different countries; as it turned out, Dalio's cycles of the world order for the Netherlands, Great Britain and the USA correspond to Arrighi's cycles of capital accumulation and can be used to clarify their chronology. In the Russian tradition, there are substantial works on modeling the security function of different countries, which made it possible to carry out a historical reconstruction of the security dynamics of the Roman Empire, including the Roman Republic, the Russian Empire, including the USSR and the Russian Federation, as well as such imperial entities as Great Britain, the United States, China (Shumov, 2015; Shumov, 2016). However, in all these works, civilizational cycles were stated and empirically confirmed, but they were not given a systematic explanation, including why at a certain point in time some economic variables of the WCAC begin to deteriorate.

Thus, today an almost complete picture of the mechanism of economic growth is observed; moreover, these new ideas are very far apart from classical theories. Further, we will supplement the picture with missing elements to ensure final clarity of the phenomenon under consideration.

General hypothesis

The main point, which we will continue to proceed from, is that *any institutional system is created either for an existing social system or for a one that is planned to be built*. In this sense, any institutions are a secondary phenomenon, which is a kind of ritual and legal *form*, which is then filled with a certain social *content*. The social entity (system) is constantly evolving, while its institutional shell is more inert and stable. Moreover, the institutions themselves are introduced for the purpose of

ensuring the stability of society by setting the rules of conduct for each of its members and functional subsystems; otherwise, the order is violated and a war of all against all begins. For this reason alone, changes in society and institutions cannot be *fully synchronized*, which gives rise to constant efforts by politicians and the state bureaucracy to bring them into mutual compliance. The degree of *conformity or nonconformity* of the content (social structure, material base and worldview) of society to its form (institutions) determines the level of *effectiveness* of the institutions themselves.

Let us make a reservation right away that by the content of the social system we mean the totality of its elements, system connections, culture and technology, with the exception of institutions – formal and informal¹.

What has been said entails an extremely important conclusion: institutions themselves cannot be good or bad, effective or ineffective; they become so depending on the level of development of society, development of its institutional support, their correspondence to each other and the adequacy of the method of their mutual coupling. This understanding of the process is shared by D. Acemoglu and J. Robinson, who claim that “without society’s vigilance, constitutions and guarantees are not worth much more than the parchment they are written on”. (Acemoglu, Robinson, 2021, p. 12). We agree with their ideas regarding the values of society: “Liberty cannot be engineered and its fate cannot be ensured by a clever system of checks and balances. It takes society’s mobilization, vigilance, and assertiveness to make it work. We need all that running!” (Acemoglu, Robinson, 2021, p. 109). Thus, in order to build an effective state system, it is necessary to properly combine institutions and culture.

¹ Informal institutions and culture overlap in many ways and it is difficult to separate them from each other, but in this case traditions (informal institutions) can be excluded from culture to ensure the convenience of analytical constructions (Barsukova, 2021).

The following theoretical premise, necessary for further analytical constructions, can be formulated as follows: the level of *social development is proportional to the scale of national production*. In other words, the volume of GDP acts as the main evolutionary feature. Granted, the development of society is not limited to the growth of production and is not equivalent to it; however, it does not exist outside of its scrupulous accounting. All modern practice of macroeconomic research and measurements shows that no historical comparisons are possible without taking into account GDP, its dynamics and structure. Thus, the stage of development of society can somehow be approximated by the value of GDP.

Combining the two formulated provisions allows us to take the next logical step: *the construction of institutions always reflects the needs corresponding to either the current or designed (future) level of development of society and national production*. In this case, it is assumed that institution building is a creative act compressed in time, after which the institutions created remain stable for a long time, while national production and economy continue their evolution. Such an “escape” of the economy from the original institutions leads to an increase in mismatch between them and generates a natural decrease in the quality (efficiency) of institutions. In the case of sustained economic growth, such a process becomes system-wide and causes institutional erosion. Here and further, institutional erosion will be understood as a historically conditioned decrease in the effectiveness of institutions due to the growing gap in the scale of the current and initial (projected) scale of national production.

The above allows us to formulate the general hypothesis of our research: *institutional erosion manifested in a decline in the quality (efficiency) of institutions is predetermined by the phenomenon of economic growth, due to which the social system is constantly growing and becoming more complex, requiring institutional support of a different kind*. This

premise postulates the direct impact of economic growth on the quality of institutions. As far as we know, this idea has never been put forward explicitly before. This provision will be considered in more detail below.

We cannot but mention the ideas of K. Marx in the context of his law of correspondence of productive forces to the relations of production (Marx, Engels, 1960). In fact, Marx, using a slightly different terminology and expressing a slightly different connotation, asserts a thesis that coincides with our hypothesis. In his interpretation, productive forces, whose proxy variable can be economic growth, are constantly developing and eventually outgrow the original production relations, which are, essentially, institutions. If there is too much discrepancy between one and the other, a revolutionary replacement of outdated relations (institutions) should take place. However, Marx does not consider the evolutionary process of gradual erosion of institutions due to the “dispersal” of productive forces and production relations as such; he speaks mainly about the final stage of accumulated structural inconsistency. We can say that Marx focused on rare and discrete updates of the institutional system, whereas the general hypothesis focused on permanent and continuous ones. Nevertheless, taking into account these reservations, the general hypothesis formulated above appeared almost explicitly in Marx’ works.

The phenomenon of complexity of the system: economic growth and the principle of consistency

To restore the entire chain of cause-and-effect relationships arising from the general hypothesis, let us first consider the relationship between the scale of production and the level of complexity of the social system. To do this, we will assume that each current value of GDP (Y) corresponds to a certain level of complexity (Ψ) of the social system: $\Psi = \Psi(Y)$. Then the initial (projected) level of development of the social system, when the existing institutions in the country were being

formed, corresponds to the level Ψ^* . In the process of social development and economic growth, an institutional error accumulates in the form of accumulated risks (Ω) caused by the inconsistency of the institutional needs and capabilities of the state ($\Delta\Psi$): $\Omega = \Omega[\Delta\Psi(Y, Y^*)]$, where

$$\Delta\Psi = |\Psi - \Psi^*|. \quad (1)$$

In this case, we follow North’s ideas that the world is developing by shifting risks from the physical world to the social world (North, 2010). The knowledge accumulated by humankind leads to the emergence of new technology and the growth of power over the physical world, thereby reducing the uncertainty of the physical environment, but such shifts cause the complication of the social environment, which becomes a source of completely new, social uncertainty (North, 2010, p. 38). These challenges require the introduction of institutions that should be increasingly effective. Moreover, this happens by occasionally “shaking up” old institutions and replacing them with new ones (Balatsky, 2011). Thus, we are talking about the fact that institutions have remained stable for a long time, but after the accumulated problems have been acknowledged, the institutions are discretely and significantly adjusted through large-scale reforms.

When introducing the risk function $\Omega = \Omega(\Delta\Psi)$ into consideration, we follow the tradition of Zolo, who argued that time leads to the complication of the social system, which automatically increases a variety of social risks (Zolo, 2010). At this point, the viewpoints of North and Zolo are organically combined, creating the basis for further theoretical constructions. Thus, a final cycle at the level of content is as follows: economic development ($Y\uparrow$) leads to the increasing complexity of the social system ($\Psi\uparrow$), which in turn gives rise to additional risks in institutional subsystem ($\Omega\uparrow$) and eventually causes institutional erosion ($I\downarrow$):

$$\Delta I \sim -\Omega[\Delta\Psi(Y, Y^*)], \quad (2)$$

where I – institutional effectiveness (quality).

In this case, dependence (2) is a formalization of the general hypothesis about institutional erosion. At the same time, it expands the scope of the consistency principle: if, in the traditional interpretation, inconsistency in the level of development of macrofactors constrains economic growth (Balatsky, Yurevich, 2022), then in case (2) inconsistency in the needs and availability of certain institutions leads to a deterioration in the efficiency of existing institutions. Such an extension of the basic methodological principle is not only quite natural, but also quite fruitful, allowing the direct and reverse negative connections to be combined in the social system, thereby ensuring the completeness of the picture of historical dynamics.

Approximation (2) requires at least two explanations. First, in formula (1), the discrepancy in complexity is taken modulo, which can be expressed in other ways. For example, we can use the quadratic dependence: $\Delta\Psi = (Y - Y^*)^2$. It does not matter; the main thing is that the potential for institutional tension arises both with the complication and simplification of the social system relative to existing institutions. In this case, formula (1) reflects the *principle of symmetry* of institutional problems, which are the same both in the progress and degradation of the economy. This is extremely important for further constructions, because it takes into account the return movements of the system in historical segments. Second, the approximation of the level of complexity of the system is monoparametric, and this parameter is GDP: $\Psi = \Psi(Y)$. Of course, in reality, complexity is a multiparametric phenomenon, but we use only one value so as to simplify the constructions. Theoretically, the complexity of the system could be described by the size of the country's population, but this variable, as a rule, is closely correlated with the GDP indicator, which makes it possible to replace one with another for the same purpose – to simplify the analytical scheme.

The equation of institutional erosion

The concepts and assumptions introduced allow us to write down an equation for the dynamics of institutional effectiveness, which will contain the effect of institutional erosion. To do this, it is necessary to take into account three driving forces of institutional dynamics. The first one is self-improvement of institutions. As a rule, current legal norms are being continuously improved either by accumulating adequate law enforcement practice, or by adopting complementary institutional norms – additions and clarifications to existing norms. Thus, over time, a kind of “polishing” of existing institutions takes place. The second factor is reforms of existing institutions. As mentioned earlier, reforms are carried out when the accumulated institutional inconsistencies become obvious and unbearable. In essence, reforms are aimed at “adjusting” existing institutions by abolishing old and introducing new rules. The third driving force is erosion of institutions due to the accumulated discrepancy between the institutional needs of the social system and the capabilities of the regulator (state). The old “rules of the game” no longer cope with the situation and do not allow achieving the goals for which they were created.

Then the final balance, which in the future we will call the equation of institutional erosion, can be as follows::

$$\dot{I} = -\Omega + (R + \nu I), \quad (3)$$

where ν – coefficient of institutional “polishing”, reflecting adaptive self-improvement of the legal system; R – effect of the ongoing institutional reform.

In the right part of differential equation (3), positive contribution to the quality of institutions appears in parentheses in the form of “polishing effect” (νI) and “correcting effect” (R); negative contribution is represented by “erosion effect” (Ω). Even in this generalized representation, formula (3) shows that the growth of institutional effectiveness

is not guaranteed, but requires the fulfillment of the condition: $\Omega < R + \nu I$. If we take into account that the effect of reforms occurs only periodically, then for most of the institutional dynamics $R = 0$, and the recorded condition becomes even more stringent: $\Omega < \nu I$. In other words, the erosion effect should not exceed the polishing effect.

Let us elaborate on the complexity function $\Psi = \Psi(Y)$ and the risk function $\Omega = \Omega(\Delta\Psi)$ in the simplest way. Let us assume that the complexity of the economic system is approximated directly by the value of GDP $\Psi = Y$, and the system risks depend linearly on the excess of complexity $\Omega = \alpha\Delta\Psi$, where α – parameter reflecting the sensitivity of the system to the excess/shortage of complexity. Then the equation of institutional erosion is as follows:

$$\dot{I} = R + \nu I - \alpha|Y - Y^*|. \quad (4)$$

In this form, it is clearly visible that institutional dynamics are losing their former triviality, becoming dependent on the stage of economic growth and the amount of excess (deficit) of systemic (economic) complexity typical for it. It is the equation of institutional erosion that is a turning point in our theoretical constructions. Let us focus on this in more detail.

The point is that North proceeded from the idea that economic growth is not a function of knowledge and technology, as it is traditionally postulated in classical theory. In his opinion, this function should have another factor – institutions that “collect” and arrange knowledge and technology; institutions, in turn, are closely related to culture (North, 2010, p. 223). At this point, there emerges a theoretical bifurcation: if we use a simplified two-factor model, then the future of humanity seems bright, because the growth of useful knowledge and technology continues; the three-factor growth model contains a situation where the lack of culture and the lack of effective institutions can neutralize the positive impact of knowledge and technology (Balatsky, 2011). The equation of institutional

erosion substantiates and visualizes this hypothetical possibility. We can say that thanks to this equation, the model of economic growth becomes complete and allows us to explore the endogenous trajectories of societal development.

Basic model of economic growth

Continuing North’s ideas, let us consider a three-factor production function (Balatsky, 2021a); for simplicity, we will use the Cobb – Douglas function:

$$Y = AI^a K^b L^c, \quad (5)$$

where I , K and L denote the availability of three factors in the economy: institutions, capital and labor; a , b and c – parameters that take into account the contribution of institutions, capital and labor to the creation of new value; A – scale parameter.

Here and elsewhere, let us assume that the provision of these resources involves taking into account two components – quantitative and qualitative. For example, the institutions factor is the product of their quantitative (index Q) and qualitative (index E) features: $I = I_Q I_E$. In this case, it is assumed that the number of institutional norms (I_Q) is multiplied by their average effectiveness (I_E). Similarly, capital and labor are taken into account: $K = K_Q K_E$ and $L = L_Q L_E$. Then production function (5) is as follows:

$$Y = A(I_Q I_E)^a (K_Q K_E)^b (L_Q L_E)^c. \quad (6)$$

To simplify the analysis, we will consider the aggregated values of three resources without allocating quantitative and qualitative components. However, if necessary, all constructions can be generalized accordingly.

For capital (technology), we will use the traditional accumulation equation:

$$\dot{K} = -\sigma K + sY, \quad (7)$$

where σ – fixed assets retirement rate; s – accumulation rate (share of investments in GDP).

For the dynamics of institutions, we will use the erosion equation without taking into account the reform factor ($R=0$):

$$\dot{I} = \nu I - \alpha |Y - Y^*|. \quad (8)$$

For the basic model, we can use the simplest option, when the labor factor is stable and is not exposed to any impacts. Then the production function will become two-factor and be as follows:

$$Y = A^* I^a K^b, \quad (9)$$

where $A^* = AL^c$ is an aggregated parameter, $L = \text{const}$.

Thus, the adoption of the above simplifications allows us to build a basic dynamic model consisting of equations (7), (8) and (9).

We cannot ignore the issue of measuring all the variables contained in the model. Obviously, the volume of fixed capital and the volume of GDP are estimated in monetary terms, while labor is approximated by the number of employees, and institutions by some conventional units. Today there are many alternative (expert, survey and statistical) and integrative (mixed) methods for assessing the quality of institutions; while the methods themselves can be a subject of various discussions, it is universally acknowledged that the phenomenon under consideration can be measured with varying degrees of accuracy. Labor can also be calibrated depending on the accounting of human capital, just as fixed capital can contain a parameter such as the quality of technologies and the rate of their actual utilization. However, these questions are of a technical nature and do not affect the logic of the model and all related theoretical constructions.

The peculiarity of model (7)–(9) consists in the fact that it has no institutional reforms in it. This model considers, in the most simplified form, the natural “devaluation” of institutions without their occasional repair by the authorities. Thus, many small but important aspects such as the culture of the elites and the masses, managerial skills of reform designers, etc., remain outside the scope of

the study. Of course, these nuances can be taken into account, but in more general varieties of the model proposed (see the following sections). However, we should note that as the model becomes more complex, the results of experimenting with it become less informative. The main objective of model (7)–(9) is to find out the reverse effect of economic growth on institutions as one of its driving forces.

Model experiments and the phenomenon of economic overheating

Despite its simplicity, growth model (7)–(9) is a nonlinear construction in which nonobvious effects occur. To clarify the most general points of the new model, we will use it to conduct simple numerical experiments². We will use conditional data that are close to actual data and also consider two scenarios that differ in the accumulation rate; the initial data for calculations are given in *Tables 1–3* (Tab. 1 shows that the volume of accumulated fixed capital is twice the value of GDP; in Tab. 3 it is assumed that the share of accumulation (the volume of annual production investments to GDP) for two scenarios is at the level of 30 and 60%).

The calculation results are shown in Figures 1–3; the solid line corresponds to scenario 1, and the dotted one to scenario 2. The presented trajectories allow us to draw the following conclusions.

First, the presence of the mechanism of institutional erosion leads to the formation of an economic cycle when intensive growth is replaced by recession and prolonged depression (*Fig. 1*). Thus, the assumption that institutional erosion can act as a source of inhibition of economic growth can be considered proven.

Second, excessive investment increases the unevenness of development and causes the emergence of a pronounced phenomenon of economic overheating. From this viewpoint, the regime of

² When performing applied calculations, model (7)–(9) with differential equations was approximated by a model from difference equations, for example, $dI/dt \approx \Delta I = I_{t+1} - I_t$.

Table 1. Initial values of variables in function (9)

Variables in model (9)		
Institutions I(0)	Capital K(0)	Output Y(0)
30.0	300.0	150.0

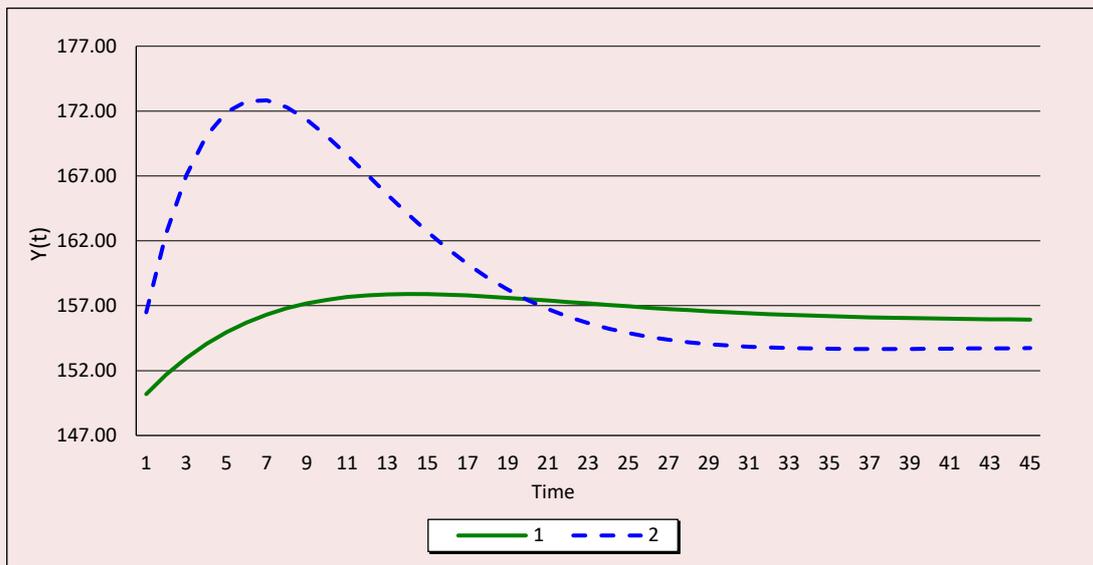
Table 2. Values of parameters in function (9)

Parameters of model (9)			
σ	ν	α	Λ^*
0.13	0.01	0.05	4.9

Table 3. Calculation scenarios for model (7)–(9)

Scenarios of model calculations	
Scenario 1	Scenario 2
$s_1=0.3$	$s_2=0.6$

Figure 1. Model GDP trajectories in scenarios 1 and 2



moderate capital accumulation is more preferable than the regime of accelerated investment. Thus, Figure 1 shows that under scenario 2, rapid growth is replaced by equally rapid decline in GDP, and the fall is below the initial value, which devalues the previous growth. The situation is different under scenario 1: growth is replaced by a small adjustment of GDP, but its volume remains noticeably higher than the initial value. Thus, economic overheating cancels all previous gains, while slower growth allows them to be preserved. This conclusion is

very meaningful and even unexpected for such a simple model. Even more interesting is the fact that the trajectories of the two scenarios overlap, which shows that after about 20 model cycles (years), the country's economic situation under scenario 1 is more preferable than that under scenario 2. This proves once again that a smoother development can be much more preferable than explosive growth.

Third, from the standpoint of the dynamics of macroeconomic resources, scenario 1 turns out to be much more rational than scenario 2. For

example, institutional effectiveness in scenario 2 shows a landslide fall and is restored at the level of 2/3 of the starting value only after 36 cycles; in scenario 1, on the contrary, it increases slightly during 7 cycles, and then imperceptibly decreases without apparent catastrophes (Fig. 2). As for the dynamics of capital, in scenario 1, it tends to increase for 34 cycles, and then imperceptibly decreases and stabilizes; in scenario 2, the capital

is growing rapidly for 19 years, after which it imperceptibly decreases and stabilizes (Fig. 3). As a result, by the end of the modeling period, institutional effectiveness in scenario 2 is at the level of 63.2% of the initial value, and in scenario 1 – 97.7%; similar final values for the volume of capital in scenario 2 and scenario 1 are 202.4% and 117.7%, respectively. Thus, a less stressful scenario of economic growth makes it possible to maintain

Figure 2. Model trajectories of institutional quality under scenario 1 and 2

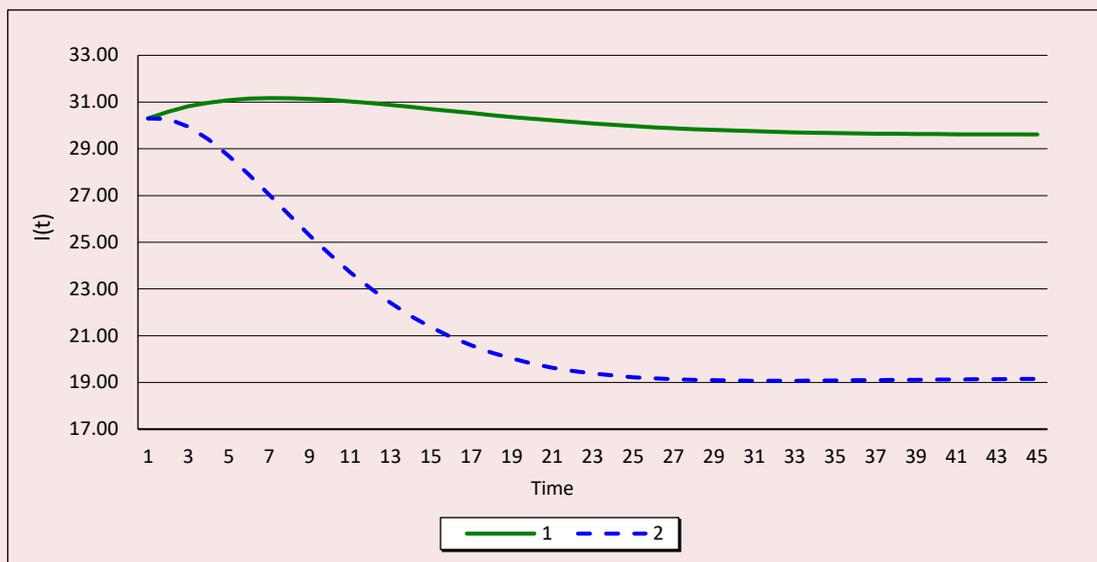
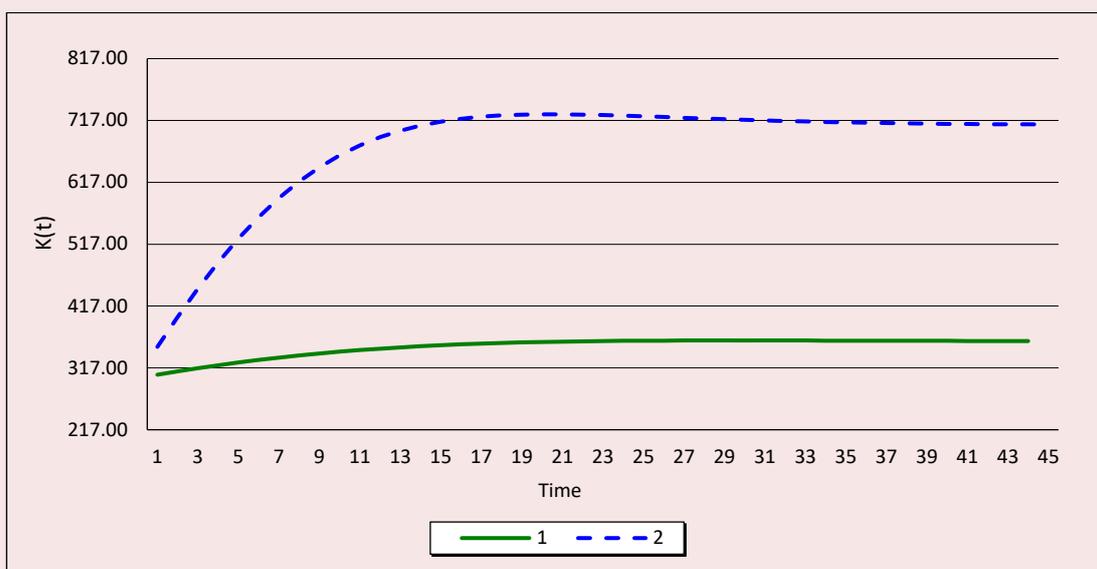


Figure 3. Model trajectories of capital under scenario 1 and 2



institutional effectiveness against the background of moderate capital accumulation, whereas an intensive scenario is characterized by a noticeable destruction of the institutional environment against the background of gigantic over-accumulation of production technologies. Therefore, scenario 1 can be qualified as a gentle development regime, and scenario 2 as an economic overheating regime.

Thus, the modeling using the basic model of economic growth allows us to obtain fundamentally new conclusions regarding classical and traditional models. In the new theory, unlimited capital growth leads to economic overheating, subsequent depression and the destruction of the institutional basis of society.

Resistance to reforms and the rule of increasing damage

Understanding the fact that the phenomenon of institutional erosion in the long term is capable of generating the cooling of the economy urges us to analyze equation (4) more closely. The fact is that it includes the effect of reforms, which can potentially compensate for any effects of erosion by institutional restructuring. However, this is not quite true. To understand the possible problems on the path of institutional restructuring, let us take a closer look at the reform process itself.

Let us define reform R^* as the cumulative change in the quality of institutions over the period of reform T , i.e. $R^* = I(T) - I(0)$ (Balatsky, 2021a):

$$R^* = \int_0^T dI(t), \quad (10)$$

where t – current time (year); T – duration of the period when the reform project is being implemented. It is assumed that the value of R^* is set (constant) and the larger it is, the larger the reform being carried out. In this case, the reform involves a project with a specific action plan (regulatory and organizational), which must be implemented within the established (planned) deadlines.

It is quite logical to assume that $R^* > 0$, i.e. reform is always aimed at improving institutions and improving their quality. Although there are a huge number of examples of erroneous reforms when $R^* < 0$, we will not address such degenerate cases further. If we assume that the reform is implemented evenly over the years, then its annual effect can be described by the following ratio:

$$R = R^*/T - \gamma(R^*/T)^{1+\theta}, \quad (11)$$

where γ and θ are parameters that take into account the resistance to reforms with sides of different social groups; $\theta > 0$ and $0 < \gamma < 1$.

If the first term in the right part (11) reflects the normative impact of reforms on the quality of institutions, then the second term is the *effect of resistance to reforms* on the part of those social groups for whom the ongoing reforms are undesirable or even dangerous. The role of this effect has been raised repeatedly in the literature (Polterovich, 2001; Polterovich, 2006b; Polterovich, 2007). In this case, we proceed from the thesis that reforms are not a socially neutral phenomenon – they do not just affect all people, but some of them to a greater or lesser extent. It is not surprising that groups of people who lose from the reforms step up their actions against the introduced changes, which not only reduces the effectiveness of the regulator's actions, but in some cases can lead to completely unpredictable results (Polterovich, 2001). For example, an increase in the retirement age does not affect people who have already retired, is almost not perceived by young people and, conversely, causes a painful reaction from people of pre-retirement age.

Thus, in addition to the direct effect of reforms, formula (11) takes into account the peculiar *effect of social friction* that occurs during the revision of old institutions and introduces system-wide distortions in economic dynamics. This effect is described in (11) by the power function of damage $C = \gamma(R^*/T)^{1+\theta}$. However, in addition to this, the so-called rule of increasing damage is also important, which postulates the nonlinearity of the damage

function. The successful formulation and disclosure of the content of this effect was given by N. Taleb: The damage caused to fragile objects by any shocks increases nonlinearly as their intensity increases (Taleb, 2014, p. 403). Taleb illustrates this rule by a simple example: if small pebbles are thrown at a person 1,000 times, the harm from this will not be comparable to that which will occur if one large stone is thrown at them, equal in weight to the previous thousand small ones (Taleb, 2014, p. 402). If in the first case the harm inflicted on an individual is likely to be limited to prolonged irritation with concomitant slight pain, then in the second case the experiment is likely to end in death or severe injury. In other words, it is better to have many small institutional changes that occur sequentially over a long period of time than one large and one-time change that has a shock character.

In our case, the rule of increasing damage from reforms reduces to two inequalities: $dC/dR > 0$; $d^2C/dR^2 > 0$. In other words, we are talking about an accelerated increase in social damage as the scale of the reform increases. If we continue the example of pension reform, the picture looks like this: with an increase in the retirement age by one year, social friction will be insignificant and will not cause a noticeable distortion of the reform project itself; if the retirement age is increased by five years, it will cause mass discontent on the part of the population, and if the retirement age is increased by 15 years, then we can get a revolutionary movement that will question the necessity and reasonableness of the planned reform. Thus, the rule of increasing damage conceals a hidden possibility of complete or partial disavowal of the results of reforms. From a formal point of view, a limitation on the scale of the projected reform follows from (11): if $R^* > R^{**}$, then the reform leads to the opposite result, namely, it does not improve, but worsens the current quality of institutions ($R < 0$). The critical magnitude of the scale of reforms is as follows:

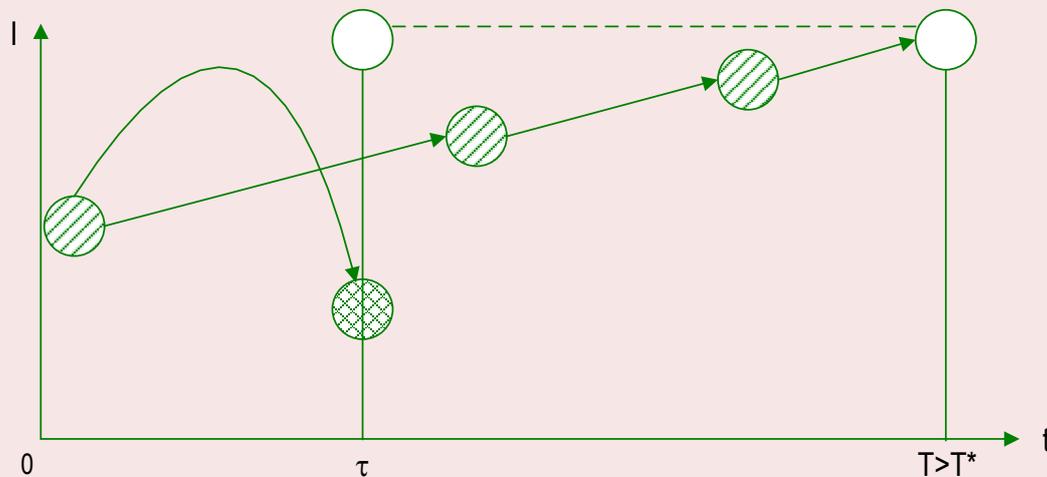
$$R^{**} = T^{\theta} \sqrt{1/\gamma}. \quad (12)$$

It clearly follows from ratio (12) that a large-scale reform should stretch over time rather than take the form of shock therapy. However, as has been repeatedly stated, the reform is basically a temporary phenomenon and should not turn into permanent pressure on the population. Consequently, the duration of T cannot take on too large values; otherwise, the stability of public order is disrupted and a reform fatigue syndrome occurs, which will be discussed in more detail below.

The phenomenon of institutional friction, coupled with the rule of increasing damage, leads to an understanding of the differences in two reform regimes – shock, which involves the “rapid” implementation of all planned innovations, and adaptive, based on the “stretching” of the transformation program for a longer period (Balatsky, 2021a). In turn, the adaptive mode is organically connected with the process of building an institutional trajectory due to the “fragmentation” of the desired institution into intermediate (auxiliary) ones (Polterovich, 2006a; Polterovich, 2006b). We emphasize that the process of carrying out reforms in small “portions” of institutional innovations can be conducted both through a simple prolongation of the planned measures, and through the special construction of simpler intermediate institutions; the nature of these measures is the same.

A comparison of the shock and adaptive modes of reform is shown in *Figure 4*. The logic of the above illustration is as follows. The initial institution at the initial moment of time (the left shaded circle) is supposed to be changed by carrying out a sufficiently large-scale reform to build a new final institution (the left white circle). If the reform is carried out in a shock mode in a compressed time (t), then the resistance to reforms may be so significant that the goal will not be achieved, and the final institution (the circle with double hatching) will not only not coincide with the designed one, but will also be less effective than the original one. If the reform is carried out in an adaptive mode for a time

Figure 4. Comparison of the shock mode and adaptive mode of reform



T , greater than a certain minimum safe T^* , and by a stepwise transition to intermediate institutions (two right shaded circles), then it is possible to reduce the social damage from the transformations and reach the designed institution (the right white circle).

Thus, taking into account the phenomenon of resistance to reforms and the rule of increasing damage makes the process of reform itself nontrivial and raises the question of its proper design³.

Reforms and the erosion of human capital

In addition to all the above, reforms also have a negative effect on human capital, which in itself can lead to the paradox of reforms, when the growth of the institutional quality provokes an economic downturn; this aspect was discussed in detail in (Balatsky, 2021a). Elaborating on this provision, we will consider two channels of the impact of reforms on human capital – cognitive and physiological.

The first, *cognitive*, channel is connected with the fact that reforms lead to the write-off of part of human capital due to the devaluation of certain

knowledge, experience and skills. The second, *psychophysiological*, channel involves physiological fatigue and psychological discomfort from externally imposed reforms, to which people have to adapt; sometimes this is also associated with the loss of professional and social positions. The negative impact on both channels leads to a deterioration in health and psychological well-being, an increase in the cognitive and psychological burden. With some degree of conditionality, we can say that the cognitive channel is responsible for reducing the quality of labor (L_e), and the psychophysiological channel is responsible for its quantity (L_q); of course, in reality, the influence coming through two channels affects both features of labor, and therefore we will not take these differences into account in detail in model constructions. Then the dynamics of labor will be described by the equation:

$$\dot{L} = \omega L - \mu H^{1+\rho} - \zeta (R^*/T)^{1+\beta}, \quad (13)$$

where ω – natural growth rate of the quantity and quality of labor; H – time period after the start of the reform ($H=0, \dots, T$); ζ and β – parameters that take into account the impact of the scale of the reform on the process of writing off human capital; μ and ρ – parameters that take into account the

³ We consider it relevant to point out that in all constructions we deliberately do not take into account the cost factor of reforms. This is due to the fact that the costs of ensuring reforms fall on the country's budget and are reflected in the overall macroeconomic characteristics. However, this aspect of the problem is not of great importance for the issues under consideration.

impact of the duration of the reform on the process of psychological fatigue of the population; all parameters μ , ζ , ρ and β are positive.

The second term of the right part of (13) reflects the psychophysiological effect of the reforms, and the third – cognitive. In equation (13), as in equation (11), the rule of increasing damage appears explicitly. In this regard, there is a potential opportunity when the erosion of human capital blocks its natural reproduction. For example, even a sluggish but long-lasting reform intensified at a certain moment by a new large-scale and short reform can create such a destructive potential for the human capital of a nation that will provoke its depopulation with the accompanying economic downturn. It is where another danger of reforms can be found.

In general, the refined model of economic growth consists of equations (5), (7), (8), (11) and (13). The dynamics of institutions and labor are presented in a somewhat unconventional form; equations (8), (11) and (13) clarify various provisions of economic theory that were previously ignored. Numerical experiments with the model are a separate topic, but all the qualitative aspects are well understood from the very configuration of the equations considered.

Dialectics and the rebirth of institutions

The equation of institutional erosion reproduces a purely quantitative evolutionary change in the effectiveness of institutions as the economic system grows. However, no less important is the qualitative aspect of the problem associated with institutional failures and radical degeneration of institutions. This question is important in itself; it is also important because it allows us to understand the direction of the deformation of institutions under the influence of external circumstances. To clarify the issue raised, we should determine two aspects. Let us look at them in more detail.

The first aspect is connected with the formation of domestic and foreign policy in the state; these types of policy are sometimes supported by

institutions that are completely different in their goals and ideas. For example, a hegemon state represented by the United States has traditionally supported economic and political competition within the country, whereas in the world economic system it has done everything to ensure its economic and political monopoly. This situation, when the builder and custodian of institutions for the internal and external environment uses completely different institutional models, is typical.

The second aspect is associated with the direction of the rebirth of institutions. Dialectical logic is fully involved here. Thus, modern dialectics has three fundamental laws – the unity and struggle of opposites, the transition of quantity into quality, and the negation of negation. Combining these three logical postulates allows us to formulate the *main theorem of dialectics*: any phenomenon in the process of its development passes into its own opposite (Hegel, 2023). This fact is directly related to institutional dynamics, namely: any serious failure in the work of institutions leads to its dysfunction and inability to achieve the goal for which it was created; the gradual accumulation of such dysfunction sooner or later leads to the fact that the institution begins to work to achieve the goal directly opposite to the original one. This inversion is related to the purpose of the institution, which is either provided or not. In the first case, the institution is effective, in the second – ineffective; bringing distortions in the work of the institution to a certain critical level leads to its restructuring in the opposite direction. The considered dualism in the dynamics of institutions is determined by their original functional dualism – they either perform their generic function or not; therefore, they perform the opposite function. Such inversions are also the norm of institutional dynamics.

Reforms and the institutional paradigm

The work (Balatsky, 2021a) substantiates the thesis that all reforms should be strictly metered, whereas the theoretical constructions of the previous sections allow us to add something else

to this: all reforms have their limits in the “repair” of institutions and cannot compensate for their historically conditioned erosion. This issue is extremely important because of the often false impression that reforms can correct any norms of public life.

To understand the limited possibilities of reforms, it is advisable to introduce the concept of *institutional paradigm*, which we will understand as the initial basic principles of the institutional model of the state. As a rule, reforms are aimed at “repairing” institutions, but do not affect the institutional foundations, which in turn are permeated by some kind of institutional paradigm. That is why sometimes, instead of reforms, revolutions occur designed to change the original social paradigm of the outdated legal system.

To understand the introduced concept, one can refer to the studies of institutional systems based on different philosophies. For example, today it is customary to distinguish between competitive and collaborative institutions. The former are based on the primacy of mechanisms and principles of competition, the latter – on the primacy of mechanisms and principles of cooperation (Polterovich, 2022a; Polterovich, 2022b). Thus, we can talk about competitive and collaborative institutional paradigms, which form a kind of dialectical opposition and which cannot be reduced to each other. Experience shows that one or another institutional paradigm has deep historical roots and an economic basis. The demand for a radical change in the economic model of the state also leads to the demand for a change in the institutional paradigm, on the basis of which a new institutional system is being built. It is this logic that underlies the replacement of the old WCAC with a new one.

Concretizing what has been said, let us turn to the colonial paradigm of Great Britain, which in the second half of the 20th century has already become ineffective, as well as the entire institutional management system of the world economic system. This contradiction is due to the fact that the very

core of the British colonial system represented by a small island state – Great Britain – turned out to be insufficiently large and powerful for the expanded and complicated geopolitical space. That is why this core was replaced by a more adequate state formation in the face of the United States with a different institutional paradigm and a different institutional model. Some fundamental differences between the British and American systems of domination are considered in (Arrighi, 2006).

Similar processes took place with the Russian Empire in the period from 1917 to 1924, when the old social system in the new conditions could no longer keep the gigantic territory of the country from disintegration; the change of the institutional paradigm led to the reconstruction of the Russian Empire into the Soviet Union. The same situation was repeated in 1991, when the Cold War exhausted the USSR and under the conditions of the old institutional paradigm there were no longer enough resources to preserve the country; another change in the way of life led to the rebirth of the Soviet Union in the format of the current Russian Federation. In both cases, the breakdown of the country’s institutional framework occurred because of the overdue mismatch of economic problems and economic opportunities of the state; bringing supply and demand in the economic sphere into line required a fundamental change in the rules of the game.

An interesting illustration of the phenomenon of “obsolescence” of the institutional paradigm is provided by basic model (7)–(9) proposed above. Thus, the scenario of economic overheating clearly shows that excessive erosion of institutions makes it pointless even to accumulate fixed capital, which, within the framework of the old institutional structure, cannot reverse the negative situation and restart economic growth. This is the universal mechanism of economic degradation: old institutions “bind” the country’s economic resources and do not allow them to function with due efficiency.

Discussion of the results and historical interpretations

The introduced concept of institutional erosion made it possible to construct a model of economic growth that best meets the above requirements mentioned by North. This model demonstrates the complex interdependence of not only the three groups of macrofactors, but also the volume of production. Back in 2002, V.M. Polterovich made a shrewd remark that, paradoxically, the most important factor in economic growth is growth itself (Polterovich, 2002). In the light of the completed constructions, Polterovich's thesis can be paraphrased: paradoxical as it may be, but the limitation of economic growth is growth itself. This is the effect generated by the proposed model. However, in addition to this general conclusion, the new theory allows us to answer a number of questions posed in the introduction. Let us dwell on these meaningful interpretations in more detail.

Before moving on to concrete examples, let us consider a kind of institutional metaphor. A balloon or a football bladder can be considered as institutions, and the gas filling them can be considered as an economic system. If the balloon is filled with light gas, it will fly up, and if it is filled with heavy gas, it will lie on the ground; if the balloon is inflated too much, it may burst, and if not strong enough, it will be like an ordinary rag, not suitable for use. It is this analogy that will become a guide to all subsequent examples.

Example 1: Why have modern secondary schools ceased to provide good education? To answer this question, one should proceed from the fact that schools were established quite a long time ago as small institutions, where teachers and schoolchildren were few and knew each other well. At the same time, the teachers themselves were in short supply and the school management treated them with care. Today, the school education system has undergone a total *massification*, when the number of students and teachers has become huge on the scale of both one school

and the whole country. Secondary education has become a conveyor belt and has lost its former value, as well as the personalities of teacher and student. The individual contact between teacher and student has been replaced by a bureaucratic system of formal evaluation of both, which is based on primitive templates. In such conditions, the traditional institution of school is degenerating and losing its former effectiveness; modern large-scale economic realities cannot be squeezed into the old institutional framework.

Example 2: Why did Lomonosov Moscow State University lose its position as a world-class university after the collapse of the USSR? The organizational model of Moscow State University, formed in the Soviet Union, was designed to solve large scientific, technical and economic problems, but after 1991, the GDP of the Russian Federation for eight years decreased by half compared to the Soviet period alongside the closure of many high-tech economic sectors. Thus, for MSU, the goals and objectives for which it was designed have physically disappeared. The primitive economy of the post-Soviet period no longer required the university to solve complex problems, and therefore its organizational model turned out to be unclaimed and inefficient. There was nothing to fill the old institutional model with, and therefore it first began to work idle, and then simplified, formalized and degraded. Of course, this model of erosion was typical for many universities in Russia. We should note that in recent years, MSU has begun to “come to life” a little; this is due to the fact that the economic growth of the last two decades has started to generate pinpoint scientific problems addressed to researchers, which were chronically lacking in the first 10 years after the collapse of the USSR.

Example 3: Why have the “melting pots” of the United States and European countries stopped coping with their tasks of Americanization and Europeanization of immigrants? The answer to this question is also rooted in the phenomenon of migration outgrowing its original borders. For

example, if the “melting pot” is set up to “process” a certain proportion of the population in the form of migrants, then it will not necessarily cope with this task when the specified proportion increases tenfold. In addition, the growing European (American) society was increasingly tolerant of the violation of internal cultural norms, which by no means added “fuel” to the “melting pot”. Thus, the extinction of the effectiveness of the institute of melting pots in the USA and Europe is also a consequence of the proliferation of the phenomenon of migration itself. No cosmetic reforms will help here – the entire institutional paradigm must change either in the direction of rejection of tolerance and strengthening control over the behavior of migrants, or in the direction of severe restrictions on the flow of visitors.

Example 4: What are the origins of such phenomena as the “decline of the West” and the loss of dynamism of Japan’s development? Quite often, these phenomena are explained by a decrease in the passionarity of the respective peoples, a drop in the vitality of their representatives. This explanation can be considered correct, but it is of an intermediate nature, because in this case it is quite legitimate to ask the question of why passionarity suddenly begins to fade. With regard to Japan, the situation is more obvious: the country’s catching-up development has been replaced by its economic and technological leadership, which has “crossed out” the very need for institutions of catching-up development; in parallel, Japan has reached its limit in population growth in the existing territory and in the growth of the average level of welfare. Taking into account these new realities, the further efforts of the Japanese in ensuring economic growth have actually become meaningless, which is the direct cause of the decline in passionarity. With regard to Europe, we can talk about two historical phases of its decline – the second decade of the 20th and 21st century, respectively. However, in the 20th century, Germany’s imperial ambitions added “fuel” to the civilizational dynamics of the continent,

whereas at the beginning of the 21st century there is no similar incentive yet, and the welfare is at an unprecedentedly high level by historical standards. It is the acquisition of a new quality of life in Europe and Japan that underlies the decline in the productivity of the established development institutions.

Example 5: Why are the established WCACs eventually replaced by new leading states and why is the United States losing its position as a global regulator today? Any WCAC creates its own world order (institutional system), in which it acts as a global regulator of all major processes; this system is based on an international political consensus, when all countries explicitly or implicitly recognize the established order as legitimate. However, over time, the world system grows quantitatively and qualitatively, when the population, production, military power, etc. increases in all countries. Sooner or later, the complexity and scale of the geopolitical space reach such a level that the WCAC no longer has enough resources to ensure effective control of all world-system relations. The old order comes into conflict with the new interests of the countries within the world system, and they begin to struggle with the old institutions, which leads to a natural decline in their effectiveness. At the same time, the WCAC, which is at the peak of economic prosperity, loses incentives for an uncompromising struggle for its dominance, which ultimately ends with the change of the world political hegemon. At the moment, the Chinese economy has already outgrown the American one, which negates the previous consensus on the current world order and provokes geopolitical turbulence. At the same time, it is important to emphasize that the currency hegemony of the United States is not going away because, for example, the U.S. Federal Reserve System (the Fed) has become poorly functioning. On the contrary: the mistakes of the monetary institution represented by the Fed during the Great Depression in the 21st century were taken into account by B. Bernanke, and therefore

for many years the country managed to curb the unfolding crisis phenomena; however, despite this, the countries participating in the world market are beginning to abandon the dollar as a trading currency, which is due to their own geopolitical interests; the Fed can no longer effectively serve the global economy, because it was not intended for such a large-scale economy. In an attempt to maintain its monopoly over the outside world, the United States spontaneously renounces the internal order in the form of maintaining political and economic competition within the country. Because of these processes, a dialectical inversion of the institutions of the world order occurs – the external monopoly is replaced by fierce competition between other countries and the United States, and the internal competitive mechanisms within the American state are replaced by the monopoly of one (democratic) party on all forms of state power.

In a broader context, the general hypothesis is indirectly confirmed by the entire history of capitalism. For example, the phenomenon of economic growth itself arises simultaneously with the formation of the capitalist system, and it is at this time that the colossal dynamism of institutions begins to manifest itself, which in the conditions of the Middle Ages were highly stable and could remain in their original state for hundreds of years. Thus, the fact of synchronization of the high dynamism of institutions and the economy clearly indicates the existence of a connection between the two phenomena; the rapid growth of production led to the rapid erosion of institutions, which were constantly modernized through institutional reforms⁴.

We started this section with a certain analogy, but we would like to finish it with another one. The history of states resembles the life of individuals, which consists of qualitatively disparate stages. It is

not surprising that different stages are characterized by different life strategies and lifestyle (rules of the game, institutions), which are produced by completely different tasks facing a person. For example, the principles of career and professional growth for an 80-year-old person lose not only their effectiveness, but also any meaning due to the fact that the person has already outgrown the corresponding stage of their life. Conversely, to them, the right diet, work and rest become the determining factors in their existence, whereas at the age of 30 they did not pay any attention to all this. The same thing happens in the life of countries. And no matter how conditional this analogy may be, it highlights the main thing – the erosion of certain institutions at different stages of the life of an individual and society.

Conclusion

The issues discussed in this article are a logical step in integrating the institutional factor into the theory of economic growth. The implicit assumption in many modern studies about the exogenous nature of institutions, which, although they “link” labor and capital for the production of vital goods, but themselves explicitly do not depend on the level of welfare, leads to a loss of the explanatory power of economic theory. In this picture, institutions are connected with culture and live their own life, which is not directly coordinated with the achieved level of production and complexity of the economic system. Removing this unrealistic premise opens up great analytical possibilities in understanding social dynamics. The hypothesis of the influence of the level of welfare on the quality of institutions allows us to explain comprehensively not only the ups, but also the downs of individual countries and entire civilizations.

The proposed model is a deliberate simplification of reality, but even in this form it generates a lot of additional effects that enrich our understanding of the world around us and the person themselves. So far, the potential of computational

⁴ I would like to thank Professor V.V. Volchik for this observation; he was the first to draw attention to the parallel between the dynamics of institutions and economic growth at the stage of capitalism.

experiments based on the full model, and not only with its basic version, has remained unrealized. Progress in this direction can provide additional interesting information about the patterns of self-assembly and self-disintegration of social systems. In addition, the empirical verification of the thesis about institutional erosion is of independent interest. However, these questions are beyond the scope of this article and can serve as a basis for further research.

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Trade Effects in the Commodity Markets of the Asia-Pacific Region



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Abstract. The aim of the research is to assess long-term effects of trade integration in the Asia-Pacific region (APR) at the level of commodity markets – industrial and primary goods. Over the previous three decades, trade within the APR has significantly increased, thanks to the lowering of trade and economic barriers as a result of trade agreements and the WTO accession by almost all countries in the subglobal region. We show that trade between the Asia-Pacific countries greatly exceed their trade with other countries of the world, due to the increase in the exchange of goods, both primary and industrial goods including in the production chains of transnational corporations. Estimates derived from the gravity model indicate that in the long term the overall positive effect of trade integration in the APR is manifested through the complementarity of regionalization and globalization processes, with the dominance of the latter. The regionalization process stimulates an increase in most of the aggregate trade in industrial goods, while trade of primary goods is generated exclusively by globalization, which explains the motivation of a number of countries specializing in exports, including Russia, in their reluctance to expand trade agreements with other APR countries. The article points out that along with the process of regionalization, globalization in the Asia-Pacific region contributes to the expansion of trade in industrial goods, with the production chains of transnational corporations successfully functioning within the framework of trade agreements. The assessments also point to signs of the exhaustion of globalization as a source of increasing trade in industrial goods in the APR, which may be related to the fragmentation of the subglobal region as manifested in creating trade megaformats in recent years. We assume that under the current instability

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of foreign policy processes in the APR, the introduction of various kinds of restrictions can lead to the transformation of trade and economic relations in the sub-global region, manifesting itself in the redistribution of the accumulated benefits of integration for the Asia-Pacific countries.

Key words: trade, integration, regionalization, globalization, direct effect of integration, accumulated effect of integration, primary goods, industrial goods, trade agreement, free trade zone, customs union, Asia-Pacific region.

Introduction

Integration processes in the global economy have contributed to a significant increase in trade and strengthening of economic interconnections between the world countries. Such processes have been quite clearly manifested in the Asia-Pacific region (APR)¹. By 2021, this sub-global region accounted for more than 60% of the world economy². Over the previous three decades, a global production complex has formed in the APR, which included most East Asian countries, as well as key North American countries. In this subglobal region, vertical trade between enterprises of transnational corporations (TNCs), located in different APR countries, has been actively developing. In addition to the export component of TNCs enterprises, the growth of APR economies has increased their consumption of industrial goods³ produced within the subglobal region. In turn, to increase the scale of production of various industrial goods, including the maintenance and optimization of cross-border

production chains, the key APR economies begin actively importing primary goods from other countries, mostly located in the subglobal region.

Integration has promoted the expansion of intraregional trade, economic growth and increased consumption in the Asia-Pacific region⁴; it has greatly reduced barriers in the subglobal region and facilitated trade and economic interactions between its member countries as part of the processes of globalization and regionalization. In the 2000s, the vast majority⁵ of Asia-Pacific economies joined the World Trade Organization (WTO), a global trade integration format⁶, which created the conditions for globalization on the basis of the former General Agreement on Tariffs and Trade. Another integration process in the APR is regionalization (Arndt, 1993; Ethier, 1998), associated with the conclusion of trade and economic agreements between countries of the subglobal region. It is worth noting that APR countries failed to go beyond the initial stage of integration after unsuccessful attempts to create complex integration forms, similar to the European Union, so there is no single integration format in

¹ The APR includes the economies of the Pacific Ring of Fire (Australia, Brunei, Cambodia, Canada, Colombia, Costa Rica, Laos, Malaysia, Marshall Islands, Mexico, Micronesia, Nauru, Nicaragua, Guatemala, Hong Kong, Indonesia, Kiribati, the People's Republic of China, Macau, Malaysia, Marshall Islands, Vanuatu, Vietnam, New Zealand, New Caledonia, Palau, Panama, Papua New Guinea, Peru, Russia, Republic of Korea, Samoa, Singapore, Solomon Islands, USA, Chile, Ecuador, Fiji, French Polynesia, Taiwan, Tonga, Tuvalu, Philippines, Wallis and Futuna, Thailand), as well as Mongolia and Myanmar.

² Own compilation, based on the International Monetary Fund (IMF) data.

³ Industrial goods include products of food, light, woodworking, pulp and paper, chemical and petrochemical, metallurgical, metal-working industries, machine-building; production of equipment, construction materials and products of other manufacturing industries.

⁴ In the research, the term "economic integration" (hereinafter – integration) is used to describe the convergence of national economies and their groups in leveling tariff and nontariff barriers to trade and economic interactions between them.

⁵ Except some small island states, it is the DPRK and Russia, which only became a full member of the WTO in 2012.

⁶ Fundamental WTO principles include non-discrimination (under most-favored-nation treatment); transparency (publicity of trade policies); reciprocity (mutual reduction of trade barriers); flexibility (finding ways to compensate disadvantaged parties); consensus-based decision-making. For details, see (Baldwin, 2016).

the subglobal region. The initial stage of integration includes partial trade agreements (PTAs)⁷, free trade areas (FTAs)⁸, and customs unions (CU)⁹. Since the need to further reduce barriers has still persisted, the functional component of concluded FTAs, as the most common integration format, inevitably began expanding to other areas of economic interaction, which contributed to the emergence of FTAs in an expanded format – FTA+ (Izotov, 2020a; Smirnov, Lukyanov, 2022).

Concluded trade agreements in the Asia-Pacific region were aimed at liberalizing trade in industrial products, which was especially important for reducing barriers to trade in intermediate goods in the context of production cooperation between leading countries of the subglobal region, as well as to expand the turnover of investment goods. Along with the globalization process, the lower barriers to trade in primary goods¹⁰ is also regulated in trade agreements, mainly in the extended format, especially the products of agriculture and forestry, fisheries, as well as a number of commodity groups of the mineral complex. In addition, trade agreements in an extended format can reduce barriers to foreign direct investment (FDI) inflows (Lakatos, Walmsley, 2012; Balistreri, Tarr, 2020), including in the resource sector of member countries, which can help increase commodity trade between them.

⁷ Conclusion of PTA implies the reduction of tariff barriers on certain goods traded between countries.

⁸ FTA means the reduction of both tariff and non-tariff barriers between the countries that have entered into the agreement, as well as the definition in relation to third countries of the regime of trade interactions.

⁹ CU functioning is based on the creation of a common customs tariff for member countries, as well as a common system of regulation of non-tariff barriers for goods from third countries.

¹⁰ In the research, we consider primary goods as an aggregate indicator, which includes the following aggregated commodity groups: agricultural products; forestry products; fishery products; coal mining; oil and natural gas production; metal ore production; products of other branches of the mining industry.

Based on the general equilibrium model, *ex-ante* estimates quite clearly point to the potential for increased trade in the APR in both primary and industrial goods, subject to further steps to reduce barriers (Kawasaki, 2015; Li, Whalley, 2017) that constrain trade and economic interaction among sub-global economies, which, in turn, could lead to even greater interdependence among these economies (Auer, Mehrotra, 2014).

Another issue is *ex-post* estimation of long-term trade effects of APR integration on commodity markets resulting from globalization and regionalization processes. Gravity models, which have high explanatory power confirmed by a large number of empirical studies (Yotov et al., 2016), are mainly used to obtain such estimates. Despite the large number of works of integration processes in the APR carried out within the framework of this methodology, estimates of trade effects in them are mainly constructed for trade as a whole (Clarete et al., 2003; Athukorala, 2012), without disaggregation into commodity groups. Episodic estimates of integration effects of trade in primary and industrial goods in the APR have been obtained for Southeast (Okabe, Urata, 2014) and East (Pomfret, Sourdin, 2009) Asia interactions, groups of countries with multilateral trade agreements (Yang, Martinez-Zarzoso, 2014; Urata, Okabe, 2010), and certain countries in the subglobal region (Purwono et al., 2022). Estimates of the integration effects of trade in specific goods, predominantly primary ones (Lee et al., 2016), of certain APR countries are also widespread: agricultural products (Xu et al., 2023; Akhmedi, 2017); raw fish (Saputra, 2022); timber (Nasrullah et al., 2020); energy (Taghizadeh-Hesary et al., 2021) and industrial goods (Siahaan, Ariutama, 2021).

In general, *ex-post* estimates indicate a positive impact of trade agreements and the WTO accession by APR countries on the expansion of trade in the subglobal region. At the same time, the conclusions, based on such assessments, should be supplemented

in a number of fundamental ways. First, assessments of the trade integration effects in the Asia-Pacific region were mainly based on earlier gravity models, which traditionally included the presence/absence of a trade agreement among the independent variables, along with physical distance, economic size and other factors. However, the assessment of gravity dependence has its own features when determining integration effects (Baier et al., 2019) as, due to endogeneity, it is incorrect to include the presence/absence of trade agreements among the independent variables along with distance, size of the economy, and key institutional indicators that can be accounted for in the fixed effects. Second, if we abstract from the problem of endogeneity, the estimates, obtained on the basis of early gravity models, indicate the presence of a general integration effect reflecting the manifestation of both regionalization and globalization processes, which is often interpreted as a direct effect of creating trade agreements. Third, as a rule, estimates of integration effects in the APR covered the time period up to the mid-2010s.

We should note that studies of trade integration using modern methodology of gravity dependence assessment (Dai et al., 2014; Piermartini, Yotov, 2016) usually do not consider sub-global regions, including the APR. Nevertheless, an earlier study (Izotov, 2020b) has proved that positive integration effects in the APR were generated mainly by the globalization process. From the point of view of determining the reason for the dominance of globalization over regionalization in the manifestation of positive integration effects in the APR, such estimates need to be supplemented, especially since today's global economy faces the risks of escalating trade barriers (Afontsev, 2020). To this end, our study will assess the effects of trade integration in the APR at the level of aggregated commodity groups, namely industrial and primary goods, for the long-term period (1996–2021). The research is particularly relevant in terms of covering the pandemic period of the early 2020s due to the

spread of COVID-19, which contributed to the short-term recession in the world economy that weakened the long-term positive integration effects in the APR.

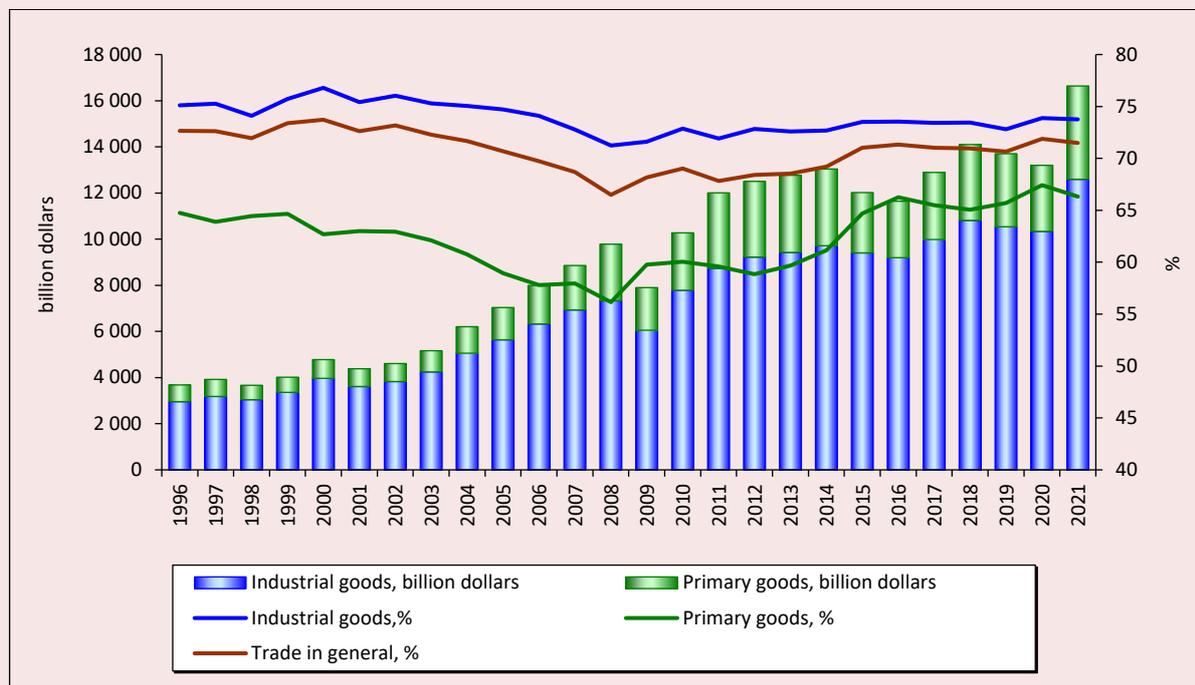
As a result, the research involves the following tasks: 1) to study the integration processes in the Asia-Pacific region, as well as analyzing the dynamics of trade in primary and industrial goods in the sub-global region; 2) to select the methodology and forming the data set to obtain quantitative estimates; 3) to obtain a decompositional assessment of APR long-term integration effects on trade in general, industrial and primary goods.

Trade in primary and industrial goods and integration processes in the APR

Within the period under consideration, intraregional trade in the APR increased from 3.6 trillion U.S. dollars in 1996 to 16.7 trillion U.S. dollars in 2021, markedly exceeding external trade with the rest of the world, which was 1.4 and 6.6 trillion U.S. dollars, respectively. Between 1996 and 2021, the share of APR countries' trade with each other (intraregional trade) in their total foreign trade turnover averaged 71.0%. The share of APR intraregional trade in global trade reached 37.4% by 2021, an increase of more than 3 p.p. compared with 1996. In the long term, mutual trade in the Asia-Pacific region has been increasing at the expense of both industrial and primary goods (*Fig. 1*).

Trade in industrial goods, as compared to primary ones, objectively prevailed in intra-regional trade in the APR, but its share declined slightly, from 75.1% in 1996 to 73.7% in 2021. However, after a period of decline in the 2000s, there has been an increase in the share of intraregional trade in manufactured goods in the APR since the early 2010s. Between 1996 and 2021, the main source of maintaining a high share of industrial goods trade among APR countries was commodity flows of intermediate goods for electronics and electrical and chemical products, indicating the leading role of trade between TNCs located in various countries of the subglobal region.

Figure 1. Industrial and primary goods: trade between APR countries, billion U.S. dollars (left axis) and trade share within the subglobal region, % (right axis)



Source: UNCTAD and World Bank.

In the Asia-Pacific region, economies specializing in production of primary goods, whose exports were mainly oriented toward the countries of the subglobal region¹¹, also received a boost. As a result, the share of primary goods in the total value of trade between APR countries averaged 21.0% over 1996–2021¹², increasing from 19.1% in 1996 to 24.0% in 2021. APR commodity trade was predominantly concentrated within the sub-global region. On average, the share of intra-regional APR commodity trade was 62.3% over the period under consideration, with an increasing trend since the early 2010s. By 2021, it reached 66.3%. The main

¹¹ In addition, these products have become actively produced by some APR countries to meet their needs.

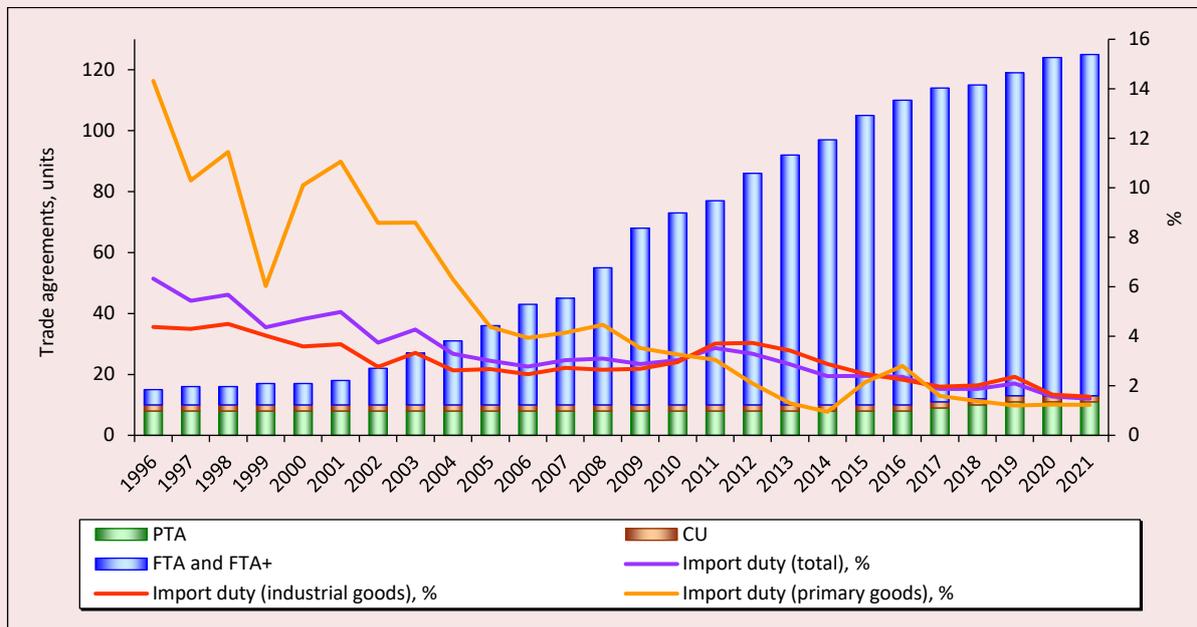
¹² Price volatility in global commodity markets has sometimes adjusted the value of primary goods traded in the APR, as well as their share of trade between countries in the sub-global region.

source of growth of commodity trade within the APR was the turnover of non-food primary goods, whose share in intraregional commodity trade increased from 64.3% in 1996 to 72.9% in 2021, mainly due to energy and metal ores.

Lower trade barriers in the APR has intensified economic cooperation between the sub-global region and the global and sub-global economies since the second half of the 1990s. In the APR, trade agreements, usually FTAs in an expanded format (FTA+), began being actively concluded. As a result, 125 trade agreements were in operation in the APR by 2021: 11 FTAs, 112 FTAs, and 2 CU, of which 1, 106, and 0, respectively, were in the extended format (*Fig. 2*).

The increase in the number of trade agreements, as well as countries' accession to the WTO, contributed to the fact that the effective applied average weighted import duty on trade between APR

Figure 2. Number of trade agreements (left axis) and weighted average import duty in APR, % (right axis)



Note: we present values of effective applied weighted average import duty; the number of trade agreements is shown cumulatively

Source: WTO and World Bank.

economies decreased by more than four times by 2021 compared to 1996. In turn, in trade between Asia-Pacific countries, the value of the duty on industrial goods has fallen by almost three times, and on primary ones – more than 11 times¹³.

In addition to import duties, there have been concerted efforts to mitigate and limit various kinds of nontariff measures that constrain trade and economic ties between countries in the subglobal region. The APR concentrates most of the FTAs+ operating in the world (about 2/3 of their number), which regulate (Plummer, 2007) the reduction of barriers to trade flows (through clear rules of origin, accelerated customs procedures) as well as to FDI, service markets, technology; harmonization of state support measures to support competition

¹³ Also, tariff barriers to trade among APR economies were characterized by lower values compared to trade with countries outside the subglobal region.

and fair dispute resolution. These extended trade agreements complemented the WTO functions and contributed to trade and economic liberalization in the Asia-Pacific region (Kawai, Wignaraja, 2011).

Assessment methodology and data

Assessment methodology. To obtain correct assessment of long-term integration effects within the gravity model, it is necessary to estimate panel data with the method of Poisson quasi-maximum likelihood (Yotov et al., 2016), use interval panel data to adjust for changes in trade policy and other trade costs (Olivero, Yotov, 2012); and include trade in domestic market in the panel data (Anderson, Yotov, 2016). According to the recommendations (Baier, Bergstrand, 2007), time-independent variables should be accounted for in fixed affects for trading country pairs and dependent ones – for exporting/importing countries (Bacchetta et al., 2012).

As in this research with respect to aggregate trade flows (trade in general; primary goods; industrial goods), we construct the assessment for the long-term period (1996–2021), it is appropriate to identify both the *direct* and *accumulated effects of trade agreements*. The direct effect means the immediate impact of trade agreements on country's trade. The accumulated effect makes it possible to assess the impact¹⁴ of previously concluded trade agreements on trade interactions. Decomposition of integration effects is made by separating contribution of the *regionalization process* (the effect of trade agreements) and contribution of the *globalization process* (the effect of globalization) from the *overall integration process* (overall integration effect).

Similar to earlier studies (Izotov, 2020b; Izotov, 2021), we use dependence to obtain estimates of the *direct* and *accumulated effects of trade agreements* (Piermartini, Yotov, 2016) as part of the *overall integration process* (1):

$$X_{ij,t} = \exp[\beta_0 + \sum_{n=0}^{n=4} \beta_k FTA_{ij,t-n} + \pi_{i,t} + \chi_{j,t} + \mu_{ij}] + \varepsilon_{ij,t}, \quad (1)$$

where: X_{ij} – export from country i to country j (this parameter also includes trade within country i , i.e. X_{ij}): total value of goods, primary goods, industrial good; β_0 – constant; FTA_{ij} – dummy variable reflecting the presence/absence of trade agreement between i and j ; n – number of lags; $\sum \beta_k$ – value of the *accumulated effect* of trade agreements; β_1 (β_k with zero lags) – value of the *direct effect* of trade agreements within overall integration process; π_i – fixed effects for an export country taking into account the year; χ_j – fixed effects for an import country taking into account the year; μ_{ij} – fixed effects for pairs of trading countries; t – time period.

¹⁴ And this impact can contribute to positive manifestations of the direct effect of trade agreements or, on the contrary, restrain it.

To determine contribution of the *regionalization process* to the effect of the overall integration process, model (1) includes variables reflecting the presence of barriers between countries for each year (Bergstrand et al., 2015). *The assessment can be obtained by including trade in domestic (internal) market in the array of data used*. Then dependence (1) for assessing the *accumulated effect of trade agreements* within the *regionalization process* is transformed into the following form (2):

$$X_{ij,t} = \exp[\beta_0 + \sum_{n=0}^{n=4} \beta_k FTA_{ij,t-n} + \sum_{T=1}^{T=n} \beta_T INTL(T)_{ij} + \pi_{i,t} + \chi_{j,t} + \mu_{ij}] + \varepsilon_{ij,t}, \quad (2)$$

where: $INTL(T)_{ij}$ – dummy variable equal to one for international trade in each year T and zero – for internal trade; $\sum \beta_k$ – means of the *accumulated effects* of trade agreements and β_1 (β_k with zero lags) – means of *direct effects* of trade agreements within the regionalization process. When assessing the $INTL(T)$ parameter some year is chosen as a benchmark in order to avoid correlation with other fixed effects.

Estimating (1) and (2) allows degerming changes (in %) in bilateral trade flows of countries with trade agreements *based on the following formula*: $([e^{\hat{\beta}_{FTA}} - 1] \times 100)$, and reduction in the equivalent tariff burden: $([e^{\hat{\beta}_{FTA}/(1-\theta)} - 1] \times 100)$ ¹⁵, in which the elasticity of substitution (θ) is set exogenously. As a result, by subtracting the direct effect of a trade agreement from the total effect of integration, the contribution of the globalization process to the total effect of integration can be determined from the values of the effects reduced to a comparable form. Accordingly, the difference between the values of β_1 (β_k with zero lags) and $\sum \beta_k$ from (1) and (2) will reflect within the globalization process the direct and accumulated effects of trade agreements respectively.

¹⁵ For details, see (Yotov et al., 2016).

Assessment data. As we have already indicated, in order to estimate the direct effects of trade agreements, the panel should include trade in the domestic market (Anderson, Yotov, 2016). One of the ways to form an array of indicators reflecting trade in the domestic market is to calculate the difference between the value of goods produced in the national economy and exports (Bergstrand et al., 2015; Yotov et al., 2016). In our study, we have obtained the necessary components for calculating this indicator from special statistical databases: CEPII; CEIC; UNIDO, FAO (UN), as well as economic and statistical agencies of several APR countries.

The sources of statistical data of mutual export between APR countries are UNCTAD (UN) and the World Bank data base. However, a restriction to the inclusion of all APR countries and economic territories in the evaluated panel is the absence for some of them of statistics describing trade in goods in the internal market. As a result, the evaluated panel includes 36 APR economics¹⁶.

Division of the trade data set into the flows of primary and industrial goods was carried out by differentiating commodity groups within the framework of the ISIC¹⁷ (2nd version) classification, which is used to reflect the statistics of intracountry trade. APR export statistics, reflected in the SITC classification in FOB prices, have been translated in the ISIC classification, based on algorithms developed (Muendler, 2009).

¹⁶ Australia, Brunei, Cambodia, Canada, Chile, Colombia, Costa Rica, Ecuador, El Salvador, Fiji, Guatemala, Honduras, Indonesia, Japan, Laos, Malaysia, Mexico, Mongolia, Myanmar, New Zealand, Nicaragua, Panama, Papua New Guinea, Peru, Philippines, Republic of Korea, Russia, Singapore, Taiwan, Thailand, Tonga, USA and Vietnam. Excluding some countries from consideration is not critical, since their share of intra-Atlantic trade did not exceed 0.1% by 2021.

¹⁷ International Standard Industrial Classification of All Economic Activities. Available at: https://unstats.un.org/unsd/classifications/Econ/Download/In%20Text/ISIC_Rev_2_Russian.pdf

Primary goods included products of agriculture (ISIC code 11); products of forestry (code 12); products of fishing (code 13); coal mining (code 21); oil, natural gas (code 22); metal ore mining (code 23); products of other mining industries (code 29). Industrial goods included products of food industry (code 31); products of light industry (code 32); products of woodworking industry (code 33); products of pulp and paper industry, printing and publishing industry (code 34); products of chemical and petrochemical industry (code 35); nonmetallic mineral products (code 36); products of metallurgical industry (code 37); products of metalworking industry, machine building and equipment manufacturing (code 38); The manufacture of electricity (code 4101) was also included under manufacturing products, since this commodity is traded between some APR countries that share a common land border.

In accordance with these recommendations, we present the final set of indicator values in the form of intervals (lag – five years): 1996, 2001, 2006, 2011, 2016 and 2021, covering 7,620 observations on APR trade, including primary and industrial goods. The value indicators of APR trade have been reported in billions of dollars and, as recommended (Bacchetta et al., 2012), in current prices.

As for the dummy variable, to assess the integration effects as trade agreements, we used only data on the presence or absence of CU, FTA, and FTA+ that have entered into force (Dai et al., 2014) based on the WTO¹⁸ database. As a result, we selected 114 APR trade agreements in FTA, FTA+, and CU formats to form dummy variables¹⁹.

Russia is one of APR countries and is considered in the panel as of the key elements of the subglobal economies. Based on the comparison with APR general trends, used in the current research, the

¹⁸ WTO Regional trade agreements database. Available at: <https://rtais.wto.org/UI/PublicMaintainRTAHome.aspx>

¹⁹ If a trade agreement between countries has come into force in the first half year of the current year, it relates to the current year, if in the second – to the next one.

methodology for assessing integral effects allows indirectly determining for Russian economies possible long-term benefits of lower barriers with the countries of the sub-global region within various commodity markets.

Integral processes can differently influence on trade and economic systems. All things being equal, lower barriers contribute to trade development based on positive effects of export specialization. Otherwise, if we are talking, for instance, about “closed” trade and economic block with a small market, trade diversion effect, i.e. a shift in demand for more expensive products of this association, may exceed the effect of trade creation, thereby inhibiting effective development of the foreign trade and consumer sectors of the national economy. Accordingly, the resulting estimates can indicate whether integration promotes trade among APR countries.

Assessment result

At the first stage, we assess the effect of trade agreements as part of the overall integration process (1) on trade in the APR as a whole, as well as on trade in primary and industrial goods (*Tab. 1*).

As part of the overall integration process in the APR, the assessment of trade agreements indicates that trade in primary goods has generally developed more than trade in industrial goods in the sub-global economy. Moreover, direct effect of trade agreements (*FTA*) has increased over the long term through the direct effect on ongoing trade interactions of already functioning trade agreements, as reflected in the accumulated effect (FTA_{cumul}) of their conclusion.

At the second stage, with the inclusion of additional dummy variables for $INTL(T)$ cross-country trade in the model, we estimated the direct and accumulated effects of trade agreements for

Table 1. Assessment results of the effects of trade agreements as part of overall integration process in the APR on model (1)

Variable	Trade in general	Primary goods	Industrial goods
<i>FTA</i>	0.17* (0.04)	0.21* (0.06)	0.13* (0.04)
<i>FTA</i> _{t-5}	0.10** (0.04)	0.002 (0.07)	0.12* (0.05)
<i>FTA</i> _{t-10}	-0.02 (0.04)	0.18* (0.06)	-0.08** (0.04)
<i>FTA</i> _{t-15}	0.14* (0.04)	0.20* (0.07)	0.17* (0.04)
<i>FTA</i> _{t-20}	0.22* (0.05)	0.56* (0.07)	0.11* (0.04)
<i>FTA</i>_{cumul}	0.61* (0.05)	1.15* (0.10)	0.44* (0.05)
Constant	-11.50* (0.45)	-6.97* (0.37)	-11.72* (0.42)
Number of observations	7620	7236	7620
Pseudo log-likelihood	-5864	-2127	-5260
RESET-test (Prob > chi2)	0.07	0.07	0.07
Pseudo R ²	0.99	0.99	0.99

Note: * p < 0.01, ** p < 0.05, *** p < 0.1. The values of standard errors are given in parenthesis. FTA_{cumul} corresponds $\sum \beta_k$ in (1), i.e. the values of the accumulated effects of trade agreements in the overall integration process. *FTA* is a direct effect of trade agreements. Hereinafter, for the sake of brevity, we do not give estimates of fixed effects.
Source: own compilation.

three APR trade flows as part of the regionalization process: trade in general; trade in primary goods; and trade in industrial goods (Tab. 2).

The assessment proved that the impact of trade agreements on trade in primary goods was not statistically significant in the regionalization process. It indicated that the development of trade in primary goods within the APR was not determined by the direct effect of trade agreements. In some way, this fact explains the reluctance to expand trade agreements with other countries of the sub-global economy a number of APR countries, including Russia, which exports mainly

raw materials. Moreover, import of primary goods (except some agricultural products) were subject to low rates of duty in most APR countries, and their containment in some cases was explained by conjunctural and noneconomic factors.

In accordance with calculations of the regionalization process, the positive effect of trade agreements in the APR was determined for trade in industrial goods. The positive accumulated effect (FTA_{cumul}) in trade in industrial goods was obtained by increasing the direct effect of trade agreements (FTA) due to lag components. This estimate for industrial goods confirms the importance of

Table 2. Assessment results of the effects of trade agreements as part of regionalization process on the model (2)

Variable	Trade in general	Primary goods	Industrial goods
FTA	0.11** (0.05)	-0.03 (0.07)	0.14* (0.05)
FTA_{t-5}	-0.004 (0.03)	-0.17* (0.07)	0.04 (0.04)
FTA_{t-10}	-0.07** (0.03)	0.05 (0.07)	-0.09* (0.04)
FTA_{t-15}	0.09** (0.04)	-0.02 (0.06)	0.13* (0.04)
FTA_{t-20}	0.12** (0.06)	-0.01* (0.08)	0.10*** (0.06)
FTA_{cumul}	0.25** (0.12)	-0.19 (0.19)	0.32* (0.11)
$INTL_{1996}$	-0.49* (0.09)	-0.94* (0.12)	-0.35* (0.08)
$INTL_{2001}$	-0.28* (0.08)	-0.89* (0.10)	-0.13*** (0.07)
$INTL_{2006}$	-0.26* (0.06)	-1.09* (0.08)	-0.08 (0.05)
$INTL_{2011}$	-0.31* (0.04)	-0.77* (0.07)	-0.20* (0.04)
$INTL_{2016}$	-0.30* (0.02)	-0.25* (0.03)	-0.28* (0.03)
Constant	-11.20* (0.38)	-6.23* (0.46)	-12.01* (0.40)
Number of observations	7620	7236	7620
Pseudo log-likelihood	-5727	-2084	-5168
RESET-test (Prob > chi2)	0.99	0.90	0.99
Pseudo R ²	0.99	0.99	0.99

Note: * p < 0.01, ** p < 0.05, *** p < 0.10. The values of standard errors are given in parenthesis. Base year for variable $INTL$ is 2021. FTA_{cumul} corresponds $\sum \beta_k$ in (2), i.e. the value of the accumulated effect of trade agreements within the regionalization process. FTA is a direct effect of trade agreements.
Source: own compilation.

trade agreements for expanding trade in the APR in both final demand goods and intermediate goods in functioning production chains of TNCs. In addition, we can assume that the East Asian economies, as well as North America, which are the “core” economies of the APR and specialize in industrial goods, have co-developed in order to increase trade in primary goods with other countries, even outside the framework of trade agreements with them.

Before proceeding to a decompositional assessment of the effects of trade agreements, we should pay attention to the reduction of barriers to trade in the APR as a whole, judging by the values of $INTL(T)$ dummy intercountry trade variables for the relevant years. It is likely that due to the accession of the Asia-Pacific countries to the WTO, the process of globalization has, to some extent, helped curb the growth of trade barriers to trade in the Asia-Pacific as a whole. At the same time, different trends in trade flows were observed: for primary goods, reduction of trade barriers; for industrial goods from the second half of the 2010s there was a noticeable increase in barriers, indicating rather a process of fragmentation of the APR trade and economic space, which

could be caused by China’s confrontation with some countries of the sub-global region, and by the effects of the COVID-19 pandemic in 2021, which caused some transformation of production and logistics interrelations between countries (Zagashvili, 2022).

Finally, at the third step, we assessed the contribution of regionalization and globalization effects to the overall integration effect in the APR for the analyzed trade flows. The overall integration effect exceeded the regionalization effect, as revealed by the ratio of estimates (Tab. 1, 2) both for trade in general and for trade in primary and industrial goods. To decompose the effects of trade agreements in the APR, it is necessary to make them comparable. The accumulated integration effect coefficients reflected in Tables 1 and 2 for analyzed APR trade flows can be presented as changes in mutual trade, as well as in the form of the tariff equivalent of barriers to trade (Tab. 3).

Direct effect of trade agreements. The direct effect of trade agreements in the APR contributed to an increase in trade: overall, by 18.5%; in primary goods, by 23.6%; and in industrial goods, by 13.6%. The reduction of tariff barriers amounted to 4.2 p.p., 5.2 p.p. and 3.1 p.p., respectively.

Table 3. Decomposing integration effects on trade flows in the APR

Trade flow	Integration process	Direct effect			Accumulated effect		
		1	2	3	1	2	3
Trade in general	overall integration process	18.5	100.0	-4.2	84.7	100.0	-14.2
	regionalization process	12.1	65.4	-2.8	28.3	33.4	-6.0
	globalization process	6.4	34.6	-1.3	56.4	66.6	-8.2
Primary goods	overall integration process	23.6	100.0	-5.2	214.4	100.0	-24.9
	regionalization process	–	–	–	–	–	–
	globalization process	23.6	100.0	-5.2	214.4	100.0	-24.9
Industrial goods	overall integration process	13.6	100.0	-3.1	55.3	100.0	-10.4
	regionalization process	14.9	109.6	-3.4	37.4	67.6	-7.6
	globalization process	-1.3	-9.6	0.3	17.9	32.4	-2.8

Note: 1 – change in mutual trade, %; 2 – contribution of globalization and regionalization effects to overall integration effect, %; 3 – decomposition of the tariff equivalent of barriers to trade, %, when $\theta = 5$. Globalization effect is estimated as the difference between the overall integration effect and regionalization effect. Since the estimates (see Tab. 2) for primary goods in the regionalization process were not statistically significant, they were not used for the purpose of decomposing the trade integration effects.
Source: own compilation.

According to the estimate, the direct effect of trade agreements was generated by different processes: for industrial goods – regionalization; for primary ones – globalization. In this case, the globalization process did not increase trade in industrial goods among APR countries, and the regionalization process did not increase trade in primary goods. To put it differently, the estimates point to the greater importance of the regionalization process precisely for countries specializing in exports of industrial goods to the APR than for countries exporting primarily primary goods. Since the analysis includes the year 2021, in which COVID-19-related restrictions were active, we can assume that the impact of the globalization process, which previously stimulated trade in industrial goods in the APR, may have been slightly distorted in estimating the direct effect of integration.

Accumulated effect of trade agreements. An assessment of the accumulated effect on trade in the APR as a whole indicated a markedly greater long-term positive effect of trade agreements on trade interactions, contributing to an increase in trade: overall, by 84.7%; for primary goods, by 214.4%; and for industrial goods, by 55.3%. Tariff barriers ended up decreasing by 14.2 p.p., 24.9 p.p., and 10.4 p.p., respectively. In contrast to the direct effect, the accumulated effect for trade in the APR as a whole was generated by the globalization process, whose contribution to the increase in trade was 2/3 and regionalization 1/3. As for primary goods, the accumulated effect of trade agreements in the APR was determined solely by the globalization process. Based on the accumulated effect values obtained, trade in manufactured goods in the APR in the long run was predominantly determined by the regionalization process (contribution of 67.6%), while the contribution of globalization was also notable at 32.4%. Despite the fact that the contribution of the globalization process to increased trade was

dominant in the decomposition of the accumulated effect of trade agreements, nevertheless, in the long term, the development of commodity exchange in the APR was stimulated by lower barriers due to trade agreements in the sphere of trade in industrial goods in the context of the regionalization process. This fact has noticeably stimulated trade in primary goods, as well as some industrial goods in the APR, based on functioning globalization mechanisms that guarantee non-discrimination to importers under the most-favored-nation treatment.

Conclusion

Over the previous three decades, trade among Asia-Pacific countries has increased markedly due to the lower barriers to trade cooperation, the accession of almost all countries in the subglobal region to the WTO, and the creation of a network of concluded trade agreements, including those in an extended format. Over the long term, intraregional trade of Asia-Pacific countries greatly exceeded their trade with the rest of the world, both in industrial and primary goods. Trade in industrial goods is fundamental to APR intraregional trade, accounting for slightly less than 3/4 of its volume on average over 1996–2021. The main role in maintaining high values of trade in industrial goods was played by intermediate commodity flows between TNC enterprises located in various APR countries. In addition, intraregional trade in primary goods received a positive impetus in the Asia-Pacific region, and its share increased markedly over the long term, mainly due to mineral products.

The resulting decomposition estimates of APR trade flows indicated that, over the long term, trade agreements stimulated the expansion of most trade in industrial goods, reinforcing the regionalization processes in the subglobal economy. In addition, trade in primary goods and partly industrial ones was generated solely by globalization, which complements earlier conclusions (Izotov, 2020b)

about the nature of the integration process in the APR. From this point of view, there is no intraregional integration effect in the APR, which, all other things being equal, would limit trade in primary goods for countries that do not enter into trade agreements in the long run. This circumstance explains to some extent the reluctance of a number of primary goods exporting countries, including Russia, to expand trade agreements with other APR states.

The globalization process associated with the accession of APR countries to the WTO also contributed to the expansion of trade in industrial goods, with the production and technological chains within the vertical trade of TNCs successfully operating mostly within the framework of concluded trade agreements. Apparently, the regionalization process in the APR, while stimulating most trade in industrial goods, has to some extent expanded opportunities for trade in commodities within the sub-global region, contributing also to the growth of exports of a certain share of industrial goods to APR countries that are not party to trade agreements. These estimates suggest that the main long-term benefits of APR integration have accrued to the countries included in the production and technological chains within the framework of trade in industrial goods.

As a result, the overall positive integration effect in the APR in the long run was manifested through the “synergy” of regionalization and globalization, with the latter apparently dominating. At the same time, the direct effect of trade agreements indicated the exhaustion of the globalization process as a “driver” for increasing trade in industrial goods in the APR, which has rather serious effects related to the growing competition between country groupings and the fragmentation of the sub-global region, which has begun showing in recent years when large trade and economic integration formats are created.

During the period under analysis, Russia did not implement a strategy to join the integration processes of the sub-global region by expanding trade agreements with Asia-Pacific countries. Russia’s long-term focus on the European market for its raw materials exports and strong economic ties with the European Union until 2022 have contributed to the fact that the APR market has been secondary for Russia, being limited to the largest economies of Northeast Asia (NEA): People’s Republic of China, Japan, and the Republic of Korea. There was no demand for more complex forms of trade and economic relations with APR countries on the Russian side. Exporting mainly low-value-added products to the Asia-Pacific market, the value volumes of which were small compared with exports to the European market, Russia made do with globalization mechanisms, especially in the context of its accession to the WTO, access to some trade platforms in the APR and taking a small share of the Northeast Asian commodities market²⁰. On the other hand, due to the high risks of economic activity in Russia, there was no targeted commodity and geographic diversification of commodity exports as in Chile, Australia, New Zealand and Canada (Izotov, 2020a). This circumstance has also not contributed to the generation of demand in Russia for integration as part of a strategy to expand the scope of trade agreements concluded with APR countries. Consequently, the chance for Russia to build a more diversified economy through its neighborhood with APR countries in the analyzed period was to some extent lost, not allowing it to mitigate the current effects of the gap with the European market. As a result, it has to face monopsony on the part of China, as well as indifferent observation of the fragmentation of the Asia-Pacific trade and economic space.

²⁰ Crude oil, natural gas, coal, timber, fish and shellfish, ferrous metals, etc.

An important result of this study is that there have been no attempts to create a “closed trade bloc” in the APR, the effect of which could be extended to the commodities that are the basis of Russian exports. However, it cannot be ruled out that as the contradictions between leading APR countries in trade in manufactured goods (the U.S.–Chinese confrontation) grow, a quite deliberate process of concluding long-term contracts for the supply of primary goods produced and traded within the framework of integration associations in the sub-global region may begin. From this point of view, given the current instability of foreign policy processes in the APR, the introduction of various kinds of restrictions, including in certain emergency situations, may lead to the fact that the previously seemingly rather stable structure of trade and economic relations in the subglobal region may be transformed, manifesting itself in the redistribution of previously accumulated benefits from integration for APR countries.

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Conceptual Approach to the Formation of the Monitoring of Socio-Economic Development of Municipal Entities in Russia's Regions



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Abstract. The study is relevant, because there is a necessity to improve approaches to and tools for monitoring the development of municipal entities in Russia, taking into account the current situation concerning statistics in the context of municipalities and the tasks to be addressed at the municipal level of management in modern conditions. The aim of the work is to provide a scientific and methodological substantiation for an approach to the formation and implementation of a comparative monitoring of socio-economic development of municipalities at the intraregional and interregional levels. To achieve the goal, we use scientific methods such as economic and statistical analysis, generalization, and expert survey (questionnaire survey of Vologda Oblast municipalities' heads). Scientific novelty of our research consists in the development of a unified approach to organizing municipal monitoring in Russia's constituent entities. The approach should take into account the current situation concerning municipal statistics and help to compare local territories of different regions. We describe a methodological approach to organizing the monitoring of Vologda Oblast municipalities; the results of the monitoring are reflected in the annual information and analytical bulletin "Socio-Economic Development of Municipal Districts", issued by Vologda Research Center of the Russian Academy of Sciences since 2014. Based on the calculations of the integral indicator of the level of development of municipalities in the Vologda and

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Leningrad oblasts and the Komi Republic according to our own methodology, we reveal that statistical information presented in the Rosstat database containing indicators for Russia's municipalities does not allow us to form an objective interregional typology of municipalities by development level. In this regard, we substantiate the ways to improve municipal monitoring and the expediency of using the indicators presented in statistics collections "Socio-Economic Development of Municipalities" published annually by territorial offices of Rosstat in constituent entities of the Russian Federation. The findings of our research can be used by federal, regional public authorities, local self-government bodies, scientific and educational organizations in analyzing the development of municipalities, as well as serve as a basis for further research on the subject under consideration.

Key words: municipal entities, socio-economic development, monitoring, constituent entity of the Russian Federation, Vologda Oblast, questionnaire survey.

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Introduction

One of the tasks aimed at achieving the goal of spatial development of the Russian Federation and outlined in the Spatial Development Strategy of the Russian Federation for the period up to 2025 (approved by RF Government Resolution 207-r, dated February 13, 2019) is to reduce the level of interregional differentiation in the socio-economic development of constituent entities of the Russian Federation, as well as to reduce intraregional socio-economic differences. According to the Strategy, one of the principles of spatial development is a differentiated approach to the directions and measures of state support for the socio-economic development of territories, taking into account the demographic situation, specifics of the settlement system, level and dynamics of economic development, and natural conditions.

In accordance with Federal Law 172-FZ, dated June 28, 2014 "On strategic planning in the Russian Federation", the powers of local self-government bodies in the field of strategic planning include defining long-term goals and objectives of municipal management and socio-economic development of

municipalities, coordinated with the priorities and goals of socio-economic development of the Russian Federation and its constituent entities; developing, reviewing, adopting (approving) and implementing strategic planning documents on issues related to the powers of local self-government bodies; monitoring and controlling the implementation of strategic planning documents adopted (approved) by local self-government bodies; other powers.

According to Rosstat, as of January 1, 2022, there were 19,655 municipal entities in Russia, including 1,544 municipal districts, 180 municipal okrugs, 608 urban okrugs, 4 urban okrugs with intra-urban division, 23 intra-urban raions, 267 intra-urban territories of federal cities, 1,287 urban settlements and 15,742 rural settlements.

Municipalities in Russia differ significantly in their development potential, features, trends and drivers of their socio-economic development (differences in development indicators can reach tens or hundreds of times). At the same time, the municipal level of government (within the framework of the local self-government system) has a significant

set of functions and list of powers to resolve issues and problems related to the development of local territories, ensuring decent living conditions for the population; the development of the country as a whole is ultimately determined by the development of its constituent territories (constituent entities of the Russian Federation and its municipal entities). In view of the above, it is fundamentally important to have an effective system for monitoring the socio-economic development of regions' municipal entities (individual constituent entities of the Russian Federation, municipalities of several RF constituent entities, including within macroregions). In accordance with the available information and statistical base in Russia, the most comprehensive, system-wide and reliable monitoring can be carried out at the level of urban okrugs, municipal districts and okrugs.

The aim of the monitoring is to obtain information that allows for a comprehensive and systematic assessment of the state and development processes of municipal entities in the region in order to substantiate the adoption of appropriate management decisions related to the policy of an RF constituent entity on the development of municipal entities and local socio-economic policy.

The main objectives (directions) of the monitoring are as follows:

- identify trends and problems related to socio-economic development in municipal entities in the long-, medium- and short-term (operational – last year, last month, quarter of the current year) periods, identify the severity, significance, system-wide nature of the problems and threats to the development of the municipality; identify the causes for current trends and problems in order to substantiate ways to find solutions and responses to emerging threats;
- assess the extent of implementation of program and strategic documents on municipal development (the strategy for socio-economic

development of the municipal entity and the action plan for its implementation; sectoral strategies of the municipality, municipal programs and projects) in order to substantiate the ways to adjust these documents;

- assess intraregional policy (policy of the RF constituent entity in relation to municipal entities; methods and tools for its implementation) from the point of view of the impact of decisions taken by regional authorities and real actions on the parameters of socio-economic development of municipalities;

– assess the effectiveness of the work of local self-government bodies in terms of how the implemented local socio-economic policy allows solving current problems of the municipality and creating conditions for ensuring its sustainable development, how effectively and efficiently local self-government bodies (LSG) solve issues of local importance (in accordance with Federal Law 131-FZ “On the general principles of organizing local self-government in the Russian Federation”, dated October 6, 2003), what adjustments need to be made to this policy and the mechanism of its implementation.

Main stages in organizing and conducting the monitoring are as follows: 1) defining a list of indicators for conducting the monitoring, and sources of relevant information; 2) collecting operational data on the monitoring indicators, data processing (standardization, calculation of specific indicators, calculation of indices of changes in the values of indicators for different periods, etc.); 3) analyzing the calculation results, drawing conclusions about trends and problems in the development of municipalities, factors that caused the corresponding changes, etc.; 4) adopting various management decisions by the subjects of the monitoring; the decisions are based on the results of the findings; making decisions on the necessity of adjusting the monitoring system.

Currently, the key source of information on the state and development of municipal entities, which allows monitoring their condition and development, is the official statistical information of the Federal State Statistics Service of the Russian Federation (Rosstat), represented by the following elements:

1) Rosstat database on the indicators of municipalities (<https://rosstat.gov.ru/storage/mediabank/Munst.htm>), which contains official statistical information on all municipalities of Russia since 2006 (in more detail on municipal districts and okrugs, urban okrugs) arranged in 28 main blocks (development spheres);

2) Rosstat statistical bulletins “Formation of local self-government in the Russian Federation” (not published since 2021), “Population of the Russian Federation in the context of municipal entities” (published annually), “Volume of social payments to the population and taxable monetary incomes of the population in the context of municipalities” (not published since 2020); official publications on the results of the All-Russian population censuses (2002, 2010, 2021);

3) statistical information published by Rosstat’s territorial departments in RF constituent entities: annual statistical collections “Municipal districts and urban okrugs ...” or “Municipal entities ...”; operational quarterly and monthly information “Socio-economic situation in municipal entities ...”; sections showing the data in the context of municipalities in statistics collections, bulletins containing the data on the specific RF constituent entity (Voroshilov, 2022).

In addition to official statistical information, there is departmental statistical information collected and generated by federal authorities, state authorities of RF constituent entities, local self-government bodies, including on the main results of the work of the relevant authorities, results of the implementation of strategic and program documents in municipalities, etc. In addition, information about individual parameters on the

development of municipal entities and settlements can be formed by various expert, nongovernmental and other organizations (for example, within the framework of the quality of life index in cities, formed by VEB.RF; information about housing on web portals Domofond, TsIAN, Reforma ZhKKh, etc.), as well as in the framework of geo-analytics and GIS technologies, surveys of various respondents (residents, representatives of the business community, authorities, etc.) (Voroshilov, 2022).

The monitoring can be carried out by LSG bodies, public authorities, scientific, expert, educational organizations, as well as jointly interested parties.

The main stakeholders in monitoring the socio-economic development of municipalities and its results are:

1) local self-government bodies of municipal entities (they use statistical and other information and monitoring results for operational analysis of the current situation and identification of problems related to municipal development, development and implementation of the strategy for socio-economic development of the municipality, the action plan for its implementation, municipal programs, projects, for the development of the local budget, determining the priorities of financing certain activities, for assessing the effectiveness and efficiency of their work, etc.);

2) state authorities of RF constituent entities (to analyze territorial, spatial aspects of region’s development; to form and implement intraregional socio-economic policy, including investment policy; to determine priorities and amounts of financing of enterprises in municipalities from the regional budget; to develop and coordinate social support measures, etc.);

3) representatives of the business community (to determine the resource potential of a municipality in order to open new or expand existing industries; to use the resources of various territories

for current activities; to assess the capacity of certain territorial markets, purchasing power of residents, transport and communication accessibility of municipalities, etc.);

4) residents of municipalities (to assess the parameters of the current situation and development of a municipality as a place of residence and their self-realization; for a general self-assessment of the effectiveness of local self-government bodies) (Vóroshilov, 2022).

Foreign and Russian scientists and experts are working out various aspects of the monitoring for the development of municipal entities and the use of its results by authorities in their work. Some researchers focus on substantiating the optimal number of indicators for such a monitoring (Burtseva, Gubareva, 2020; Syupova, Bondarenko, 2017); others (Bolshakov, Vasetsky, 2019; D'jachenko, 2018; Klimova, 2019; Mendel, Fadeeva, 2013; Khokhlova, 2013) consider in detail the very system in which the monitoring is organized, the issues and problems of information collection, its analysis and evaluation, the use of various information technologies and solutions for the implementation of the monitoring (Rukhmanova, 2010; Hristodulo, Akhmetzyanova, 2021). A substantial amount of publications (Kuznetsova, Babkin, 2021; Kuznetsova, Babkin, 2022; Shogenov et al., 2012; Fertner, 2012; Brezzi et al., 2011; Bogdanov et al., 2008; Klufová, 2016; Russo et al., 2017) considers the development of various integral methods for assessing the level of socio-economic development of municipalities and their classification (grouping) as a key component of municipal monitoring.

In a monograph by scientists from Vologda Research and Coordination Center of the Central Economics and Mathematics Institute RAS (Uskova et al., 2002), municipal socio-economic monitoring is defined as a specially organized and constantly operating system for monitoring, collecting, evaluating and disseminating infor-

mation; assessing the economic and social situation on the territory of a municipal entity (municipal entities); analyzing development trends and the extent of local (municipal) problems, as well as preparing recommendations for rational management decisions. In the monograph, it was proposed to monitor the development of the city in the framework of three major areas: 1) monitoring the quality of life (health, standard of living and lifestyle); 2) monitoring the development of the city's economy; 3) monitoring the socio-economic potential of the city (the amount of the potential and the effectiveness of its use). We adhere to this approach to understanding municipal monitoring within the framework of this article. The aim of our work is to conduct scientific and methodological substantiation for the development of an approach to the formation and implementation of a comparative monitoring of socio-economic development of municipal entities at the intraregional and interregional levels.

Currently, in Russia, at the official level, the monitoring of municipalities' development is carried out only in the form of an annual monitoring of the effectiveness of the work of local self-government bodies in municipal districts, urban okrugs and municipal okrugs in accordance with Presidential Decree 607, dated April 28, 2008, which establishes a list of 14 indicators to assess the effectiveness of the work of LSG bodies. Pursuant to this Decree, RF Government Resolution 1317, dated 17 December, 2012, approved a list of additional indicators for assessing the effectiveness of the work of LSG bodies (27 indicators); a technique for monitoring the effectiveness of the work of LSG bodies; a standard form of a report for the heads of local administrations of municipal okrugs, urban okrugs and municipal districts on the achieved values of indicators for assessing the effectiveness of the work of LSG bodies for the reporting year and their planned values for a three-year period; methodological recommendations on

the allocation of grants to municipal entities from the budget of the RF constituent entity in order to facilitate the achievement and (or) encourage the achievement of the best values of indicators of the work of LSG bodies; a list of recommended indicators used to determine the amount of grants.

Heads of municipal districts and municipal okrugs annually prepare a corresponding report, which reflects the values of indicators for assessing the effectiveness of the work of LSG bodies over the past three years and indicates the planned values for the next three years, and submit it to the appropriate state authority of the RF constituent entity. As a rule, the report provides comments on the reasons why individual indicators are deteriorating, and puts forward an action plan to achieve the best values of the indicators. An increase in the values of indicators (direct indicators) or a decrease in the values of individual indicators (inverse indicators) reflects the effectiveness of the work of local self-government bodies. The subject of the assessment is the results of the work of local self-government bodies in the following areas: economic development; preschool education; general and additional education; culture; physical culture and sports; housing construction and provision of housing for citizens; housing and communal services; organizing municipal administration; energy saving and improving energy efficiency; conducting an independent assessment of the quality of conditions for the provision of services by organizations in the fields of culture, health, education and social services. At the same time, according to the research of Russian scientists (see, for example, Voroshilov, 2015), the monitoring of the effectiveness of the work of LSG bodies does not cover all areas (directions) regarding the development of the municipality; there are also questions about the actual reliability of the values of indicators (there may be significant fluctuations from year to year or omission of individual values of indicators, etc.).

A distinctive feature of our present study consists in the fact that it considers issues related to the formation of a system for monitoring the development of municipalities, taking into account the current information and statistical base in Russia, and substantiating the development of an approach to the comparative monitoring of municipalities in different regions of Russia.

Description of the research methodology and substantiation of its choice

To achieve the goal of the work, we used standard methods of economic, statistical and comparative analysis, generalization and expert (questionnaire) survey, and a monographic method. In the course of the study, we relied on the publications of foreign and Russian scientists involved in the analysis and monitoring of socio-economic development of municipal entities.

Further, the article will consider the methodological approach and the tools used to monitor the development of Vologda Oblast municipal entities; the main results of the monitoring are published in the annual information and analytical bulletin "Socio-Economic Development of Municipal Districts", issued by Vologda Research Center of the Russian Academy of Sciences (VolRC RAS) since 2014. We provide the development of this bulletin and the execution of the bulk of work for its preparation.

We use a methodological approach to grouping territories according to the value of statistical indicators under consideration. The grouping of municipal districts for each of the initial statistical indicators characterizing their socio-economic development and analyzed in this bulletin is carried out in accordance with the following interval estimates (*Tab. 1*). For a number of indicators, in the absence of districts that fall into a group with a high or low level of development, the grouping is carried out logically, based on the magnitude of the differences between the values of the indicator for the districts from the indicators for the districts of another group.

Table 1. Boundaries of intervals for the groups of municipalities according to the level of socio-economic development indicators

Group – level of indicator values	Boundaries of the group
High	$x_i \geq x_{av} + (3/4) \cdot \sigma$
Above high	$x_{av} + (1/4) \cdot \sigma \leq x_i < x_{av} + (3/4) \cdot \sigma$
Median	$x_{av} - (1/4) \cdot \sigma \leq x_i < x_{av} + (1/4) \cdot \sigma$
Below median	$x_{av} - (3/4) \cdot \sigma \leq x_i < x_{av} - (1/4) \cdot \sigma$
Low	$x_i < x_{av} - (3/4) \cdot \sigma$

x_i – value of the indicator of the i -th district (urban okrug) of the oblast; x_{av} – average value of the corresponding indicator for all districts (urban okrugs); σ – standard deviation for the corresponding indicator.

An example of the grouping of Vologda Oblast municipal districts according to one of their indicators under this approach will be given in Table 4.

The level of socio-economic development of municipal entities is assessed on the basis of the methodology presented in the publication (Voroshilov, Gubanova, 2014). The essence of the methodology consists in the sequential implementation of four stages: standardization of the initial 18 statistical indicators of municipal districts relative to average values for the region; calculation of the integral indicator for four blocks of indicators (“Demography”, “Improvement”, “Standard of living”, “Economy”) based on the arithmetic mean of standardized indicators included in the block; calculation of the integral indicator of the level of development as an arithmetic mean of the integral indicators of the blocks; grouping of oblast districts into five groups of territories by level of development (high, above median, median, below median, and low). The results of such grouping according to the indicators for 2000, 2010, 2020 and 2021 are presented in Table 5.

In order to monitor the current state and reform of the institution of local self-government in the oblast, RAS Vologda Research Center has been conducting a questionnaire survey of the heads of Vologda Oblast municipal entities since 2006 (questionnaires are sent to all municipalities of the oblast; the number of filled-in questionnaires received from the heads provide a sampling error of no more than 4–5%). At the same time, the

questionnaire for the survey is adjusted annually taking into account the specifics of changes occurring in the system of state and municipal administration in Russia and the Vologda Oblast.

Research results

We were able to elaborate and substantiate the principles (*Tab. 2*) and approach to monitoring the development of municipalities after we implemented the following steps: summarizing research works on the issues under consideration; gaining practical experience in monitoring the development of Vologda Oblast municipal entities (by preparing an annual information and analytical bulletin and conducting a questionnaire survey of municipalities’ heads); analyzing development parameters of the largest and large urban agglomerations of Russia, urban agglomerations on the territory of the European North of Russia, rural territories of regions within the Northwestern Federal District; gaining experience in developing methods for assessing the level of socio-economic development of RF constituent entities, municipal entities (municipal districts and okrugs, urban okrugs, urban and rural settlements) and arranging these territories into groups; analyzing the existing practice of monitoring the development of municipalities in some RF constituent entities (Vologda Oblast, Altai Krai, etc.), implemented by public authorities.

Next, let us consider main features of the approach to conducting the monitoring of Vologda Oblast municipal entities (*Tab. 3*), the main results

Table 2. Principles of monitoring statistical indicators of socio-economic development of municipalities

Principle	Essence
<i>Principles, according to which the monitoring is organized</i>	
Regularity, efficiency	The monitoring should be conducted (the relevant information base should be collected and analyzed) in every analyzed period (year, quarter, month); analysis should be carried out and conclusions should be made as soon as possible after the appearance of a reliable and adequate information and statistical base
Comprehensiveness	The monitoring should cover all possible aspects in the development of municipalities; in order to confirm certain facts, in addition to statistical information, it is advisable to use other sources of information (the results of sociological research conducted in the municipality; departmental, reporting information of local self-government bodies, municipal enterprises and institutions; the results of an expert survey, other available reliable information bases and resources)
System-wide nature	Various aspects in the development of municipal entities should be considered in the interrelation of spheres (subsystems) of socio-economic development of municipal entities; cause-and-effect relationships between individual phenomena and processes should be identified
Accessibility	The results of the monitoring should be presented in an understandable, accessible form for various consumers; the results should substantiate the need and direction of adjusting the forms, methods, and tools for managing the development of municipalities
Purposefulness	The monitoring should be aimed at achieving the goal and specific objectives of monitoring the development of municipalities
Usefulness	The results of the monitoring should be useful for various stakeholders (public authorities, local self-government bodies, business community, residents of municipalities)
<i>Principles, according to which the information base is formed (indicators are selected)</i>	
Comparability	The indicators used in the monitoring should be comparable in time (in terms of the name of indicator, features of its formation and form of presentation) and space (it should be possible to adequately compare the values of the indicator between different territories of a specific RF constituent entity and all RF constituent entities or any macroregion of the country)
Reliability	Indicators should be collected on the basis of data from official statistical sources (statistics collections, databases) or other information resources, the principles of formation of which are clear and methodologically correct
Moderation	The number of indicators for the monitoring should not be too large; it is necessary to avoid duplication of indicators characterizing the same phenomenon or process, multicollinearity of indicators used for integral assessment of the level of development of municipalities
Accessibility	Information on the values of the municipality's development indicators should be available to various interested parties and be presented over a long period of time (at least ten years)
<i>Principles, according to which the level of socio-economic development is assessed</i>	
Adequacy of the results obtained	The results of assessing the level of socio-economic development of municipal entities and their typology should most adequately reflect the characteristics of the territories in each group; the municipality in each group should be characterized by common, similar trends, features, development factors and problems
Taking into account territorial specifics	The level of development of municipalities in RF constituent entities should be assessed taking into account the adjustment of cost indicators for interregional differences in the level of prices or cost of living to ensure comparability of interregional comparisons for municipalities
Applicability of the assessment results	The results obtained while assessing the level of development should make it possible to substantiate differentiated measures and instruments of regulatory influence on the part of the state and local self-government bodies on various types of municipalities
Relative simplicity of calculation	Methodological tools for assessing the level of development of municipalities should be understandable and accessible to all interested parties; processing of initial data and calculation of the integral indicator should preferably be carried out without the use of specialized, nonpublicly available software and without lengthy and complex calculations

of which are published in the annual information and analytical bulletin "Socio-Economic Development of Municipal Districts" issued by Vologda Research Center of the Russian Academy of Sciences since 2014. VolRC RAS sends the bulletin annually and free of charge to the state authorities

of the Vologda Oblast and local self-government bodies of districts and urban okrugs of the oblast, and sometimes to individual federal legislative and executive authorities, senior officials of all RF constituent entities, and certain scientific and nongovernmental organizations of Russia.

Table 3. Structure of the monitoring of socio-economic development of Vologda Oblast municipal entities as presented in the bulletin (on the example of the 9th issue of the bulletin published in 2022)

Block of indicators	List of monitoring indicators
Main trends in socio-economic development of municipal districts and urban okrugs in the Vologda Oblast in 2000–2020	Permanent population size at the end of the year, including urban and rural population; number of rural settlements within municipal districts and urban okrugs of the Vologda Oblast; structure and dynamics of the permanent population by age group Natural and migration increase (decrease), including in the context of urban and rural population; migration increase/decrease in the context of migration directions Morbidity per 1,000 people Agricultural production (in comparable prices) per inhabitant; industrial production and shipment of goods per inhabitant Retail turnover (in comparable prices) per inhabitant Volume of commissioned residential buildings per inhabitant Ratio of the average monthly nominal accrued wage to the subsistence level; average monthly wage of certain categories of employees designated in Presidential Decree 597, dated May 7, 2012 Registered unemployment rate Provision of doctors per 10 thousand people Availability of hot and cold running water, sewerage, central heating, gas in the housing stock Condition of water supply and sewerage networks infrastructure (proportion of networks in need of replacement; replaced networks; leakage and unaccounted for water consumption); condition of heat supply networks Main characteristics and dynamics of key indicators of socio-economic development of groups of municipal districts in the Vologda Oblast (in the context of the typology of territories by share of rural population, typology by remoteness from large cities)
Current condition and trends in the formation of budgets of municipal districts and urban okrugs in the Vologda Oblast	Budgetary provision of own (tax and nontax) revenues of the district (urban okrug) budget per inhabitant Structure of expenditures of budgets of municipal districts and urban okrugs in the Vologda Oblast Volume of financial resources of the Vologda Oblast budget, allocated for the implementation of projects and events under the state program “Comprehensive development of rural areas” in municipal entities of the Vologda Oblast
Some indicators showing the development of agriculture in municipal districts of the Vologda Oblast	Cattle population, pig population in all types of farms, cow population in all types of farms and in households Gross harvest of grain and leguminous crops in all types of farms Productivity of grain and leguminous crops in all types of farms Milk production in all types of farms Milk yield per cow in agricultural organizations Sale of livestock and poultry for slaughter in live weight in all types of farms
Main results of socio-economic development of municipal districts and urban okrugs in the Vologda Oblast in 2021	Natural population growth (decrease); migration growth (decrease) Turnover of organizations and production volumes of the logging industry Dynamics of the main indicators of agricultural sectors Retail and catering turnover (in comparable prices) Number of organizations and individual entrepreneurs; share of profitable organizations Number of unemployed and the level of registered unemployment Volume of commissioning of residential buildings Dynamics of cargo turnover and passenger turnover of motor transport Average monthly nominal accrued wage of an employee
Forecast of the main parameters of development of municipal districts and urban okrugs in the Vologda Oblast until 2030	Permanent population at the end of the year Agricultural production per inhabitant (in comparable prices) Retail trade turnover (in comparable prices) Real accrued wages (in comparable prices)
Municipal management efficiency (based on the materials of surveys conducted by VoIRC RAS)	Results of the annual questionnaire survey of Vologda Oblast municipalities' heads, which includes the following main areas: – studying changes occurring in municipal entities after the adoption of Federal Law 131-FZ; – identifying areas for improving the work of local administrations directly and assessing the availability of qualified personnel there; – identifying the role of federal and regional authorities in the development of municipalities and directions for improving state policy on the development of municipalities; – studying public participation in local self-government
Appendices	Main stages in the development of local self-government institution in the post-Soviet period Proposals for improving state policy in the field of local self-government in Russia, improving the management of municipalities development Methodological commentary

Next, as an example, let us consider some calculations (examples) from the results of monitoring the development of Vologda Oblast municipalities, published in a 2022 issue of the bulletin.

Thus, in 2000–2020, the average per capita volume of agricultural production decreased in comparable prices in 19 districts of the oblast (average decrease was 8%; *Tab. 4*). In Vashkinsky, Babushkinsky, Nyuksensky, Syamzhensky, Vozhegodsky, Kaduysky, Babaevsky, Vytegorsky, Ust-Kubinsky districts, production decreased more than twofold. In five districts (Vozhegodsky, Sokolsky, Babaevsky, Vytegorsky), by the end

of 2021, the volume of agricultural production was more than four times lower than the district average. In Gryazovetsky, Vologodsky, Sheksninsky, Ustyuzhensky, Mezhdurechensky, Totemsky and Kirillovsky districts in 2021, there was an increase in agricultural production compared to 2000 (from 0.3 to 92%); an increase compared to 1995 is observed in Vologodsky, Gryazovetsky, Sheksninsky, Ustyuzhensky, Tarnogsky, Totemsky, Chagodoshchensky districts.

Vologodsky, Gryazovetsky and Sheksninsky districts remain leaders in the development of agriculture in the Vologda Oblast; they provide the bulk of agricultural products to two large cities of

Table 4. Agricultural production (in comparable prices in 2021), thousand rubles per capita

Municipal district	1995	2000		2010	2020	2021		2021 to 2000, %	2021 to 2019, %
		Value	Position			Value	Position		
Vologodsky	227.7	250.4	1	229.1	245.1	251.0	1	100.3	102.4
Gryazovetsky	97.4	105.7	5	99.7	190.9	202.4	2	191.6	106.0
Sheksninsky	110.8	96.8	7	81.5	112.7	109.9	3	113.6	97.5
Ustyuzhensky	79.0	80.4	11	67.7	104.1	107.6	4	133.8	103.3
Cherepovetsky	234.6	191.8	2	153.5	103.2	102.0	5	53.2	98.8
Tarnogsky	86.0	101.5	6	58.3	86.0	92.5	6	91.2	107.6
Totemsky	72.1	71.4	13	55.4	88.8	91.2	7	127.7	102.6
Mezhdurechensky	104.7	86.4	10	60.5	87.4	86.8	8	100.4	99.3
Verkhovazhsky	164.9	108.6	3	70.3	75.0	74.6	9	68.6	99.4
Kirillovsky	71.9	69.0	16	48.7	70.1	71.6	10	103.7	102.1
Chagodoshchensky	47.3	58.7	19	28.9	53.7	52.1	11	88.7	96.9
Ust-Kubinsky	72.4	106.6	4	81.9	54.1	47.4	12	44.5	87.6
Nikolsky	83.1	88.6	8	49.5	48.7	47.1	13	53.2	96.8
Kichmengsko-Gorodetsky	87.8	78.5	12	43.6	43.7	42.3	14	53.9	96.8
Velikoustyugsky	68.3	40.7	23	28.1	32.8	34.3	15	84.2	104.4
Babushkinskiy	85.0	86.7	9	40.3	30.9	31.5	16	36.3	101.8
Kharovsky	56.0	49.6	20	29.7	32.1	30.8	17	62.2	96.2
Vashkinsky	62.0	62.4	18	27.7	28.1	30.1	18	48.2	107.0
Nyuksensky	165.1	70.4	14	26.5	31.7	29.1	19	41.4	91.9
Syamzhensky	67.6	63.2	17	25.6	26.1	24.5	20	38.8	94.0
Belozersky	55.3	39.9	24	25.1	23.1	24.1	21	60.5	104.3
Kaduysky	42.5	45.1	22	21.0	22.5	21.6	22	47.9	95.9
Sokolsky	34.2	34.0	26	24.6	18.4	19.6	23	57.8	106.5
Vozhegodsky	53.4	46.7	21	26.5	18.3	18.5	24	39.6	101.3
Babaevsky	78.6	69.2	15	25.9	15.0	14.4	25	20.8	96.0
Vytegorsky	33.9	34.8	25	11.0	9.2	9.9	26	28.4	108.0
District average	94.8	87.9	-	67.7	79.4	81.0	-	92.1	102.0
Groups of districts are highlighted in color according to the value of the indicator									
High	Above median	Median	Below median	Low					

the oblast and, due to their favorable economic and geographical location, have convenient access to large sales markets of the Northwestern and Central federal districts. Cherepovetsky District has lost its position in 20 years; it is largely due to a significant decline in production in the pig farming subsector (a number of large pig breeding facilities have been closed).

The results of grouping Vologda Oblast municipal districts by socio-economic development level for 2000–2021 are presented in *Table 5*. A deterioration of the overall assessment of socio-economic development level (based on the analysis of the results of the integral indicator) was noted

in a number of municipal districts of the Vologda Oblast (in 2000 and 2010, the group with a low development level included only eight districts, while in 2020–2021, their number increased to 9–11 districts). At the same time, the number of districts with a high development level decreased from six to four. In 2000–2021, eight districts experienced a deterioration in their socio-economic situation (Kaduysky, Cherepovetsky, Chagodoshchensky, Totemsky, Belozersky, Vashkinsky, Ustyuzhensky, Vytegorsky); while six districts (Gryazovetsky, Mezhdurechensky, Babaevsky, Syamzhensky, Verkhovazhsky, Nyuksensky) moved to groups with a higher level of development during this period.

Table 5. Ranking of Vologda Oblast districts by value of the integral index of socio-economic development

Municipal district	2000		2010		2020		2021		2010 to 2000 (+/-)	2021 to 2010 (+/-)	2021 to 2000 (+/-)
	Abs. value	Rank	Rank	Rank	Rank						
Gryazovetsky	1.147	7	1.132	6	1.406	2	1.521	1	1	5	6
Sheksninsky	1.222	5	1.595	1	1.536	1	1.486	2	4	-1	3
Vologodsky	1.405	2	1.310	5	1.298	3	1.325	3	-3	2	-1
Sokolsky	1.265	4	1.329	4	1.210	5	1.229	4	0	0	0
Kaduysky	1.655	1	1.439	3	1.246	4	1.133	5	-2	-2	-4
Velikoustyugsky	1.141	8	1.047	8	1.101	8	1.058	6	0	2	2
Chagodoshchensky	1.202	6	1.446	2	1.106	7	1.045	7	4	-5	-1
Babaevsky	0.930	12	0.909	12	0.998	11	1.034	8	0	3	3
Totemsky	1.036	9	0.960	10	1.000	10	1.032	9	-1	2	1
Nyuksensky	0.928	13	0.784	19	1.110	6	1.009	10	-6	9	3
Cherepovetsky	1.354	3	1.056	7	1.015	9	0.940	11	-4	-4	-8
Kirillovsky	0.872	16	0.865	16	0.898	13	0.923	12	0	3	3
Kharovsky	0.895	14	0.979	9	0.885	15	0.923	13	5	-3	2
Tarnogsky	0.861	17	0.901	13	0.956	12	0.899	14	4	-2	2
Mezhdurechensky	0.840	19	0.869	15	0.896	14	0.897	15	4	1	5
Syamzhensky	0.755	24	0.725	23	0.821	19	0.873	16	1	7	8
Verkhovazhsky	0.766	22	0.779	20	0.843	18	0.854	17	2	2	4
Vytegorsky	0.957	10	0.857	18	0.797	21	0.846	18	-8	-2	-10
Ustyuzhensky	0.857	18	0.883	14	0.873	16	0.838	19	4	-3	1
Belozersky	0.878	15	0.861	17	0.850	17	0.832	20	-2	-2	-4
Vashkinsky	0.937	11	0.749	21	0.821	20	0.823	21	-10	0	-10
Ust-Kubinsky	0.813	21	0.955	11	0.772	22	0.759	22	10	-11	-1
Nikolsky	0.693	26	0.741	22	0.768	23	0.740	23	4	-1	3
Vozhegodsky	0.818	20	0.715	25	0.761	24	0.728	24	-5	1	-4
Kichmengsko-Gorodetsky	0.709	25	0.649	26	0.718	25	0.700	25	-1	1	0
Babushkinsky	0.756	23	0.715	24	0.677	26	0.699	26	-1	-2	-3

Groups of districts are highlighted in color according to the value of the indicator

High	Above median	Median	Below median	Low
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To study spatial (intraregional) specifics in the development of the Vologda Oblast, two typologies of municipal districts were proposed: by share of rural population and by remoteness from large cities (Tab. 6). It is shown that in areas with a predominance of rural population, the share of residential housing stock equipped with running water (33–46%) and gas (13–21%) is small; and the overall level of socio-economic development in such areas is lower.

Table 6. Main characteristics of groups of municipal districts in the Vologda Oblast in 2021

Group of territories	Share of the group of territories in the total value of the indicator in the aggregate for all districts, %					Average value of the indicator for districts within the group				
	Population size	Goods shipped	Agricultural production	Investments in fixed capital	Commissioning of residential buildings	Share of housing equipped with running water, %	Share of housing equipped with centralized gas supply, %	Natural population growth rate, per mill	Migration gain, per mill	Integral indicator of the level of development
Typology of municipal districts by share of rural population										
Purely rural (42% of the total number of districts in the oblast)	33.6	14.5	50.7	21.4	64.1	45.6	20.7	-12.5	2.2	0.849
Mostly rural (15%)	15.0	11.6	8.0	11.8	7.1	32.5	13.2	-13.2	-1.4	0.801
Largely urban (35%)	39.2	54.1	38.2	43.9	24.6	53.6	28.0	-13.7	-2.5	1.039
Mostly urban (8%)	12.2	19.8	3.0	12.9	4.2	60.3	54.4	-12.6	3.7	1.154
Typology of municipal districts by location relative to very large and large cities										
Near periphery of the 1st order (8%)	17.5	7.6	40.5	13.8	52.3	54.8	38.8	-10.9	6.3	1.100
Near periphery of the 2nd order (15%)	25.0	50.6	26.7	48.2	13.1	61.4	51.6	-11.8	0.4	1.309
Near periphery of the 3rd order (31%)	33.9	30.3	16.5	28.1	18.8	44.0	20.8	-13.8	-1.9	0.888
Middle periphery (15%)	6.90	3.5	6.4	1.9	5.3	45.8	0.8	-15.4	-3.1	0.805
Far periphery (31%)	17.1	7.9	10.0	8.0	10.3	37.4	8.1	-14.8	-1.9	0.805
By district	100.0	100.0	100.0	100.0	100.0	48.6	26.5	-13.1	0.01	0.931
By oblast	-	-	-	-	-	71.4	33.4	-9.3	-0.77	-
<p>The features and composition of Vologda Oblast district groups are as follows:</p> <ul style="list-style-type: none"> – purely rural (the share of rural population is 100%): Babushkinsky, Vashkinsky, Verkhovazhsky, Vologodsky, Kichmengsko-Gorodetsky, Mezhdurechensky, Nyuksensky, Syamzhensky, Tarnogsky, Ust-Kubinsky, Cherepovetsky; – mostly rural (the share of rural population is 50.0–99.9%): Vozhegodsky, Vytegorsky, Nikolsky, Totemsky; – largely urban (the share of rural population is 25.0–49.9%): Babaevsky, Belozersky, Velikoustyugsky, Gryazovetsky, Kirillovsky, Ustyuzhensky, Kharovsky, Chagodoshchensky, Sheksninsky; – mostly urban (the share of rural population is 0–24.9%): Kaduysky, Sokolsky; – near periphery of the 1st order (territories that are part of agglomerations; their center is a large city): Vologda, Cherepovets; – near periphery of the 2nd order (territories located in the zone of active influence of a large city): Gryazovetsky, Sokolsky, Kaduysky, Sheksninsky; – near periphery of the 3rd order (territories whose center is a small or medium-sized city): Vytegorsky, Babaevsky, Belozersky, Kirillovsky, Velikoustyugsky, Nikolsky, Totemsky, Kharovsky; – middle periphery (territories outside the zone of active influence of the city and adjacent to the territories of the 1st and 2nd order): Ust-Kubinsky, Syamzhensky, Mezhdurechensky, Ustyuzhensky; – far periphery (territories remote from the region's cities): Vashkinsky, Chagodoshchensky, Vozhegodsky, Verkhovazhsky, Tarnogsky, Nyuksensky, Babushkinsky, Kichmengsko-Gorodetsky. 										

At the same time, the group of purely rural areas accounts for 64% of housing commissioning (in this case, we are talking more about the construction of individual housing that is not connected to centralized utilities systems). In turn, as the distance from large cities increases, the demographic situation and the overall level of development in the territories deteriorates. The group of purely rural areas is characterized by the largest volume of agricultural production (122.2 thousand rubles), housing commissioning per inhabitant (1.17 square meters) and the volume of own income per capita (14.1 thousand rubles). In the group of these districts, population has decreased by 19% over 20 years, and on average for all districts of the oblast – by 23% (Tab. 7).

Table 7. Dynamics of key indicators of socio-economic development in groups of Vologda Oblast municipal districts

Group of territories	Permanent population size at the end of the year, thousand people			Average monthly wage in prices of 2021 (excluding SMEs), thousand rubles			Agricultural production per inhabitant (in prices of 2021), thousand rubles			Commissioning of residential housing per inhabitant, square meters			Own (tax and nontax) revenues of the local budget per inhabitant (in prices of 2021), thousand rubles		
	2000	2021	2021 to 2000, %	2010	2021	2021 to 2010, %	2000	2021	2021 to 2000, %	2000	2021	2021 to 2000, %	2006	2021	2021 to 2006, times
Typology of municipal districts by share of rural population															
Purely rural (42% of the total number of districts in the oblast)	213.7	173.6	81.3	27.4	41.5	151.5	145.9	122.2	83.8	0.15	1.17	799.1	5.8	14.1	2.45
Mostly rural (15%)	106.0	77.4	73.1	28.2	45.2	160.0	60.0	43.3	72.1	0.15	0.29	193.3	5.5	13.8	2.50
Largely urban (35%)	272.0	202.4	74.4	29.0	42.7	147.5	68.0	79.0	116.2	0.12	0.38	327.7	7.4	13.2	1.79
Mostly urban (8%)	78.7	63.2	80.3	29.0	42.2	145.4	36.7	20.1	54.9	0.18	0.21	117.7	7.5	10.6	1.41
Typology of municipal districts by location relative to very large and large cities															
Near periphery of the 1st order (8%)	92.8	90.2	97.3	29.4	43.5	148.2	224.1	187.6	83.7	0.15	1.84	1233.9	6.5	12.5	1.92
Near periphery of the 2nd order (15%)	157.5	127.1	80.7	30.2	43.8	144.9	69.1	88.0	127.2	0.15	0.33	221.8	7.9	12.9	1.63
Near periphery of the 3rd order (31%)	241.5	175.2	72.5	28.1	43.1	153.5	54.7	39.4	72.0	0.13	0.34	262.7	6.8	13.1	1.92
Middle periphery (15%)	50.3	35.9	71.2	25.9	38.7	149.4	82.7	74.4	89.9	0.19	0.46	239.2	4.8	13.3	2.79
Far periphery (31%)	128.3	88.3	68.9	26.4	40.1	151.6	76.9	47.1	61.3	0.12	0.37	315.9	5.3	15.0	2.84
By district	670.3	516.6	77.1	28.4	42.7	150.2	87.9	81.0	92.1	0.14	0.61	441.6	6.6	13.3	2.02
By oblast	1290.4	1139.5	88.3	39.2	50.7	129.1	-	-	-	0.16	0.56	353.9	19.9	13.3	0.67

According to the typology by remoteness from large cities, the greater the distance from the major cities of the oblast, the more negative trends in demographic development can be noted (in the areas of the near periphery of the 1st order, Vologodsky and Cherepovetsky districts, population decreased by only 3% in 2000–2020, while in the most remote territories of the far periphery – by 31%; see Tab. 7). In the areas of the near periphery of the 1st and 2nd order, there is a higher level of wages, a larger volume of shipments of agricultural products, and more positive dynamics of these indicators for 2000–2021 (see Tab. 6). Vologodsky and Cherepovetsky districts are leaders in terms of the volume and dynamics of housing commissioning. The smallest volumes of housing commissioning are noted in peripheral areas of the oblast (the near periphery of the 3rd order and the far periphery).

According to the results of a questionnaire survey conducted in 2022 among the heads of Vologda Oblast municipal entities, it was revealed that the most difficult situation in oblast municipalities is observed in demography, economy,

employment, transport (from 25 to 68% of respondents indicated that the condition of these spheres is “poor” and “very poor”; Tab. 8). While the most problematic situation is developing in rural settlements (in almost all areas, the proportion of municipalities’ heads who pointed out this difficult situation is higher than in districts and urban settlements).

In most municipalities, the problem of insufficient financial resources is acute, as well. Urban and rural settlements found themselves in a difficult situation: 86 and 77% of their heads in 2021, respectively, assessed the availability of own revenues in their settlement as extremely low and low (Tab. 9).

At the same time, judging by the analysis of the survey results for 2006 and 2021, there are positive changes in the availability of financial resources in municipal entities. Thus, during the period under consideration, we observe an increase in the share of municipalities’ heads who indicated median replenishment of the budget at the expense of own revenues, and the share of districts with an extremely low availability of own revenues decreased to zero.

Table 8. Assessment of the situation in the municipal entity according to the following parameters by the end of 2021, % of respondents who chose the answer options “poor” and “very poor”

Parameter	Municipal entities		
	municipal districts	urban settlements	rural settlements
Demographic situation	65.0	71.4	69.8
Employment	5.0	28.6	48.8
Economic development	15.0	57.1	45.2
Provision of transport services	0.0	28.6	38.1
Diversification of the economy	15.0	57.1	30.2
Provision of communication services (Internet, mobile communication)	0.0	0.0	25.6
Accessibility and quality of healthcare services	20.0	42.9	23.3
Development of road transport infrastructure	10.0	71.4	23.3
Material welfare	0.0	28.6	19.0
Housing and communal services	15.0	0.0	18.6
Provision of residential housing	20.0	28.6	18.6
Ensuring public safety	0.0	28.6	11.6
Accessibility and quality of education services	0.0	14.3	2.3
Recreation and culture	0.0	0.0	2.3
Environment (air, water, etc.)	0.0	0.0	0.0

Table 9. Distribution of answers of administrations' heads to the question "How would you assess the availability of own revenues and revenues in general in your municipality?", % of respondents

Municipal entities	Availability of revenues in general				Availability of own revenues			
	extremely low (0–30%)	low (31–60%)	median (61–90%)	high (over 90%)	extremely low (0–30%)	low (31–60%)	median (61–90%)	high (over 90%)
	2006							
Municipal districts	40.0	40.0	0.0	20.0	85.8	14.2	0.0	0.0
Urban settlements	40.0	40.0	0.0	20.0	63.7	27.3	9.0	0.0
Rural settlements	40.1	23.4	31.7	4.8	87.2	7.8	4.0	1.0
	2021							
Municipal districts	15.0	25.0	45.0	15.0	15.8	42.1	42.1	0.0
Urban settlements	0.0	85.7	14.3	0.0	28.6	57.1	14.3	0.0
Rural settlements	20.9	32.6	46.5	0.0	34.9	41.9	23.3	0.0

Next, we will consider the results of evaluation of VoIRC RAS information and analytical bulletin "Socio-Economic Development of Municipal Districts" by various experts. In 2022, the bulletin was sent to federal and regional state authorities, local self-government bodies and scientific organizations of Russia. As a result, 35 response letters were received in August – September 2022 (including 31 filed-in questionnaires on the evaluation of the bulletin): 21 responses from the state authorities of RF constituent entities; 10 responses from local self-government bodies of the Vologda Oblast and a number of other regions; 4 responses from scientific and other organizations. The main conclusions from the results of the questionnaire on the evaluation of the bulletin are as follows.

Respondents noted high relevance of the bulletin for public authorities and local self-government bodies (77 and 94% of respondents,

respectively; *Tab. 10*), about a third indicated its usefulness for federal authorities, employees of scientific organizations and residents of municipalities; 90% of respondents pointed out that the quality of materials contained in the bulletin was "high" and "sufficiently high". Respondents assessed the bulletin's main parameters as being quite high (topics of the sections, information content, clarity of expression, design – at 4.27 points or higher out of 5 points possible).

The overwhelming majority of respondents (64.5%) indicated "very high" and "high" usefulness of the bulletin materials for their professional activities; 35.5% of respondents indicated average usefulness of the materials. The materials presented in the bulletin are of use to employees of public authorities and local self-government because they can be used to prepare analytical materials on the development of the municipality, to prepare speeches and reports on the development of the

Table 10. Distribution of answers to the question "Who do you think this information and analytical bulletin can be useful to?", % of respondents

Target audience	Share of respondents
Local self-government bodies	93.5
Public authorities of RF constituent entities	77.4
Residents of municipalities	35.5
Employees of scientific and educational organizations	32.3
Federal government agencies	32.3
Business community	9.7
Nongovernmental organizations, political parties	9.7
I find it difficult to answer	0.0

Table 11. Distribution of answers to the question “In your opinion, in what areas of your professional activity can the bulletin be most in demand?”, % of respondents

Area of activity	Share of respondents
Preparing analytical materials on the development of the municipality	67.7
Preparing speeches and reports on the development of the municipal entity	48.4
Developing proposals and measures to improve the management of socio-economic processes at the regional and local levels	45.2
Developing and revising strategic planning documents	41.9
Expanding and deepening my own knowledge and the knowledge of my subordinates about the development of municipalities in the Vologda Oblast	35.5
Providing information about municipalities to representatives of state authorities and local self-government of other constituent entities of the Russian Federation	29.0
Provide information on municipalities to representatives of business structures	16.1

municipality, to develop proposals and measures to improve the management of socio-economic processes at the regional and local level (45–68% of respondents indicated these areas; *Tab. 11*); 87.1% of respondents are interested in receiving issues of the bulletin in the following years, 12.9% are not interested in it.

We believe that the monitoring of the development of municipalities, taking into account the

principles outlined above, should be carried out regularly (annually) in all RF constituent entities according to the same list of indicators (*Tab 12*). It is also advisable to compare development parameters for municipalities of different constituent entities of Russia (for example, municipalities of constituent entities included in a federal district, or municipalities of several constituent entities, which can be taken for analysis).

Table 12. Key indicators for monitoring municipalities of RF constituent entities

Indicator	SEDL	IRM
Based on the indicators presented in Rosstat database of indicators for municipal entities		
Estimation of population size as of January 1 of the current year, total fertility rate, mortality, natural and migration growth	Yes	Yes
Average number of employees of organizations (excluding small businesses) Average monthly wages of employees of organizations (excluding small businesses), including in the context of main types of economic activity and certain categories of social workers (1)	No Yes	Yes
Proportion of children aged 1–6 years who receive a preschool educational service and (or) are enrolled in a municipal educational institution Proportion of children aged 1–6 years who are registered for admission to municipal preschool educational institutions	No	Yes
Number of employees and the average monthly accrued wages of LSG bodies	No	Yes
Total area of residential premises	Yes	Yes
Share of the population who received housing and improved living conditions in the reporting year, in the total population registered as needy	No	Yes
Single length of the street gas, running water, sewer network; length of heating networks; length of networks in need of replacement; length of networks that have been replaced and repaired in a year; number of non-gasified settlements	No	
Volume of shipped goods of own production, amount of works and services performed on one's own (without small business entities), including by type of economic activity of industrial production		
Agricultural products (in actual prices); agricultural production index; acreage, gross yields and crop yields; livestock and poultry head at the end of the year; livestock production (2)	No	Yes
Share of unprofitable organizations in the total number of organizations		

End of Table 12

Indicator	SEDL	IRM
Investments in fixed assets carried out by organizations located on the territory of the municipal entity (without small business entities), investments at the expense of the local budget (3)	No	Yes
Number of retail and catering facilities	Yes	Yes
Current (operational) costs of environmental protection, including payment for environmental services	No	Yes
Length of public roads of local significance; total length of streets, driveways, embankments, including illuminated parts Share of the length of public roads of local significance that do not meet regulatory requirements Share of the population of localities that do not have regular bus and/or rail connections to the administrative center of the municipality	No	Yes
Residential buildings (including individual ones) commissioned on the territory of the municipal entity (3)	No	Yes
Number of collective accommodation facilities, number of seats and rooms in them (4)	No	No
Additional indicators contained in the statistics collections "Socio-economic development of municipalities" issued by Rosstat's territorial departments		
Level of registered unemployment; load of the unemployed population per one declared vacancy	Yes	Yes
Availability of water supply, sewerage, heating, gas in the housing stock	Yes	Yes
Number of places in organizations that carry out educational activities under educational programs of preschool education, supervision and care of children; number of children receiving preschool educational services	No	Yes
Number of doctors, nursing staff, number of hospital beds	Yes	Yes
Number of places in cultural and leisure type institutions; number of sports facilities	Yes	Yes
Number of registered crimes	No	Yes
Availability, receipt of fixed assets, commissioning of new fixed assets, disposal of fixed assets, liquidation (write-off) of fixed assets	No	Yes
Production of the most important types of industrial products; production of the most important types of products by type of economic activity "Logging"	No	Yes
Availability of vehicles of all types in organizations, availability of trucks in organizations	No	Yes
Retail trade turnover (including physical volume index); volume of paid services provided to the population	Yes	Yes
Net financial result (profit minus loss) of organizations' activities	No	Yes
Indicators formed on the basis of other sources of information		
Revenues, expenditures, local budget surplus/deficit, revenue and expenditure structure (based on the reports on the execution of local budgets, available at the websites of municipalities)	Yes	Yes
Monitoring of the functioning of the institution of local self-government (based on a questionnaire survey of municipalities' heads)	No	Yes
<p>Notes: SEDL – the indicator is applicable for assessing the level of socio-economic development; IRM – the indicator is applicable for the interregional monitoring of municipalities' development.</p> <p>Comments on individual indicators:</p> <ol style="list-style-type: none"> 1. In some years, the database for municipal entities published these indicators for a full range of organizations, in 2014–2017 – without taking into account small business subjects. 2. In a significant number of municipalities (especially northern ones), agriculture does not exist as an independent industry; therefore, it is not necessary to include these indicators in integral ratings. 3. Fluctuations in the investment volume indicator may be significant (several times and dozens of times) in a single year or from year to year due to the possible one-time implementation of one or more major investment projects in any area, which may lead to distortion of the integral indicator and not reflect the real long-term investment attractiveness of the municipality. 4. The data in the database differ significantly from the data presented in statistics collections of Rosstat's regional departments. 5. The tourism sector may not play a significant role in the development of individual municipalities. <p>Within the framework of this approach to the monitoring, the most accessible and widespread sources of statistical and other information for all constituent entities of the Russian Federation are used.</p>		

It is proposed to assess the level of socio-economic development (typology) of municipal entities in a macroregion (comparative interregional assessment) in accordance with the following methodology, consisting in the sequential implementation of the following stages.

Stage 1. Based on the available official statistical information, a list of indicators is formed; they reflect various aspects of socio-economic development of territories (x_i): natural population growth/decline rate, per mill; migration growth/decline rate, per mill; goods of own production shipped, works and services performed on one's own (without small businesses) per inhabitant, thousand rubles; tax and nontax revenues of local budgets per capita, thousand rubles; average monthly wages of employees of organizations (excluding small businesses), rubles; total area of residential premises per inhabitant, thousand square meters. This list was determined based on the available official statistical information for all municipalities of Russia, presented in the database of indicators for municipalities, which is formed by the Federal State Statistics Service of the Russian Federation since 2006.

The values of all cost indicators included in the methodology are initially adjusted to uniform average Russian prices according to the following formula:

$$I_{adj}ik = I_{init}ik \times \frac{C_{RF}}{C_k}, \quad (1)$$

where $I_{adj}ik$ – value of the i -th indicator of the municipal entity included in the k -th RF constituent entity in the corresponding year, adjusted for the cost of a fixed set of goods and services (interregional differences in the price level); $I_{init}ik$ – initial value of the i -th indicator of the municipality included in the k -th RF constituent entity; C_{RF} – average annual cost of a fixed set of consumer goods and services on average in Russia at the end of the corresponding year; C_k – average annual cost

of a fixed set of consumer goods and services in the k -th region at the end of the corresponding year.

Stage 2. The indicators are standardized relative to the average values:

$$k_{ij} = \frac{(x_{ij} - x_{minij})}{(x_{maxij} - x_{minij})}, \quad (2)$$

where k_{ij} – standardized coefficient; x_{ij} – value of the i -th indicator in the j -th municipality; x_{maxij} – maximum value of the i -th indicator for all municipalities under consideration; x_{minij} – minimum value of the i -th indicator for all municipalities under consideration.

Stage 3. The integral indicator of the level of socio-economic development of the municipal entity (I) is calculated as follows:

$$I_j = \frac{(\sum_{i=1}^n k_{ij})}{n}, \quad (3)$$

where n – number of indicators used in the methodology.

Stage 4. Agglomerations are grouped according to the level of socio-economic development, which is determined by the following interval estimates of the integral indicator I : high ($I_j \geq 0.67$), median ($0.33 \leq I_j < 0.67$), low ($I_j < 0.33$).

The methodological toolkit and the list of monitoring indicators are universal and can be used to conduct interregional comparisons of development processes of municipalities and to analyze municipalities of a single constituent entity of Russia.

In addition, within the framework of the development monitoring, it is also advisable to organize an assessment of the parameters of intraregional differentiation in the following areas: assessing the scale of differentiation; the level of socio-economic development of municipalities; factors determining differentiation; assessing the effectiveness of regional policy aimed at the development of municipalities. A methodological

approach to organizing such a monitoring of differentiation is presented, for example, in the monograph (Voroshilov, Gubanova, 2019).

The results of testing this methodological toolkit on the materials of three regions of the Northwestern Federal District are presented in *Table 13*.

Table 13. Values of the integral indicator of the level of socio-economic development for municipal districts and urban okrugs of the Vologda and Leningrad oblasts and the Republic of Komi by the end of 2021

Municipal entity	Integral indicator	Development level	Municipal entity	Integral indicator	Development level	
UO Usinsk RK	0.640	Median	MD Udorsky RK	0.270	Low	
MD Lomonosovsky LO	0.537		MD Vashkinsky VO	0.267		
MD Kingiseppsky LO	0.478		MD Chagodoshchensky VO	0.266		
MD Vsevolozhsky LO	0.476		MD Vytegorsky VO	0.266		
UO Vuktyl RK	0.470		MD Totemsky VO	0.265		
UO Vorkuta RK	0.437		MD Volosovsky LO	0.264		
MD Ust-Tsilemsky RK	0.417		MD Vologodsky VO	0.264		
UO Sosnovoborsky LO	0.389		MD Harovsky VO	0.262		
MD Nyuksensky VO	0.385		MD Gryazovetsky VO	0.260		
MD Izhemsky RK	0.372		MD Troitsko-Pechorsky RK	0.260		
MD Syktyvdinsky RK	0.370		MD Kirillovsky VO	0.257		
UO Inta RK	0.367		MD Kirovsky LO	0.257		
MD Priluzsky RK	0.364		MD Sosnogorsk RK	0.253		
MD Syamzhensky VO	0.356		MD Vozhegodsky VO	0.252		
UO Ukhta RK	0.350		MD Gatchinsky LO	0.249		
UO Cherepovets VO	0.345		MD Sheksninsky VO	0.247		
MD Knyazhpogostsky RK	0.337		MD Sokolsky VO	0.247		
MD Kaduysky VO	0.332		MD Tikhvinsky LO	0.247		
MD Kichmengsko-Gorodetsky VO	0.323		MD Cherepovetsky VO	0.242		
MD Ust-Kubinsky VO	0.321		MD Babushkinsky VO	0.242		
MD Ust-Kulomsky RK	0.317	MD Boksitogorsky LO	0.240			
MD Kortkerosky RK	0.314	MD Ustyuzhensky VO	0.238			
MD Ust-Vymsky RK	0.309	MD Belozersky VO	0.234			
MD Kirishsky LO	0.308	MD Mezhdurechensky VO	0.226			
MD Tarnogsky VO	0.304	MD Tosnensky LO	0.222			
MD Koigorodsky RK	0.304	MD Nikolsky VO	0.218			
MD Pechora RK	0.302	MD Lodeynopolsky LO	0.218			
MD Verkhovazhsky VO	0.291	MD Velikoustyugsky VO	0.206			
MD Babaevsky VO	0.289	MD Volkhovsky LO	0.204			
UO Syktyvkar RK	0.289	MD Luzhsky LO	0.203			
UO Vologda VO	0.288	MD Slantsevsky LO	0.199			
MD Vyborgsky LO	0.288	MD Priozersky LO	0.198			
MD Sysolsky RK	0.283	MD Podporozhsky LO	0.194			
Note: UO – urban okrug; MD – municipal district; RK – Republic of Komi; LO – Leningrad Oblast; VO – Vologda Oblast.						

A comparison of the data in Table 13 for municipal districts and urban okrugs of the Vologda Oblast with the data in Table 5 for municipal districts of the Vologda Oblast allowed us to conclude that the results of the calculation of the integral indicator and classification of territories based on a methodology using statistical data from Rosstat's database of indicators for municipalities do not adequately reflect the real situation concerning the level of development of territories. Therefore, it is advisable to monitor the integral level of socio-economic development of municipal entities on the basis of statistical information (statistics collections "Socio-Economic Development of Municipal Districts") published by Rosstat territorial bodies in RF constituent entities, with the use of the methodology presented in VolRC RAS bulletin "Socio-Economic Development of Municipal Districts" and described in the article (Voroshilov, Gubanova, 2014).

Analysis and explanation of the results obtained

In the course of the study, we put forward a scientific and methodological approach to organizing the monitoring of development of municipalities in the region; the approach is based on the use and analysis of statistical and sociological information on the development of municipalities and interregional comparison of their development level. To improve the comprehensive element and consistency of such a monitoring, it is necessary to further elaborate on the issues related to the collection and analysis of available and reliable information in the following areas:

- assessing socio-economic and budgetary effects of the transformation of municipal entities (consolidation of settlements, transformation of municipal districts into municipal districts and urban okrugs, changing the boundaries of municipalities);
- analyzing and assessing the staffing of local self-government bodies (number, qualification,

sufficiency, advanced training, salary of employees of LSG bodies);

- assessing the level of public approval for the work of heads of local administrations, development of public self-government and civil society, forms of people's participation in the development of municipalities;
- evaluating the activities of local self-government bodies in raising additional funds through participation in competitions and grants;
- analyzing international and foreign economic relations of municipalities;
- analyzing the dynamics of small business development, dynamics and structure of investments in fixed assets (including physical volumes), including the implementation of large investment projects;
- analyzing employment and labor resources in the context of sectors;
- tourist flow to the territory of municipal entities;
- identifying and summarizing best practices of municipal management in the region;
- effectiveness of implementation of national projects and the achievement of national goals and objectives of the country's development in the context of municipal entities (resultant and process indicators);
- analyzing the directions and frequency of control and supervision of local self-government bodies by public authorities;
- annually revising and designing the proposals (taking into account the results of the monitoring) to improve state policy in the field of functioning of local self-government in Russia, to improve management in the development of municipal entities with a description of the lists of measures and formulations of amendments to regulatory legal acts.

At the same time, we should note that the system of monitoring the development of

municipal entities can function effectively only if the problems existing in Russian municipal statistics are resolved, restrictions eliminated and the peculiarities of the collection and use of statistical information taken into account (Voroshilov, 2022).

We should add that the expected new stage of local self-government reform will require improving approaches to monitoring the development processes in municipal entities. December 16, 2021, a draft federal law (draft law 40361-8) “On the general principles of organizing local self-government in a unified system of public authority” was submitted to the State Duma of the Russian Federation. January 25, 2022, the draft law was adopted by the State Duma in the first reading. It was planned that the law would come into force on January 1, 2023 with a transitional period until January 1, 2028. However, due to various reasons, further consideration of this draft law has been postponed (most likely until 2024). The draft law provided for the establishment of a single-level system of local self-government (municipal districts, urban okrugs, urban territories of federal cities), establishment of two lists of powers for LSG bodies, increase in the role of various forms of people’s participation in the development of territories, etc. At the same time, the processes of transition to a single-level system of local self-government (transformation of districts into municipal districts and urban okrugs with the abolition of urban and rural settlements) have been actively underway since 2017 and within the framework of the current federal law on local self-government (131-FZ).

In the conditions of the reform of local self-government, it is important to ensure the preservation of the information and statistical base in the

context of the territories of former urban and rural settlements of municipal districts that have been transformed into municipal districts or urban okrugs. This task can be solved centrally (Rosstat could resume collecting at least minimal statistical information in the context of the territories of abolished settlements) or by local self-government bodies of districts and okrugs (independent collection using various methods and information sources of data on key parameters reflecting the development of individual territories of the district or okrug – population, number of enterprises, production indicators of enterprises, investment projects implemented, capacity and condition of key infrastructure facilities, etc.). In addition, it is important to organize system-wide and qualitative monitoring of the development of territorial public self-government, participatory budgeting and the activities of the heads of settlements at the level of municipal districts, municipal okrugs and urban okrugs (where these forms of local self-government are represented): to determine indicators for the monitoring, its frequency, the procedure for collecting and processing information, the procedure for making decisions based on the results of the monitoring, etc.

Thus, the contribution of the research, the results of which are presented in this article, to the development of theoretical science consists in elaborating a methodology for assessing the level of development of municipal entities, allowing for interregional comparisons of territories; the contribution to the development of applied science is that the work substantiates specific recommendations for improving the process of organizing municipal monitoring, taking into account the current state of official statistics.

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Economic Inequality of Citizens beyond Averages: Assessment in the Conditions of its Transformation



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Abstract. Inequality in Russia has been at a consistently high level for 30 years, but it is not permanent or static. New forms of it are emerging, such as digital inequality, inequality of life and work balance, health inequality, inequality of the coronavirus crisis. The difference between the richest and poorest in food consumption in terms of volume is shrinking, but in terms of quality it is growing. The purpose of the study is to substantiate the need to improve approaches to the measurement of economic inequality of citizens on the basis of determining the features of its modern transformation. The hypothesis of the study is that economic inequality in Russia is transforming, and the existing approaches to its assessment do not allow us to comprehensively and objectively determine its current state, which leads to the ineffectiveness of the measures taken by the government to smooth it out. A comparative analysis of the classical indicators of economic inequality was conducted: the Gini coefficient, the Theil, Atkinson, Palma indices, R/P 10% ratio (the ratio of the average income of the richest 10% to the poorest 10%), R/P 20% ratio (the ratio of the average income of the richest 20% to the poorest 20%), decile differentiation ratio (the ratio of the lowest income in the tenth decile to the highest income in the first decile) and quintile differentiation ratio (the ratio of the lowest income in the fifth quintile to the highest income in the first quintile). The results of the assessment of inequality in Russia obtained by eight organizations (Rosstat, CIS Stat, World Bank, Luxembourg Income Study, Credit Suisse, World Inequality Database, UN Development Program, European Bank for Reconstruction and Development) are compared. In Russia, income inequality remains consistently high, wealth inequality is excessive (Credit Suisse estimates the Gini coefficient

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at 0.88), and opportunity inequality is less significant in comparison to them. It is proved that the classical statistical indicators do not reflect the transformation of economic inequality, new markers are needed for this. Rosstat estimates income inequality and consumption inequality, leaving out wealth inequality and nonmonetary manifestations of economic inequality. Four directions for improving approaches to the diagnostics of economic inequality in Russia were identified: a qualitative assessment of the manifestations of consumption inequality, nonmonetary manifestations of economic inequality, wealth distribution and the increase in income differentiation within the groups of the wealthiest citizens.

Key words: income inequality, wealth inequality, consumption inequality, opportunity inequality, transformation of inequality, smoothing, Gini coefficient, Rosstat, inequality assessment.

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Introduction

Inequality is one of the key global socio-economic problems of mankind. The current conditions of geo-economic turbulence, exacerbated by the beginning of the coronavirus crisis and the special military operation in Ukraine, carry the risks of increasing inequality, which may become, to some extent, critical for society. As Nobel Prize laureate in economics J. Stiglitz notes, “inequality gives rise to instability, the instability itself gives rise to more inequality, one of the vicious cycles” (Stiglitz, 2012, p. 156).

For Russia, this instability is exacerbated by sanctions pressure, and also by a sharply increased budget deficit since the beginning of 2023. Against the background of growing risks, it must be stated that inequality in Russia has been at a high level for 30 years since the beginning of market transformations. Thus, the Gini coefficient, as a classic indicator of income inequality of citizens, according to Rosstat, exceeds 0.4 and in 2021 is 0.409¹. Today, the task of overcoming inequality is set in Russia at the highest state level, even under conditions of unprecedented sanction pressure on

the economy². In the current environment, the problem of inequality requires special attention from the government, because the current economic uncertainty in Russia, coupled with a possible exacerbation of the citizens’ inequality problem, can lead to the realization of risks to socio-economic stability. Stiglitz also pointed out, that inequality increases economic instability, which leads to political instability (Stiglitz, 2012, p. 223). This is very important for Russia today because, as V.A. Ilyin and M.V. Morev noted, “long-term unresolved issues related to the increase of the level and quality of life which would be noticeable by wider population, as well as more equitable distribution of national wealth, has a negative impact on the dynamics of public opinion regarding the efficiency of the system of public administration and the President’s activities” (Ilyin, Morev, 2020, p. 29).

Despite the stability of inequality in Russia, it is not permanent or static. Inequality finds new forms of manifestation, such as in access to

¹ Gini coefficient. Rosstat. Available at: <https://rosstat.gov.ru/folder/13723> (accessed: March 3, 2023).

² Meeting on measures of social and economic support of regions. Official website of the RF President, dated March 16, 2022. Available at: <http://www.kremlin.ru/events/president/news/67996> (accessed: March 12, 2023).

medicine (Whitehead, Dahlgren, 2007) and education, on forms of leisure activities (Platt, 2019), environmental³ (Osipova, 2021, p. 81; Hamann et al., 2018) or environmental inequality (Bartone, 2002, p. 158), digital inequality (Schullerr-Zwierlein, Zillien, 2013; Deursen, Dijk, 2014; Robinson et al., 2015; Yates et al., 2015), life and labor balance inequality (Mareeva, 2019), and coronavirus crisis inequality (Milovidov, 2021).

Changes in the manifestation inequality are also expressed in an increase in the qualitative gap, while quantitative indicators may be stable. This applies, for example, to differences in the quality of products and services consumed by the most and least affluent citizens while maintaining the volume of consumption. This may be the reason for an increase in the subjective assessment of citizens' perception of inequality (Belekhova, 2023, p. 180).

In other words, the inequality of citizens is being transformed. By transformation of inequality we propose to understand its changes as a phenomenon in the practical level, the emergence of its new forms and the manifestations and the disappearance of the old ones. For example, while in the first half of the 20th century inequality in access to electricity or kerosene consumption might have been significant, today it is not relevant, and the availability of access to 4G/5G communication and high-speed Internet has become significant. The most significant, in our opinion, are currently the following transformations of economic inequality, which became the focus of this study: qualitative transformation of consumption inequality, not fixed by quantitative statistical indicators, differentiation of nonmonetary manifestations of economic inequality (access to education, medicine, communications, environmental inequality),

increasing income differentiation and inequality in the distribution of wealth. Such trends remain beyond the scope of observation and averages. These are mostly qualitative changes. "The economic factors underlying the "classic" understanding of social inequality, are increasingly moving into the background, giving way to non-economic factors that determine not a quantifiable standard of living, but rather a kind of integral satisfaction with it" (Milovidov, 2021, p. 65).

Despite wide of coverage by domestic science of the problem of citizens' inequality and research on the prospects for overcoming it, the issues of the need to change approaches to the diagnosis of inequality of citizens in its modern transformation remain outside the scope of research, which indicates the presence of a gap in scientific knowledge. At the same time, there are proposals to use the experience of foreign statistical services and international organizations in measuring inequality on the basis of equivalent income (Surinov, Luppov, 2020). Of interest are developments in nonmonetary indices of inequality – based on multidimensional poverty, material deprivation and social exclusion (Moiseeva, 2019) and the subjective approach to the definition of poverty by individuals themselves (Slobodenyuk, 2014). Foreign researchers, using economic-mathematical methods, propose an approach to assessing multidimensional inequality – based on income, expenses and ownership (Lugo, 2005; Araar, 2009; Yang et al., 2023), and the multidimensionality may not consist in a combination of these three indicators, but in assessing inequality simultaneously on these three manifestations – in three-dimensional space (Hajdu, 2021).

Most domestic researchers are focused on substantiating changes in approaches to assessing the poverty level within, for example, the expert method of determining equivalent income (Zhmachinskii, Cherneva, 2018) or analyzing the

³ Inequality in the distribution of environmental benefits: inequality in the influence of nature on society and people and the impact on them of the features of the urban environment in which most of the world's population lives today; asymmetric distribution of knowledge about environmental problems and ways to solve them.

possibilities of applying international assessment standards (Kubishin et al., 2021), and the implementation of the Eurostat approach in terms of the AROPE index⁴ (Korchagina et al., 2019). In the applied aspect, there are changes in this direction, in contrast to the approaches to measuring inequality, which remain classical. For example, Rosstat is developing approaches to measuring nonmonetary poverty and multidimensional poverty⁵.

Modern economic science has not developed a unified approach to the definition of economic inequality. In the context of this study, we will understand that approach as inequality of wealth in the broad sense, in distinguishing between inequality of current income, inequality of accumulated capital or wealth, and inequality of consumption. Economic inequality is a narrower category than social or socio-economic inequality, which in addition to differences between income, wealth, consumption and access to benefits is dictated by the impact of various non-economic factors, which differentiate social status, such as sex, age, level of education, birth in urban or rural areas, etc.

The hypothesis of the study is that the economic inequality of citizens in Russia is transforming, and the existing approaches to its assessment do not allow us to comprehensively and objectively determine its current state, which among other

⁴ AROPE (at Risk of Poverty or Social Exclusion) is the share of the population at risk of poverty or social exclusion, corresponding to the sum of people who are either at risk of poverty, in a difficult material and social situation, or living in a household with a very low intensity of work. This is the main indicator for monitoring the EU poverty and social exclusion target for the period up to 2030 and for monitoring the poverty target in the EU Strategy 2020. Source: AROPE. Eurostat. Available at: https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Glossary:Persons_living_in_households_with_low_work_intensity (accessed: March 13, 2023).

⁵ Report at the meeting of the Scientific and Methodological Council of the Federal State Statistics Service "On improving the methodological provisions for the calculation of nonmonetary poverty indices based on sample observations of socio-demographic problems". Rosstat. Available at: https://www.gks.ru/free_doc/new_site/rosstat/NMS/doc-frol.pdf. (accessed: March 14, 2023).

things leads to the inefficiency of the measures taken by the state to smooth it out.

The aim of the study is to substantiate the possibility of improving approaches to the diagnosis of economic inequality of citizens on the basis of determining the directions of its modern transformation.

The objectives of the study, aimed at achieving this purpose:

- to highlight and compare key statistical indicators of economic inequality of citizens;
- to summarize the results of a comparative analysis of economic inequality in Russia according to Rosstat and international organizations;
- to identify opportunities for improving approaches to the diagnosis of economic inequality of citizens in the conditions of its modern transformation.

The scientific novelty of the study consists in substantiating the possibility of improving approaches to the diagnosis of economic inequality of citizens in Russia in conditions of its transformation: the need for a qualitative assessment of inequality, assessment of nonmonetary manifestations of economic inequality, wealth distribution and increasing income differentiation within groups of the most affluent citizens.

The results can be used by Rosstat, other statistical organizations, and scientists for developing more effective ways to measure inequality. This is the practical significance of the study.

Methods and information base of the study

In order to identify promising areas for improving approaches to assessing inequality, we summarized the information on the classical indicators of concentration and entropy: the Gini coefficient, the Theil, Atkinson and Palma indices, R/P 10% ratio (the ratio of the average income of the richest 10% to the poorest 10%) and R/P 20% ratio (the ratio of the average income of the richest 20% to the poorest 20%) and decile differentiation ratio (the ratio of the lowest income in the tenth

decile to the highest income in the first decile) and quintile differentiation ratio (the ratio of the lowest income in the fifth quintile to the highest income in the first quintile), a comparative analysis of these indicators was carried out.

Based on data from eight organizations – Rosstat, CIS Stat, World Bank, Luxembourg Income Study, Credit Suisse, World Inequality Database, UN Development Program, European Bank for Reconstruction and Development (EBRD) – the results of inequality assessment in Russia are compared and the directions of its transformation, requiring improvement of approaches to its assessment in terms of income, wealth and consumption inequality are highlighted.

Statistical analysis and the analysis of series of dynamics are used to illustrate changes in the level of citizens' inequality in Russia. Vertical analysis is used to assess the consumption structure of different income groups.

The information base of the study on the inequality level in Russia and its methodological approaches to its measurement was formed by data from Rosstat and the mentioned international organizations.

Approaches of Rosstat and international organizations to measuring inequality of citizens

Let us consider various approaches to measuring inequality. Information about the indicators of inequality calculated by Rosstat and international organizations is summarized in *Table 1*.

Table 1. Indicators of citizens' inequality

Indicators	Identifier	Characteristic	Calculation formula	Organizations
Gini coefficient	<i>G</i>	The concentration ratio. Demonstrates how much the actual distribution of income deviates from a completely uniform distribution. It takes values from 0 to 1, where 0 is a situation of absolute equality, 1 is absolute inequality. The entire set is taken into account, it allows us to compare the inequalities of different sets.	$G = \left 1 - \sum_{i=1}^{k-1} (Y_{i+1} + Y_i) \times (X_i - X_{i+1}) \right $, where Y_i – cumulative share of income indicator, X_i – cumulative share of observations (population/households), k – number of intervals in the cumulative series	Rosstat, CIS Stat, Eurostat, OECD, World Bank, Luxembourg Income Study, Credit Suisse (by wealth), World Inequality Database (by wealth), UN Development Program, EBRD (by opportunities)
Theil index	<i>T</i>	The entropy indicator, shows how far from equality the distribution of income is. It ranges from 0 to infinity, where 0 is an absolutely equal distribution. The entire set is taken into account.	$T = \frac{1}{N} \times \sum_{i=1}^N \left(\frac{x_i}{\bar{x}} \times \ln \frac{x_i}{\bar{x}} \right)$, where x_i – income of the <i>i</i> -th citizen, N – number of citizens	World Bank
Atkinson index	<i>A</i>	The entropy indicator, which allows us to take into account the degree of non-acceptance of inequality by citizens. Accepts values from 0 to 1, where 0 is absolute equality, 1 is absolute inequality.	$A = 1 - \left(\frac{1}{N} \times \sum_{i=1}^N \left(\frac{x_i}{\bar{x}} \right)^{1-\varepsilon} \right)^{\frac{1}{1-\varepsilon}}$, where x_i – income of the <i>i</i> -th citizen, N – number of citizens, ε – a parameter of society's perceptions of the permissible depth of inequality	Luxembourg Income Study, UN Development Program

End of Table 1

Indicators	Identifier	Characteristic	Calculation formula	Organizations
Palm coefficient	P	The concentration indicator, represents the ratio of total incomes of the tenth decile to the 40% of citizens with the lowest incomes. Does not take into account the distribution in the middle groups.	$P = \frac{x_{10}}{x_1 + x_2 + x_3 + x_4},$ <p>where x_i – total monetary income of the i-th decile</p>	UN Development Program, OECD
R/P 10% ratio	k_1	The ratio of average income of the tenth and first decile. Does not take into account the income distribution of 80% of the population	$k_1 = \frac{\bar{x}_{10}}{\bar{x}_1},$ <p>where \bar{x}_{10} – average income of the tenth decile, \bar{x}_1 – average income of the first decile</p>	Rosstat, CIS Stat, OECD, World Bank
Decile differentiation ratio	k_2	The ratio of the lowest income in the tenth decile to the highest income in the first decile.	$k_2 = \frac{x_9}{x_1},$ <p>where x_9 – income of the poorest citizen in the tenth decile, x_1 – income of the richest citizen in the first decile</p>	Rosstat, Luxembourg Income Study
R/P 20% ratio	k_3	Ratio of average income of the fifth and first quintile. It is the analogue to the decile, but allows us to track changes in a larger group of citizens due to the coverage of data for 40% of the population.	$k_3 = \frac{\bar{x}_5}{\bar{x}_1},$ <p>where \bar{x}_5 – average income of the fifth quintile, \bar{x}_1 – average income of the first quintile</p>	Rosstat, CIS Stat, Eurostat, World Bank, UN Development Program
Quintile differentiation ratio	k_4	The ratio of the lowest income in the fifth quintile to the highest income in the first quintile.	$k_4 = \frac{x_4}{x_1},$ <p>where x_4 – income of the poorest citizen in the fifth quintile, x_1 – income of the richest citizen in the first quintile</p>	Luxembourg Income Study
According to: (Kostyleva, 2011, pp. 30–41; Salmina, 2019; Klasen et al., 2016; Pyatt et al., 1980).				

Rosstat collects and summarizes a lot of information for assessing inequality. On the official website of Rosstat, in the section “Inequality and poverty”⁶, data since 1995 are accumulated in the following areas:

- inequality in the money income distribution;
- differentiation of salary;
- inequality in consumption.

For the Russian Federation as a whole and in the regional context, inequality in the distribution of the population’s money income is estimated by decile (10%) or quintile (20%) groups and also by the Gini coefficient, R/P 10% ratio and R/P 20% ratio, decile and quintile differentiation ratio. These

⁶ Inequality and poverty. Rosstat. Available at: <https://rosstat.gov.ru/folder/13723> (accessed: March 18, 2023).

data are generated annually based on a random survey of household income and participation in social programs (VNDP) for 60,000 households. Salary, income of the self-employed, income from property, pensions and benefits are taken into account. Also, the source of data is the official statistical reporting of economic entities.

Differentiation in salary is assessed not only in the regional, but also in the industry section, and also according to the forms of ownership of organizations-employers. These data are used to calculate the decile differentiation ratio. In addition to the official statistical reporting to assess the differentiation of salary, Rosstat conducts a sample survey of the number of employees’ distribution by the size of accrued salary. Inequality in consumption

is estimated by Rosstat by final consumption expenses, the structure of consumer spending, food consumption and daily ration of households by decile groups. The data on the resource are presented since 2005, there is no regional context.

The CIS Stat relies on data from national statistical authorities and summarizes information on the Gini coefficient and R/P 10% ratio and R/P 20% ratio⁷.

Eurostat assesses citizens' income inequality by the Gini coefficient and the R/P 20% ratio based on the concept of equivalent disposable income, and also pays serious attention to age and gender inequality⁸. There are no data about Russia.

The OECD calculates the Gini coefficient, the Palm Index and the R/P 10% ratio to measure income inequality and inequality in the distribution of wealth. The assessments of gender inequality, inequality in entrepreneurship, employment, level of education, self-assessment of health and life satisfaction are original. The OECD database contains standardized measures of inequality, derived from the concept of equivalent disposable household income from household finance surveys, carried out by the national statistical authorities of participating countries⁹. There are no data about Russia.

The World Bank estimates the level of inequality across countries by accumulating separate data since the 1980s on such indicators as the Gini index, the Theil index, average consumption rates of citizens, shares of income by decile and quintile groups, using which we can also calculate R/P 10% and R/P 20% ratios¹⁰. The World Bank estimates the level of inequality in Russia based on Rosstat data, using adjustments to approximate the income distribution.

⁷ Population, employment and living conditions in the countries of the Commonwealth of Independent States – 2020. CIS Statistics Database. Available at: <http://www.cisstat.info/0base/frame-rus.htm> (accessed: March 18, 2023).

⁸ Database. Eurostat. Available at: <https://ec.europa.eu/eurostat/web/main/data/database> (accessed: March 18, 2023).

⁹ Social protection and well-being. OECD.Stat. Available at: <https://stats.oecd.org/> (accessed: March 18, 2023).

¹⁰ Poverty and Inequality Platform. The World Bank Data. Available at: <https://pip.worldbank.org/#> (accessed: March 18, 2023).

The Luxembourg Income Study includes data on the Gini and Atkinson indices, the decile and quintile differentiation ratios, and the ratios of income of the bottom of the upper decile to the average income. In all key measures of inequality, the Luxembourg Income Study uses equivalent income, which is equal to the unadjusted household income divided by the square root of the number of household members, assuming that all household members have the same equivalent income, regardless of age, sex or relationship to the head of household¹¹. The source of the Luxembourg Income Study for Russia is Rosstat data.

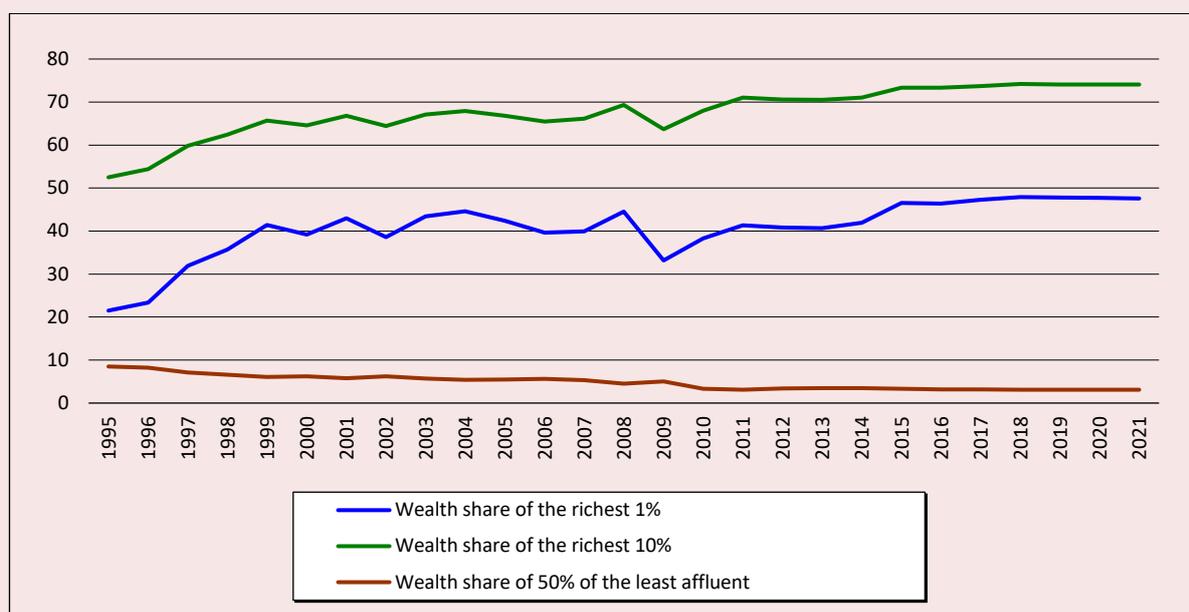
A fundamentally different manifestation of inequality is estimated by Credit Suisse and the World Inequality Database – inequality in the distribution of wealth.

The World Inequality Database collects information on income and wealth inequality by such indicators as the share of income of the richest 1% and 10%, the share of income of the poorest 50%, and the Gini index. For Russia, data on income inequality has been available since 1905, and on wealth inequality since 1820. This is the broadest set of data, including periods not only of the USSR, but also of the Russian Empire. In 2021, the wealth of the richest 1% of Russians was 47.6% and the richest 10% had 74.1% of total wealth, while the 50% of the least wealthy Russians had 3.1% of wealth¹². The dynamics of wealth concentration indicators is presented in *Figure 1*. Since 1995 the wealth of the richest 1% has grown 2.2-fold from 21.5% to 47.6%, i.e. nowadays 1% of the wealthiest citizens in Russia owns almost half of all the wealth. Against this background, the welfare of the poorest 50% of Russians has declined significantly: the share of their wealth in its total volume has declined 2.7-fold since 1995, from 8.5% to 3.1%.

¹¹ LIS Inequality and Poverty Key Figures. Luxembourg Income Study. Available at: <http://www.lisdatacenter.org> (accessed: March 18, 2023).

¹² Russian Federation. World Inequality Database. Available at: <https://wid.world/country/russian-federation/> (accessed: March 18, 2023).

Figure 1. Dynamics of inequality in the distribution of wealth in Russia, 1995–2021



Source: Russian Federation. World Inequality Database. Available at: <https://wid.world/country/russian-federation/> (accessed: March 18, 2023).

The database of Credit Suisse, one of the largest financial and banking groups in Switzerland¹³, reports on the global distribution of wealth. The report is based on the integration of estimates of household financial assets, an estimate of the relationship between the distribution of total wealth and the distribution of income, and Forbes data on the number of billionaires by country. The degree of inequality is estimated on the basis of the Gini index of wealth in individual countries. For Russia, the data in the 2022 report are shown in the dynamics from 2000 to 2021. They indicate an increase in wealth inequality: the Gini index of wealth rose from 0.84 in 2000 to 0.88 in 2021, reaching 0.9 in 2010. This is an excessive level of inequality in the distribution of wealth. By comparison, it was 0.647 in Japan and 0.701–0.726 in China, France, the UK and Canada. In addition, the report accumulates

¹³ In March 2023, absorbed by the largest financial conglomerate in Switzerland – UBS. See: UBS bought Credit Suisse. RBC. Available at: https://www.rbc.ru/finances/19/03/2023/641756b59a79473e297de03a?from=article_body (accessed: March 18, 2023).

data on the concentration of wealth. For the richest 1%, 5% and 10% of Russians, it is 58%, 77% and 83%, respectively¹⁴.

Particularly noteworthy is the assessment of nonmonetary inequality of citizens, conducted by the UN Development Program and the European Bank for Reconstruction and Development (EBRD).

The UN Development Program estimates the Human Development Index (HDI) for countries adjusted for inequalities in life expectancy, education and income. Income inequality is measured by the Gini index, the Palm index and R/P 20% ratio. In its calculations, the UN is guided both by its own data and by data from the World Bank, the Luxembourg Income Study and Eurostat. For Russia, nonmonetary inequality is significantly lower than monetary inequality. For example, in

¹⁴ Global Wealth Report 2022. Credit Suisse. Available at: <https://www.credit-suisse.com/about-us/en/reports-research/global-wealth-report.html> (accessed: March 18, 2023).

2019, the inequality in education was 4.2%, and for life expectancy it was 7.1%¹⁵.

The EBRD's 2016–2017 Transition Report explores inequality of opportunity – the impact of birth circumstances (sex, ethnicity, place of birth, parents' education and membership in the Communist Party) on opportunities for quality education, jobs and high income. The Gini index of opportunity and the index of relative inequality of opportunity, which characterizes the share of income inequality of citizens, explained by the dispersion of opportunity inequality, are assessed.

In Russia in 2016, the Gini index of opportunity exceeded 0.3, and the index of relative inequality of opportunity was about 0.35. Among the factors under consideration, sex, place of birth (urban or rural), and parents' education had a more significant effect on income inequality in Russia. Ethnicity and parents' membership in the Communist Party had no significant effect on income inequality¹⁶.

Generalized data on the economic inequality of Russians as estimated by Rosstat and international organizations are shown in *Table 2*.

Table 2. Indicators of economic inequality of Russian citizens according to Rosstat and international organizations in 2000–2020

Indicator	Source	2000	2010	2020*
Gini coefficient by income	Rosstat	0.395	0.421	0.406
	CIS Stat	0.397	0.421	0.403
	World Bank	0.371	0.395	0.36
	Luxembourg Income Study	0.427	0.342	0.323
	UN Development Program	no data	no data	0.377
Gini coefficient by wealth	Credit Suisse	no data	0.706	0.878
	World Inequality Database	0.60	0.55	0.58
Theil index	World Bank	0.263	no data	no data
Atkinson index ($\epsilon = 0.5$)	Luxembourg Income Study	0.159	0.101	0.085
Palm coefficient	UN Development Program	no data	no data	1.6
R/P 10% ratio	Rosstat	13.9	16.6	14.9
	CIS Stat	13.9	16.6	14.5
	World Bank	11.0	12.2	9.4
Decile differentiation ratio	Rosstat	н/д	н/д	6.9
	Luxembourg Income Study	6.9	4.8	4.3
R/P 20% ratio	Rosstat	7.9	9.2	8.6
	CIS Stat	8.0	9.2	8.4
	World Bank	6.8	7.3	5.9
	UN Development Program	no data	no data	6.6
Quintile differentiation ratio	Luxembourg Income Study	3.39	2.69	2.55

* Or data for the last available year.

According to: Inequality and poverty. Rosstat. Available at: <https://rosstat.gov.ru/folder/13723> (accessed: March 18, 2023); Population, employment and living conditions in the countries of the Commonwealth of Independent States – 2020. CIS Statistics Database. Available at: <http://www.cisstat.info/Obase/frame-rus.htm> (accessed: March 18, 2023); Poverty and Inequality Platform. The World Bank Data. Available at: <https://pip.worldbank.org/#> (accessed: March 18, 2023); LIS Inequality and Poverty Key Figures. Luxembourg Income Study. Available at: <http://www.lisdatacenter.org>. (accessed: March 18, 2023); Russian Federation. World Inequality Database. Available at: <https://wid.world/country/russian-federation/> (accessed: March 18, 2023); Global Wealth Report 2022. Credit Suisse. Available at: <https://www.credit-suisse.com/about-us/en/reports-research/global-wealth-report.html> (accessed: March 18, 2023); Human Development Reports. United Nations Development Programme. Available at: <https://web.archive.org/web/20190728091531/http://hdr.undp.org/en/composite/IHDI> (accessed: March 18, 2023).

¹⁵ Human Development Reports. United Nations Development Program. Available at: <https://web.archive.org/web/20190728091531/http://hdr.undp.org/en/composite/IHDI> (accessed: March 18, 2023).

¹⁶ Transition Report 2016–17. European Bank for Reconstruction and Development. Available at: <https://www.ebrd.com/news/publications/transition-report/transition-report-201617.html> (accessed: March 18, 2023).

A comparative analysis of economic inequality indicators in Russia shows significant differences in the estimates of different organizations and even the absence of a single trend in their dynamics, and also the difference in the characteristics of the level of inequality on these indicators. For example, Rosstat estimates income inequality according to the Gini coefficient at a stable level of ≈ 0.4 , which is a high level; the World Bank and the UN Development Program estimate it at a lower level of 0.36–0.38, but it is also stable, while the Luxembourg Income Study records a decline in the Gini coefficient for income in Russia from 0.427 in 2000 to a moderate 0.323 in 2020.

Thus, at present Rosstat, just like international organizations, currently analyzes income inequality, which in Russia is estimated as high. Rosstat, unlike many international organizations, estimates inequality of consumption of citizens. However, there are no data on wealth inequality and nonmonetary manifestations of economic inequality, which makes it impossible to study inequality in Russia in all its manifestations, taking into account that wealth distribution inequality is estimated as excessive.

Directions for improving the assessment of inequality in its transformation

“Assessing inequalities in human development demands a revolution in metrics”, – such was the conclusion of the UN Development Program’s 2019 Human Development Report¹⁷. It is obvious that the task set at the highest state level in Russia to smooth the inequality of citizens in the conditions of its transformation requires the development of new adaptive approaches to its measurement.

Rosstat has made significant progress in measuring income and consumption inequality among citizens, but inequality is now finding new

manifestations that need to be diagnosed and assessed. According to thesis of the UN Development Program’s 2019 Human Development Report, “tackling inequality starts with good measurement”¹⁸. Therefore, we will consider four key areas, in our opinion, requiring the development of approaches to assessing inequality for its further study and development of proposals for its smoothing: the qualitative transformation of consumption inequality; nonmonetary manifestations of economic inequality; increasing income differentiation of the wealthiest citizens; inequality of wealth distribution.

1. The qualitative transformation of consumption inequality.

Compared with the 1990s and the early 2000s, the level of poverty and extreme poverty in Russia has significantly decreased, but income inequality remains stably high. At the same time, gaps in consumption indicators between the extreme social groups – the most and the least affluent citizens – are narrowing. Thus, R/P 10% ratio for final consumption expenditures from 2012 to 2021, according to Rosstat¹⁹, decreased from 8.28 to 7.97-fold. Final consumption expenditures in 2021 for the tenth decile group amounted to 55,3 thousand rubles per month per person, and for the first decile group – 6,9 thousand rubles. The indicators of the consumption structure by the first and tenth decile groups in 2012 and 2021 are presented in *Table 3*.

The basis of consumption expenses of the poorest citizens is represented by expenses for homemade food – 51.3%, the share of these expenses has increased since 2012. For the most affluent citizens, the basis of expenditures consists of expenditures on transportation – 25.8%, homemade food – 19.8%. In the structure of expenses of the most affluent citizens over the least

¹⁷ Human Development Report 2019. Beyond income, beyond averages, beyond today: Inequalities in human development in the 21st century. UN Development Program. Available at: http://hdr.undp.org/sites/default/files/hdr_2019_ru.pdf (accessed: March 20, 2023).

¹⁸ Ibid.

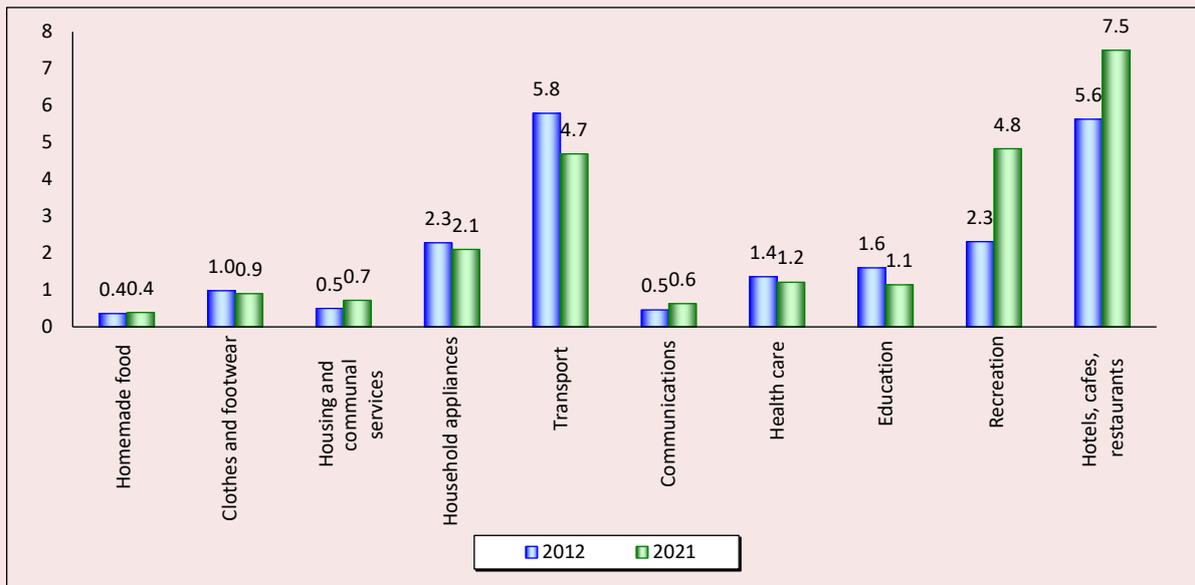
¹⁹ Inequality and poverty. Rosstat. Available at: <https://rosstat.gov.ru/folder/13723> (accessed: March 18, 2023).

Table 3. Consumption patterns of the first and tenth decile groups in 2012 and 2021

Item of expenditure	First R/P 10% group			Tenth R/P 10% group		
	2012, %	2021, %	Change, p.p.	2012, %	2021, %	Change, p.p.
Homemade food	48.0	51.3	3.3	17.1	19.8	2.7
Clothes and shoes	8.0	7.7	-0.3	7.8	6.9	-0.9
Housing and communal services	15.7	13.5	-2.2	7.8	9.7	0.9
Household appliances	2.9	2.9	0	6.6	6.1	-0.5
Transport	6.1	5.5	-0.6	35.3	25.8	-9.5
Communications	4.8	5.6	1.2	2.2	3.5	1.3
Health care	2.2	2.9	0.7	3.0	3.5	0.5
Education	0.5	1.2	0.7	0.8	0.8	0
Recreation	2.9	1.8	-0.9	6.7	8.7	2.0
Hotels, cafes, restaurants	0.8	0.6	-0.2	4.5	4.5	0

According to: Inequality and poverty. Rosstat. Available at: <https://rosstat.gov.ru/folder/13723> (accessed: March 18, 2023).

Figure 2. Dynamics of the ratio of the structure of expenditures of the tenth and the first R/P 10% in Russia in 2012, 2021, fold



According to: Inequality and poverty. Rosstat. Available at: <https://rosstat.gov.ru/folder/13723> (accessed: March 18, 2023).

affluent are the expenses for transport, recreation, hotels, cafes, restaurants, household appliances. The differences in the consumption patterns of the first and tenth decile groups and also their dynamics are presented in *Figure 2*.

A steady excess of the share of expenditures of the tenth decile group over the first decile group was in hotels, cafes and restaurants (7.5-fold more), recreation (4.8-fold more), transport (4.7-fold

more). At the same time, the excess in hotels, cafes and restaurants, and recreation has increased significantly from 2012 to 2021. A greater share of the least affluent citizens than of the rich, was formed for homemade food, housing and communal services, communications, clothes and shoes. In total, expenditures on these items of expenditure account for up to 80% in the consumption structure of poor citizens, while the rich have up to 40%.

Despite the decrease in absolute differences in consumption, there is a divergence in the latter. The poor began to consume more in kind, but there is a question about the qualitative difference in this consumption. The most affluent citizens choose the highest quality products and services: healthy foods without GMOs and animal fat substitutes, fast and stable Internet access, paid medical and educational services, etc. The most affluent citizens have the option of ordering ready-to-eat meals from restaurants, organic products from specialized online stores (such as VkusVill) or directly from farmers, which allows them to provide a better quality of consumption while saving time. While the least affluent citizens are forced to consume lower-quality goods and services, and this demand is currently being satisfied, for example, with the expansion of supermarkets of everyday goods of so-called “underselling price” (Svetofor, Mayak), which are becoming more popular with citizens of middle-income groups as well.

The transformation of consumption inequality in the qualitative aspect becomes more significant than in the quantitative aspect, and increases the divergence in consumption between citizens of different income groups. Such qualitative shifts in consumption inequality are not monitored by quantitative measurements, they are beyond averages.

The qualitative transformation of inequality requires the development of new approaches to the definition of contemporary transforming consumption inequality. If this problem is not solved, we will not be able to obtain an objective assessment of inequality dynamics, we will not be able to develop effective measures to overcome it. The solution could be a double assessment of indicators – in kind and in value terms, and also accounting for quality markers, where it is possible, for example, the quality of the Internet and communication by standard/technology – 5G, 4G, etc. (Pugachev, 2022, p. 1329).

2. The nonmonetary manifestations of economic inequality.

J. Stiglitz notes, that the fundamental contribution to the development of income inequality in the US over the last 30 years has been made by rent-seeking behavior (Stiglitz, 2012). We suppose, that for Russia it is more clearly expressed in terms of dependence on the export of raw materials.

The objective causes of inequality lie in the different conditions of access of social groups to limited economic resources, social benefits and political power (Rossoshanskii, 2019). On the other hand, economic inequality also affects inequality of access to goods. Nonmonetary manifestations of economic inequality, i.e. nonmonetary manifestations of income, wealth and consumption inequality, consist of differentiation in access to education, professional development, medicine, public goods, transportation and communications, infrastructure, inequality in self-assessment of health, inequality in employment specifics (respect for basic employee rights, availability of an influence resource at work, additional social benefits from the employer), access to social networks, inequality of social capital (for example, the presence of people who can help solve problems), inequality of subjective well-being (for example, planning one’s life, confidence in the future).

Nonmonetary manifestations of economic inequality in Russia are also currently undergoing transformation. For example, the concentration of favorable conditions of employment, opportunities for professional development, self-assessment of health, the availability of social capital in the income group of the most affluent citizens is increasing. Researchers have noted the deterioration in the position of the middle class in recent years. For key nonmonetary inequalities, the differentiation between income groups is quite high. The position in the coordinate system of nonmonetary inequalities distinguishes to a greater extent the most, rather than the least prosperous strata of the population

from all other Russians (Mareeva, 2021, p. 89). The digital inequality and inequality in access to social networks stand out here. Today, it is not the availability of access to the Internet and social networks that differentiates the wealthiest citizens from the others, but rather the lack of such access distinguishes the poor. Thus, economic inequality in its nonmonetary manifestations generally rises by increasing the concentration of well-being in the upper income groups.

At the same time, according to the international estimates we discussed above, inequality of opportunity in Russia is at a relatively low level. However, these assessments raise some questions, such as the effect of parents' wealth on opportunity inequality. For today's working-age citizens, indeed, the impact of this factor is low due to the legacy of their parents' Soviet equalization. We can expect that for future generations, the children of the current working-age population, this factor is expected to be significant.

Inequality in access to education and health care is of concern. The development of the private sector in these markets has given rise to increasing differentiation. At the same time, the introduction of the Unified State Exam had a positive impact on smoothing inequality in access to higher education, but the emergence of private schools and medical clinics significantly increases inequality, as the wealthiest citizens can get better medical and educational services at high cost, objectively unaffordable for the poor.

The evaluation of nonmonetary manifestations of economic inequality according to official statistical data is not carried out in Russia today. The Rosstat has data for such an assessment, first of all, these are data characterizing the standard of living and quality of life (for example, the degree of penetration of high-speed Internet, the share of university students in the total population, the provision of medical institutions, etc.), formed in the framework of households' surveys, among other

things. These data should be systematized, primarily in the context of decile groups, in order to provide an assessment of inequality.

3. The increasing income differentiation of the wealthiest citizens

One of the trends, which is not assessed by domestic statistics, is an increase in income differentiation of the wealthiest citizens. One of the significant causes of inequality is a large gap in the incomes of company management and ordinary employees. In general, such a gap in large companies now reaches 320-fold. In 1989, more than 30 years ago, this difference was significantly smaller – 61:1 (Sokolova, 2022).

This trend also remains outside the scope of official statistics, as Rosstat does not assess it. Thus, since the 1990s, the share of income of the richest 20% of citizens has remained stable – 50% of income²⁰, which in total is about 8–10-fold higher, than the income of the poorest 20%. At the same time, this is not evidence of static inequality: during the same period there was an increase in inequality in the tenth decile group, and income differentiation intensified. A positive shift in this direction was the fact, that in 2022 Rosstat assessed income inequality not only by quintile groups, but also by decile groups.

Before 2022, Rosstat assessed income inequality by the Gini coefficient and the R/P 20% ratio. In 2022, Rosstat has assessed inequality by decile groups. According to data for the 2nd quarter of 2022, the average income of the most affluent Russians reached 132.9 thousand rubles, which is 15-fold higher, than the average income of the first decile group, which was only 8.86 thousand rubles, that is, almost 40% below the minimum subsistence level. Rosstat emphasized, that “the transition to the 10% breakdown is needed in order

²⁰ Distribution of total monetary income by 20 percent of the population. EMISS. State Statistics. Available at: <https://www.fedstat.ru/indicator/31400> (accessed: March 4, 2023).

to see more deeply and concretely the situation with the incomes of low-income groups in particular, and to make targeted, maximally focused decisions”²¹. Of course, this is a necessary step, but today it is no longer sufficient, because it is also important to monitor the differentiation within the group of the most affluent citizens. In this regard, a more detailed, fractional assessment of income in the top tenth decile group with the allocation of the most affluent 1%, 0.1%, 0.01%, etc. is necessary.

4. The inequality of wealth distribution.

Russia also does not have a statistical basis for wealth inequality, which, according to Credit Suisse and the World Inequality Database, is excessive, as we have shown above. The key trend in the dynamics of monetary inequality in Russia is the continued accumulation of wealth by a narrow circle of citizens. 0.0001% of the adult population in Russia – about 500 “super-rich” citizens – own 40% of all financial assets of Russians, or \$640 billion²². According to Forbes²³, in a pandemic year (March 2020–March 2021), the combined wealth of Russian billionaires grew by \$207 billion, to a record \$663 billion. 84.8% of Russia’s wealth is concentrated among the richest 10% of Russians. The main wealth is in the hands of a narrow circle of people, who continue to accumulate the main results of economic growth. Fewer dollar millionaires in Russia compared to other countries also confirms the uneven distribution of wealth (Anisimova, 2018). Since there are no official statistics on wealth inequality in Russia, the introduction of appropriate indicators and the beginning of the production of

statistical information on them opens up broad prospects for the development of assessment and research on inequality in the distribution of wealth.

Discussion

Solving the problem of citizens’ inequality in Russia requires a comprehensive approach, which also involves a reliable assessment of the economic inequality of citizens in all its manifestations – inequality of current income, wealth and consumption. The current approaches to the assessment do not allow us to diagnose the transformation of inequality, which makes it necessary to improve its indicators. The relevance of solving this problem increases the interrelation of inequality with economic growth. Moreover, inequality in consumption affects not only economic growth, but also inequality in regional development, which, in turn, in a spiral lead to inequality in the distribution of goods, and, accordingly, consumption (Shatalova, Kasatkina, 2022). This is very significant for Russia as a state with a high level of disparities in regional development. Under the conditions of increasing inequality of RF constituent entities, the need to identify directions of stimulation of final consumption, that reduce regional disproportions, increases (Leonidova, 2020).

This study does not pretend to fully identify directions of transformation of citizens’ economic inequality or to define specific indicators that allow us to unambiguously, objectively and reliably assess inequality. We have substantiated the possibility of improving approaches to the diagnosis of economic inequality of citizens in the conditions of its transformation. The identified directions of inequality transformation can be supplemented or clarified. Taking into account the fact, that the economic inequality of citizens is not permanent, it is certainly possible to discuss the four directions highlighted in the article.

The conducted research correlates with the earlier results of scientists in that, despite the growth

²¹ Rosstat has measured income inequality in the country in a new way. RBC. Available at: <https://www.rbc.ru/economics/13/10/2022/63453c3d9a79470c2cdf05ca> (accessed: March 4, 2023).

²² Experts estimated the value of assets of 500 “super-rich” Russians. RBC. Available at: <https://www.rbc.ru/economics/10/06/2021/60c0c14f9a79476c014a3263> (accessed: March 4, 2023).

²³ Russia’s 200 Richest Businessmen – 2021. Forbes ranking. Forbes. Available at: <https://www.forbes.ru/rating/426935-200-bogateyshih-biznesmenov-rossii-2021-reyting-forbes> (accessed: March 4, 2023).

of qualitative gaps in consumption (Pugachev, 2022), the strengthening of nonmonetary manifestations of inequality (Milovidov, 2021) and, in general, the urgent need to solve the problem, new approaches or directions for assessing manifestations of inequality have not yet been implemented in Russia. At the same time, research in this area has serious results, which have the potential to be implemented in practice. For example, of interest in this regard is the concept of assessing inequality on the basis of the allocation of population macrostrata and the implementation of a family of centile coefficients of citizens' inequality (Lapin et al., 2020), or the concept of assessing normal and excessive income inequality (Shevyakov, Kiruta, 2009).

The study confirmed the hypothesis that the inequality of citizens in Russia is transforming, and the existing approaches to its assessment do not allow to comprehensively and objectively determining its current state, which, among other things, leads to the inefficiency of the measures taken by the state to smooth it out.

The issues of measuring inequality of opportunity, wealth inequality and nonmonetary manifestations of economic inequality in Russia offer broad prospects for further research. In practice, these estimates are not realized, and their importance can be very significant from the perspective of sustainable development, especially since the level of wealth inequality is excessive, and its concentration continues to increase: more than 70% of national wealth is concentrated in the hands of the richest 10% of citizens (in 1995 – 50%), and 50% of the least wealthy citizens own less than 5% of wealth (in 1995 – 10%) (Ilyin, 2017, p. 14).

Conclusion

The conducted research contributes to the understanding of modern transformation directions of citizens' economic inequality, and also to the substantiation of possibilities of diagnosis improvement of citizens' economic inequality,

which constitutes the scientific novelty of the research. Such directions of inequality transformation are as follows:

- qualitative transformation of consumption inequality, not captured by quantitative statistical indicators, also noted in earlier studies (Pugachev, 2022);

- increasing differentiation in nonmonetary manifestations of economic inequality (access to education, medicine, communication, etc.), also proven in previous works (Mareeva, 2021);

- increase in income differentiation, also noted in earlier works (Sokolova, 2022);

- inequality in the distribution of wealth, which we substantiated with statistical data from Credit Suisse and the World Inequality Database.

For each of the directions, the possibility of developing approaches to its assessment, based on the analysis of existing practices of eight statistical organizations and the recommendations of scientists, is substantiated. These results will be useful both to researchers, including for the purpose of developing proposals for smoothing inequality, and to statistical organizations that estimate inequality.

According to the results of the study, the following conclusions were formulated.

1. The most common, classic statistical indicators of inequality are the Gini coefficient, the Theil, Atkinson, Palm indices, R/P 10% and R/P 20% ratio and differentiation ratio. However, they do not reflect the modern transformation of inequality, new markers are needed.

2. At present, both Rosstat and international organizations, first of all, estimate the income inequality of citizens. Rosstat in Russia has more detailed data in the regional and sectoral (in terms of salary differentiation) context. The approaches of different organizations have methodological peculiarities, but despite these approaches, a high level of inequality in the distribution of current income of Russians is recorded by all of the

organizations. A distinguishing feature of Rosstat as compared to international organizations here is the assessment of the inequality of citizens' consumption, which characterizes the volume and structure of consumption, the energy value of the food set by income groups. Credit Suisse and the World Inequality Database estimate inequality in the distribution of wealth. In Russia, there is an excessive level of inequality, which has increased repeatedly since the beginning of market reforms. The Gini index of wealth was 0.88 in 2021. Since 1995, the wealth share of 1% of the most affluent citizens has increased 2.2-fold from 21.5% to 47.6%. The EBRD and UN estimate nonmonetary inequality, inequality of opportunity and the impact of inequality on the HDI. In Russia, according to these estimates, measures of inequality of opportunity (sex, ethnicity, place of birth, life expectancy and level of education, and parents' education level and membership in the Communist Party) are quite low compared to income and wealth inequality. Rosstat does not measure inequality of wealth, inequality of opportunity, and nonmonetary manifestations of economic inequality, which does not allow us to study inequality in all its manifestations in Russia.

3. Inequality of citizens does not remain static or permanent, it finds new manifestations, such as a qualitative transformation of consumption inequality, not monitored by quantitative statistical indicators, differentiation in nonmonetary manifestations of economic inequality, increasing income differentiation within groups of the most affluent citizens and inequality of wealth distribution. Inequality is transforming, and such trends remain beyond observation and averages. This requires the development of approaches to the assessment of citizens' economic inequality in order to further study it and develop proposals for its smoothing.

4. The transformation of inequality requires the development of new approaches to its assessment, which is a new challenge for economic science and domestic statistics. Without changing the approaches to measuring inequality in the future, we will not be able to obtain an objective assessment of its dynamics, and therefore we will not be able to develop effective measures to smooth it out. The solution may be a double assessment of indicators – in kind and in value terms, and also taking into account quality markers, where it is possible.

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Experience in Project Management of Socio-Economic Processes at the Municipal Level of Government



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Abstract. Project management of socio-economic processes is of considerable strategic importance, since it is an effective tool for solving problems in conditions of limited resources and instability in the market economy. The use of project management at the municipal level in the implementation of urban development strategies has the following advantages: high flexibility in the formation of a list of projects; ability to choose forms, methods, resources and participants in the implementation of projects; harmonizing interests, organizing constructive dialogue and pooling the resources of various social groups (government, business, society), etc. In this regard, the aim of the work is to investigate the use of project management in the activities of public authorities and its development to achieve the goals of socio-economic development of territories. We consider major theoretical approaches to project management and present a general outline of the system of levels and tools related to the strategic management of territory's development. We analyze the experience of project management in Vologda and prove the

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effectiveness of its use in the implementation of territory's development strategy. In addition, we propose main directions for the application of advanced management technologies – the implementation of project management based on ESG principles. It includes addressing environmental issues (E – environmental), social responsibility (S – social) and personnel governance (G – governance). Analyzing theoretical foundations and Russian experience, we identify directions for the development of project management based on ESG principles, reveal current problems and propose a set of measures for further improvement of project work in the field of public administration in order to address strategic tasks of territorial development. The information base includes the works of Russian and foreign scientists, project management specialists, and data from official websites of Russia's constituent entities. We use the following methods: analysis, comparison, generalization, sampling and grouping. The scientific provisions set out in the article may be useful to government officials and researchers interested in the implementation and application of project management.

Key words: project, project management, public administration, municipal authorities, large city, socio-economic development, ESG.

Introduction

The most important factor in solving a number of problems in the socio-economic development of territories and improving the quality of life and standard of living in an unstable political situation and limited resources is to improve the effectiveness of public administration through the introduction and application of new methods and approaches to management. Currently, one of the most popular tools in the implementation of the set of public authorities' actions is the project method.

An extensive discussion of the application of project management methodology in the activities of the authorities began at the end of 2016, when the Council for Strategic Development and Priority Projects was created under the RF President. At the same time, as I.V. Vinokurov notes¹, the introduction of this tool in the public sector is “actually an attempt to shift the focus of the authorities' activities from the execution of instructions to the achievement of results”.

We should note, that the feasibility of applying project management in solving specific problems is justified in the works of leading Russian scientists

(Bodrunov, 2014; Selin, 2014). Thus, A.I. Tatarkin believes that “the program-project approach can become the organizational basis for the management of territorial development. Based on the strategic priorities of regional policy, programs covering the most complex problems of regional development should be developed. The solution of specific tasks should be built exclusively on the basis of the program-project approach” (Tatarkin, 2012).

At the same time, project management has a number of features that distinguish it from program-targeted management. In particular, the project approach is aimed at a specific result. In this case it is possible to determine the degree of personal contribution of each project participant, the effectiveness of his work in general and professional competence, to optimize management processes, to establish more effective interaction between the participants. Very relevant from the methodological point of view is the observance of the management principles, including purposefulness, comprehensiveness, consistency, scientific validity. The ongoing transformation of the program-targeted method in terms of using the strengths of the project approach is designed to improve the goal-

¹ Head of Project Management in the Public Sector, Analytical Center under the Russian Federation Government.

setting quality and the effectiveness of public administration of territories.

However, the implementation of project management in the practice of public administration is a difficult complex task and it faces a number of problems. In particular, it is associated with constant changes in management processes, strengthening the role of residents and business representatives, increasing the importance of social projects, low motivation of civil servants.

In this regard, the purpose of the work is to study issues, related to the use of project management in the activities of public authorities and its development to achieve the goals of socio-economic development of territories.

We consistently solve the following problems:

- to study the main theoretical approaches to project management;
- to reveal the practical aspects of using project management;
- to analyze the experience of project management at the municipal level of government (for example, in Vologda);
- to identify areas of project management development, based on the application of advanced management technologies (ESG-principles);
- to propose a set of measures for further improvement of project work in public administration.

Scientific novelty of the study lies in the generalization of the system of views on project management as a tool to improve the effectiveness of public administration, and substantiation of the implementation problems of the project approach at the municipal level of government and public sector in general, requiring the improvement of scientific approaches for their solution.

Methods of research

To identify trends in the project management development and to develop suggestions for its further development, general scientific methods of research (logical, systemic approaches, struc-

tural and functional analysis and synthesis), statistical (grouping, sampling, comparison and generalization), and graphic and tabular methods of data visualization were used.

The need to understand the essence of socio-economic effects from the implementation of project management observed in the municipal territory, determines the consideration of this management methodology in terms of regulatory approach, on the basis of which the system of levels and tools for managing socio-economic development of the territory is formed and the recommendations to improve the system under study are put forward.

The information base of the study includes the works of Russian scientists in the field of project management and foreign publications, describing the impact of the project approach to management in the economy of different countries. In addition, we used the operational results of the Vologda City Administration, data from information and news portals (VologdaRF, Expert RA).

Theoretical aspects of the study

In the focus of attention of scientists (D.A. Gainanov, N.B. Grosheva, G. Dithelm (Dithelm, 2004), A.M. Ignatova, D.Y. Revin, A.A. Rudakov, A.O. Skopin, A.A. Tatarkin and others) are primarily methodological aspects of project management. Thus, D.A. Gainanov (Gainanov, 2015) presented an algorithm for coordinating the interests of economic agents at each level of interaction (strategic, program, project). The scope of various aspects of project management in the socio-economic development of territories is presented in the works of P.S. Zelenskii, A. Kovalev, I. Kurdyumov. For example, the subject of research in the work of N.B. Grosheva²

² Grosheva N.B. (2011). Metodologiya integratsii proektnogo upravleniya innovatsionnoi deyatel'nost'yu v sistemu regional'nogo upravleniya: dissertatsiya doktora ekon. nauk [Methodology of Integration of Project Management of Innovation Activity in the System of Regional Management: Doctor of Sciences (Economics) Dissertation]. Krasnoyarsk.

was an assessment of the innovative projects impact on the relevant territory and the conditions and mechanisms for the integration of project management of innovation activities in the regional socio-economic system.

The problematics of using this approach in education and science as a tool to improve the effectiveness of public administration in general is reflected in the works of such authors as D.A. Prakh, I.N. Sadovnikova, N.A. Goncharova, A.A. Geysler, L.M. Nikitina and others.

The works of V.N. Leksin and B.N. Porfiriev, S.V. Posledov, E. Savchenko, D.A. Sinyavsky and others are devoted to the issues of project implementation within a certain territory of Russia or its region.

The study of the theoretical foundations of the project approach use in territory management has highlighted the following advantages of its implementation:

- achievement of the planned results in a shorter time;
- increasing the efficiency of the resources use;
- choice of forms, methods, participants in the implementation of projects;
- validity, timeliness and transparency of decisions made by the authorities;
- compliance with and reduction of deadlines for achieving results;

- improvement of vertical and horizontal intra- and interdepartmental communications;
- possibility of organizing a constructive dialogue between the authorities, business and the population regarding socially significant projects.

Despite the existence of studies and adopted normative-legal acts in the field of project management, there is a need to systematize the theoretical foundations of this tool; to define such definitions as “management of projects” and “project management”; to substantiate the place of projects in the system of strategic management (*Tab. 1*).

For example, I.L. Surat and A.V. Tebetkin (Surat, Tebetkin, 2014) believe, that the category “project” includes many aspects and is actively used in describing a variety of processes in various areas of human activity.

As T.V. Yurieva notes (Yurieva, 2015), a project is a set of difficult, nonrepeatable processes or actions, which are designed in advance, taking into account a specific situation, a certain amount and stock of resources.

The formulations presented in Table 1 allowed us to establish the main aim (achievement of the desired result within a certain period of time under given conditions) and specific features of the project (clearly defined aim and deadline, resource constraints, combining efforts, uniqueness of elements) (Uskova, Kopytova, 2017).

Table 1. Theoretical approaches to the definition of the category “project”

Regulatory document	Definition
RF Government Resolution 1288 “On Organizing Project Activities in the Government of the Russian Federation”, dated October 31, 2018	Project – a set of interrelated activities aimed at obtaining unique results in terms of time and resource constraints
Project Management Body of Knowledge (PMBok), American National Standard “Project Management Body of Knowledge”	Project – a temporary enterprise (there is a definite beginning and end), which is designed to create unique products, services or results
Deutsches Institut für Normung (Standard DIN 69901), Germany	Project – an intention (enterprise), characterized by the uniqueness of the conditions in their totality (example: the statement of purpose; financial, time, human and other constraints)
Projects in Controlled Environments 2 (PRINCE2), Great Britain	Project – a set of interrelated activities, which are aimed at creating a unique product or service, taking into account time and resource constraints
Source: own compilation	

In this case, if with the adoption of the regulatory framework in the field of project management the meaning of the economic category “project” has become official, the definitions of the concept of “project management” are quite numerous and varied (*Tab. 2*).

At the same time, in most studies the concept of “project management” is treated as a synonym of “management of projects”, which is a consequence of the lack of study of their essence, specificity and distinctive features (*Tab. 3*).

Table 2. Theoretical approaches to the definition of the category “project management”

Authors	Definition
D.Yu. Revin, P.S. Zelenskii	Methodology of organization, planning and coordination of material and human resources throughout the project life cycle, aimed at effective achievement of project goals through the use of modern management methods, techniques and technologies
A. Kovalev, I. Kurdyumov	Methodology for the management of human and material resources and changes in the course of the project
Yu.I. Popov, O.V. Yakovenko	A section of management theory, which examines the tools that consist of coordinating resources, providing information support for the project, achieving goals, meeting the stages and deadlines of work
Yu.N. Lapygin	Part of the management theory of socio-economic systems, which reveals the tools, forms and methods of effective management of ongoing changes
I. Ilinskaya	A set of interrelated organizational, economic, legal, scientific, technical and technological and other elements, which are aimed at the development and implementation of projects
I.I. Mazur, V.D. Shapiro, A.G. Ivasenko, Ya.I. Nikonova, M.V. Karkavin	A way of organization, planning and coordination of resources throughout the project life cycle, aimed at the effective achievement of objectives using modern methods and technologies
V.V. Il'in, K. Teit, P. Martin	Activities to apply knowledge, skills, tools and techniques in project activity in order to achieve the planned results and meet the needs of project participants
M.L. Razu	Type of management activity, which is based on the formation of a systematic model of action to achieve the goal, taking into account prior collective discussion
A.M. Libman	Application of strategic objectives, methods and techniques to implement the project
Project Management Institute	The set of knowledge, skills and abilities, and methods and tools for organizing a project
According to: (Kovalev, Kurdyumov, 2001; Martin, Tate, 2006; Revin, Zelenskii, 2010; Oberlender, 2011; Wollmann, 2003); Popov Yu.I., Yakovenko O.V. (2007). Project Management: Textbook. Moscow: INFRA-M. 208 p.; Lapygin Yu.N. (2007). Project management: From planning to effectiveness evaluation: A practical guide. Moscow: OMEGA-L; Il'inskaya I. (2010). Working for results. Project Management. Veta-Press. Available at: http://www.betapress.ru/library/management-762.html ; Mazur I.I., Shapiro V.D. (2001). Project Management: A Reference Guide. Moscow: HSE University; Ivasenko A.G., Nikonova Ya.I., Karkavin M.V. (2009). Project Management: Textbook. Rostov-on-Don: Fenix; Il'in V.V. (2007). Project management: Practical guide. Moscow: Alpha-Press; Razu M.L. (2007). Project Management. Fundamentals of project management: Textbook. Moscow: KNORUS; Libman A.M. (2005). Project Management: An accelerated course. Moscow: Delo and Servis; A Guide to the Project Management Body of Knowledge. (2004). Project Management Institute, 3rd ed. USA.	

Table 3. Distinguishing characteristics of the concepts of “management of project” and “project management”

Management of project	Project management
Concentrates on the project results	Aimed at project management organization
A team is created for each project	A structure is formed, which takes part in all projects
There is the project budget, project resources, project time, project risks	There is a project budget, a project management system is created and implemented
The basic approach is project-based	The basic approach is process-based
Source: (Kravets, Vertile, 2021).	

A distinctive feature of these economic categories is the difference in the subject of discussion: representatives of project management discuss mainly organizational norms, that affect the sequence of work. Proponents of management of projects do not discuss characteristics and sequences of actions, but plans, which they see as a set of deadlines and resources, deviations and control of their implementation.

As scholars have noted (Kravets, Vertile, 2021), the category of “project management” focuses on the object. The object of “project management” is a management activity³ (Yurieva, 2015), based on specific technologies for its implementation.

At the same time, most of the authors⁴ (Kovalev, Kurdyumov, 2001; Martin, Tate, 2006; Tsogoev, 2016) highlight the achievement of specific results through the use of modern management methods, techniques and technologies, people, equipment, materials and money as a goal for both concepts.

Consequently, over the years of its evolutionary development, the concept of project management has been gradually modified from an approach characteristic of large projects to a comprehensive methodology for managing organizational processes at all levels of government (Kozhevnikov, 2020).

Practical aspects of using project management

We should note, that project management in the activity of public authorities is used abroad in many spheres. For example, the International Project Management Association (IPMA) was created and operates to develop international and national standards, conduct conferences and seminars and promote best experience. For example, the U.S. Project Management Institute has developed a

national standard, Project Management Body of Knowledge (PMBOK). In addition, in New Zealand, project management is used as a system of “competing corporations”, where executive bodies conclude a contract with each other to provide services on a competitive basis (Tovb, Tsipes, 2003; Filimonova, Rusanov, 2011); in Britain, project management is used in government organizations (Trofimova, Makovkina, 2016); in Japan, it forms the basis of the state strategy for socio-economic development of the country (Morozov, Smirnov, 2011; Crawford, 2002). At the same time, according to the Japan Project Management Association, all projects, which are implemented as part of the strategy and programs of territorial development, are assessed and implemented on the basis of project management methodology (Gray, Larson, 2003; Shchegolev, 2016).

In Russia, the tools of project management in the process of state planning began to be actively used in the 1920s and 1930s. For example, GOELRO (State Commission for Electrification of Russia) represented classical principles of implementation of the project approach; the elimination of illiteracy can be seen as one of the large-scale projects in the social sphere. Since the mid-1930s, the methodology of project evaluation has been emerging – evaluation methods are being developed, their implementation is taking place in practice. In the early 1970s, project management software began to emerge. The period of the 1980s is characterized by the development of the concept of program-targeted management. The events of the 1990s caused a decline in the development of project management, as a result of which later (from the 2000s) not Russian, but Western approaches to project management were implemented (Zyablikova, 2022; Mironenko, Leonova, 2017).

In modern Russia, the resumption of project management at the state level was facilitated by the initiatives of the RF President in 2005 on the implementation of the first national projects:

³ Razu M.L. (2007). *Upravlenie proektom. Osnovy proektnogo upravleniya: uchebnik* [Project Management. Fundamentals of Project Management: Textbook]. Moscow: KNORUS. Mazur I.I., Shapiro V.D. (2001). *Upravlenie proektami: spravochnoe posobie* [Project Management: A Reference Guide]. Moscow: HSE University.

⁴ Mazur I.I., Shapiro V.D. (2001). *Upravlenie proektami: spravochnoe posobie* [Project Management: A Reference Guide]. Moscow: HSE University.

“Health”, “Affordable and comfortable housing for Russian citizens”, “Education” and “Development of the agro-industrial complex (AIC)”. At the same time, we should note that the state’s priority tasks have been carried out through federal target programs since 2002.

The projects, undertaken by the RF President were aimed at changing approaches to financing socially important areas of the economy, combining and concentrating budgetary and administrative resources, and also at increasing the efficiency of budgetary funds and, consequently, at ensuring a better quality of life and conditions for the formation and development of the country’s human capital. However, in practice it turned out, that there is no specific mechanism, aimed at monitoring the expenditure of budgetary funds, precisely within the framework of the national projects.

A series of GOST R ISO standards for project management, developed and adopted in 2011, was designed to correct this situation, which marked the consolidation of project management as a promising management tool in regional governments (Zyablikova, 2022). Nevertheless, it should be emphasized that these regulatory documents are aimed at the commercial sector. To follow them, ignoring the peculiarities of the public sector of the economy, is to some extent impractical.

National projects fully took a fundamental place in the socio-economic policy of the state after the Presidential Decree 204, dated May 7, 2018 “On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024”. They are aimed at increasing the function of state programs “as a tool, which most closely reflects the relationship of resource provision and expected results and helps to constantly assess the effectiveness of budget expenditures on specific program activities” (Zakharchuk, Pecherkina, 2021).

It should be noted that, at present, the Russian practice of project management is characterized by lagging behind the world processes of integration

into the project-oriented society. However, recently, a favorable regulatory and institutional environment has been created at the federal and regional levels for the development of this approach in the activities of the authorities (Kozhevnikov, 2020). Project management of the economy becomes a tool for implementing the objectives of socio-economic development of the country. This is substantiated by the fact, that the country’s development strategy is concretized by a number of target indicators, for the achievement of which national projects are developed, approved in the Decree “On the national goals and strategic objectives of the development of the Russian Federation for the period up to 2024”, later supplemented by Presidential Decree 474, dated July 21, 2020 “On national development goals of the Russian Federation for the period until 2030”. National projects are decomposed into federal and regional projects for practical implementation (Leonov, 2022).

At present, project activities are regulated by Government Resolution 1288, dated October 31, 2018 “On the organization of project activities in the Government of the Russian Federation”. The law approved a functional management structure for project activities:

1. Presidium of the Presidential Council for Strategic Development and National Projects.
2. Project Committee.
3. Project Office of the Government of the RF / constituent entity of the RF.
4. Ministry of Economic Development of the RF (monitors the projects implementation).

According to the Decree, the development and implementation of new technology of national projects management can significantly reduce paperwork and increase the project management efficiency. In this regard, no less urgent, in our opinion, is the task of introducing project management at the municipal government level, where the result of the work is evaluated not only by the higher authorities and regulatory authorities, but also directly by the residents of the territories.

However, the transfer of national, federal and regional projects to local self-government level is fraught with a number of difficulties. On the one hand, the Resolution stated from the very beginning the participation of municipal entities in the implementation of regional projects. On the other hand, these provisions in fact limited the coordination of their participation in project activities until 2020.

At the same time, the concept of a “municipal project”, similar to federal and regional projects, was not defined by the Resolution, which became an obstacle to the inclusion of municipalities in regional projects, similar to the connection of regional projects to federal projects. Consequently, little attention was initially paid to the municipal component in the process of introducing the project management system in the country. The result was the actual elimination of municipal entities from participation in national and federal projects in 2018–2019 (Zyablikova, 2022).

Subsequently, a federal and regional regulatory framework (including those of a recommendatory nature) was adopted, establishing rules for the participation of municipal entities in the implementation of national and regional projects. By RF Government Resolution 391, dated March 17, 2022, a new version of the Provisions on the Organization of Project Activities in the RF Government was published, which expanded the participation of municipal entities in the implementation of regional projects and specified the forms of such participation. In particular, a mechanism of connecting municipal entities to the vertical structure of project activities through a system of project offices is formulated. This created a basis for systemic interaction between municipalities and RF constituent entities in this area.

As researchers note (Shulepov et al., 2020), the project approach to management at the municipal level makes it possible to combine the initiatives of

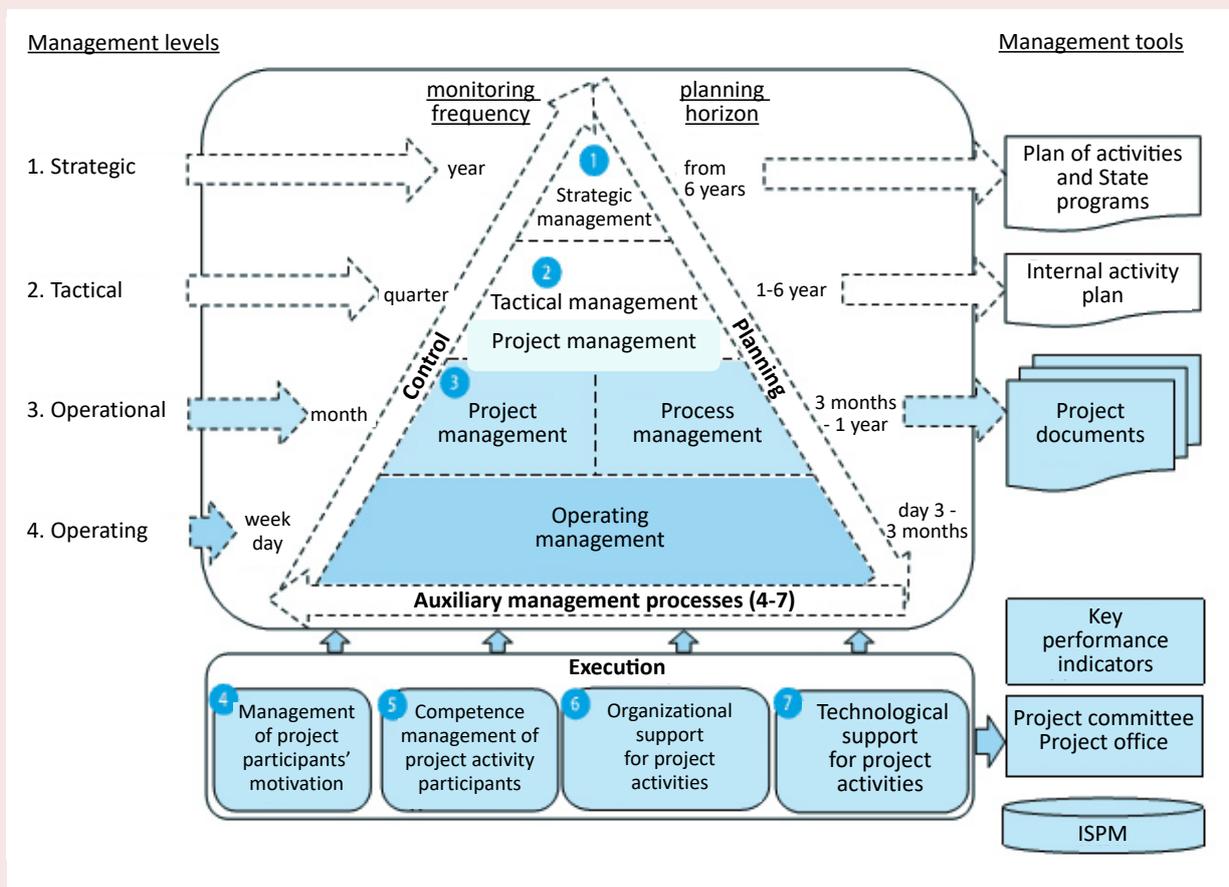
the authorities, business structures and the population and to combine them with existing measures of state support at the federal and regional levels. Undoubtedly, the behavior of authorities’ representatives and residents is one of the main levers in the city development, because it forms the attitude to the urban environment, affects the socio-psychological climate in the city.

We should note, that the directions of a municipal formation/city development should be based on the principles, designated in the Federal law 172-FZ “On strategic planning in the Russian Federation”. In our opinion, the implementation of the territory development strategy will contribute to the creation of a multi-level planning system, including four levels: strategic, tactical, operational and operational (*Fig. 1*). The formation of such system makes it possible to consider the development of projects for the medium term and for one year as one of the effective tools for implementing the strategy (Uskova, Kopytova, 2017).

The results of an earlier study, devoted to the consideration of the best Russian experience in project management (Uskova, Kopytova, 2017), allow us to conclude that this process is implemented within the general system process of territorial management and is most effective on the basis of the creation and functioning of a special authority. Therefore, in order to organize the work at different levels, project offices are created in the authorities. They include industry and project managers, and supervisors from the customer and the contractor, interacting with each other. Based on the Project Management Information System (PMIS), the offices perform the following functions:

- participate in the formation of goals and indicators of the program, plan or project;
- prepare documentation and a schedule;
- provide management of project portfolios, coordinate the efforts of various contractors and resolve problematic issues;

Figure 1. The system of levels and tools for managing the socio-economic development of the territory



According to: (Uskova, Kopytova, 2017); Pakhnina S.Yu. (2023). Eco-standard of Vologda as a tool for implementing the city development strategy: The report at the conference “Legal regulation of “green economy” in the context of sustainable development: National and international experience”. March 22, 2023, Vologda (Moscow State Law Academy).

- identify and assess risks, promptly respond to them;
- control the implementation of processes at all stages and their compliance with standards;
- provide contractual activities, accept the results of the activities;
- are responsible for document management and report preparation.

Thus, we should note that an integral element of the strategic planning system are projects, which become one of the effective tools of the territorial

development strategy. In this case, at the operational level of management, the discussion and control of the deadlines and resources of the project are carried out, while the tactical level involves the organization of a comprehensive methodology for project management of socio-economic processes.

The problems of our study can be explained by the paradox between the task of improving the efficiency of public administration and the lack of recommendations to improve project management.

Main results of the research

Despite the identified shortcomings and contradictions in the regulatory and legal sphere, there are brilliant examples of the introduction of advanced management technologies that prove the possibility of further improvement of project work in public administration, aimed at solving national strategic objectives. In particular, the Belgorod, Volgograd, Penza and Ryazan oblasts were among the first to implement the project approach and entered the top ten in the maturity assessment of the organization of project activities in constituent entities of the Russian Federation.

Vologda also has positive experience in the use of project management tools in solving problems of territorial development. Thus, it is on the project principles the Strategy 715 for a comprehensive modernization of the urban environment of the municipal entity “Vologda city” for the period up to 2020 “Vologda – a comfortable city” (Strategy–2020), approved by the decision of the Vologda Duma, dated July 1, 2011, was formed. Its basis were 178 projects, agreed with representatives of the business community and residents, united by the common task of improving the comfort of life in the city. At the same time, the implementation of projects under the Strategy 2020 began in 2009 (before the approval in parallel with its development).

In the period from 2010 to 2022, the number of implemented projects increased by 1.6 times; the

number of organizations involved in projects – by 3 times; the number of activities under major projects – from 20 to 122, i.e. 6.1 times (*Tab. 4*). However, the number of project participants, including youth representatives, decreased by 54.4% and 35.7% respectively in 2022 compared to 2010, which indicates a weak interest and decreased involvement of residents in this process.

At the same time, joint projects are becoming the most important tool for developing the territories’ economies, attracting investment and improving the quality of life.

Despite the fact that in Vologda a number of partnership projects of the authorities and business are implemented, in particular, the modernization of public transport, reconstruction of unused premises, development of coastal areas, etc. (*Tab. 5*), the business participation in solving socio-economic problems of territorial development can be much greater. This is confirmed by the results of earlier studies and surveys (Kopytova, 2017) and indicates the presence of negative stereotypes, which are an obstacle to the development of productive dialogue in the project management of the territory’s economy.

Nevertheless, the implementation of projects on the basis of collective financing can provide a positive effect on the socio-economic development of the territory – the implementation of major investment projects, budget savings, reduction of unemployment, etc. (*Tab. 6*).

Table 4. Summary indicators of socially significant projects implemented in Vologda

Indicator	2010	2012	2016	2018	2020	2022	2022 to 2010, times
Number of projects, units	5	25	17	7	10	8	1.6
Number of participating organizations, units	15	65	40	40	43	45	3
Number of activities	20	70	122	122	122	122	6.1
Number of project participants, thousand people	11	53	4	4	4	5	0.5
including representatives of youth, thousand people	7	16	3	3.5	3.5	4.5	0.6
The number of visitors to the activities, implemented in the framework of the project, thousand people	10	20	7	7	7	10	-
According to: operational information of the Vologda administration (vologda-portal.ru); (Uskova, Kopytova, 2017).							

Table 5. Joint projects of public authorities and business in Vologda

Project name, year of implementation	Amount of financing	Name of the investor	Number of created jobs, people	Achieving the planned results of the project
Vologda – reducing accidents on the road network (2020, 2021, 2022)	158.5 million rubles	Budget funds and private investments	-	95%
Digital transformation: Urban management center (2020)	0 rubles	Budget funds	-	100%
Creating a School of Street Art in Vologda (2021)	240.0 thousand rubles	IE Osiev V.G.	-	100%
The first farmers' market in Vologda	25.0 million rubles	LLC "Universam"	11	100%
Public transport of the city: Modernization and development	3.0 million rubles	Budget funds and private investments	-	100%
Preservation of objects of cultural heritage – wooden architecture (2020–2023)	490.0 million rubles	Private investments	10	100%
Revitalization of the Sodema river with the development of coastal areas (2020–2024)	45,400.0 million rubles	Including investments of MUEs – 2.5 million rubles	-	80%
Energy efficiency and conservation (2021–2023)	44.0 million rubles	Budget funds and private investments	2	80%
Green frame of the city (2021–2023)	3.5 million rubles	ANO "Native Forest"	4	100%
Creative space "SALUT"	18.5 million rubles	Including private investments – 500.0 thousand rubles	2	100%
According to: operational information of the Vologda administration (vologda-portal.ru).				

Table 6. The largest projects, implemented on the principles of partnership of government and business in Vologda

Project name	Sources of funding	Initiator, participants	Volume of investments	Number of created jobs, people	Implementation timeframe
Renovation of production areas of former plants in a derelict condition	Extrabudgetary sources	Administration of Vologda, 21 participants: LLC "Vologodskii Les", LLC "TechnoOpt", LLC NPO mechanical engineering "Svarog", GC "Bakor", LLC "Megaservice", LLC "Sota", LLC "VZMK", LLC "Region-Instrument", LLC NPF "Tekhpromservis", LLC "SMN", etc.	4 billion rubles	1000	2021–2030
Development of electric transport in Vologda	Extrabudgetary sources	Vologda city administration, 15 organizations: Association of owners of electric, unmanned and connected vehicles and infrastructure of the Vologda region, GC "Logasoft", LLC "SSK", PJSC "Rosseti Severo-Zapad", LLC "Avto-AI'yans", LLC "Impul's", LLC "NordCity", PJSC "TGK-2", LLC "Aiti Chardzh", JSC "VOEK" and more than 100 individuals	136.2 million rubles	30	2021–2030
According to: operational information of the Vologda administration (vologda-portal.ru).					

An illustrative example is the project “Urban Discount Card “Zabota”, which is implemented by the authorities together with representatives of the business community. The project contributes to meeting the consumer demand of low-income groups for goods and services of daily use. It is implemented by providing business discounts for citizens – holders of this card. Since 2009, the number of project partners has increased 4.5-fold (Tab. 7). Thanks to the cooperation between the authorities and organizations, card holders saved an estimated 200 million rubles (Shulepov, Uskova, 2015). The benefit to business from participation in this project is, first, to increase turnover, which

increases the profitability of the business. Second, it is additional advertising and reputation, as participation in social projects increases the attractiveness of the organization with the consumer and among the business community. Authorities are the initiators of partnerships, and as a result, such interaction contributes to the fulfillment of the powers vested in them.

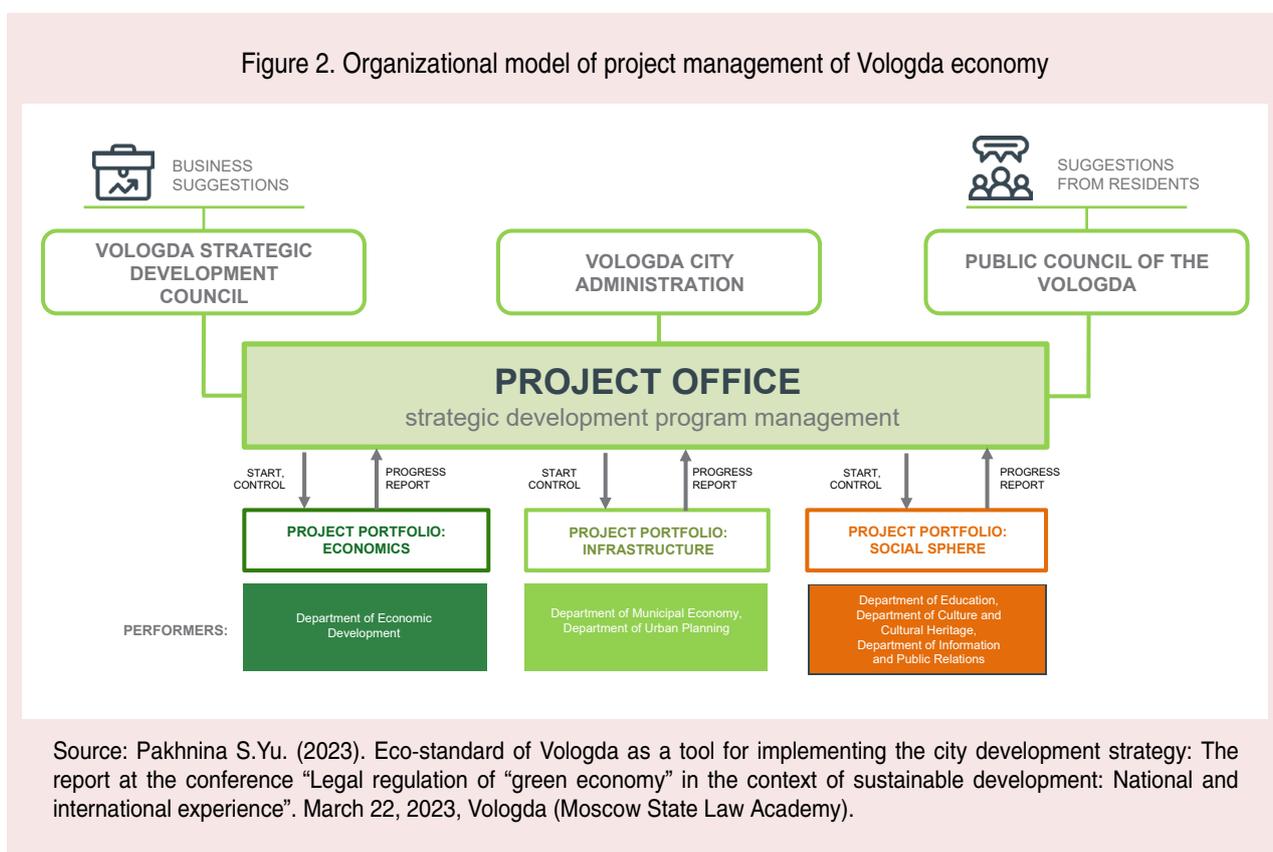
However, nowadays most of the projects are initiated by the authorities, which requires significant efforts to involve businesses and the population. At the same time, with a large number of projects, the authorities do not have enough resources to implement them. For this reason, a

Table 7. Indicators of the implementation of the project “City Discount Card “Zabota”

Indicator	2009	2012	2014	2016	2018	2020	2022	2022 to 2009, times
Number of project partners	22	208	251	111	122	91	99	4.5
Number of sales points	86	506	590	168	190	163	170	1.98

According to: operational information of the Vologda administration (vologda-portal.ru); (Uskova, Kopytova, 2017).

Figure 2. Organizational model of project management of Vologda economy



Source: Pakhnina S.Yu. (2023). Eco-standard of Vologda as a tool for implementing the city development strategy: The report at the conference “Legal regulation of “green economy” in the context of sustainable development: National and international experience”. March 22, 2023, Vologda (Moscow State Law Academy).

promising option for the implementation of project management at the municipal level is the transition to a model in which the population and businesses will also act as initiators and participants in projects (Fig. 2).

Insufficient involvement of citizens in the implementation of project activities and the low level of youth activity determines the need to develop an effective and adequate management system to involve participants in project activities. Citizens in Vologda can be activated through their participation in contests, grants, public discussions, international environmental projects (“Chisty igry/Clean games”), the development of a system of supplementary education for children and adults (“Quantorium”, DNA named after Il’yushin, VSU, “Impul’s”, IT-KUB), etc.

In addition, in our opinion, the involvement of the population in the development of territories will be facilitated by the established City Management Center, the main purpose of which is to respond quickly and competently to the citizens’ appeals. The objectives of the center are to increase the satisfaction level of citizens by reducing the processing time of appeals; the formation of a

summary of analytical data on the problems of the population for the adoption of operational management decisions; improvement of mechanisms of “feedback” with the population, affecting the speed of solving urban problems, and aimed at preventing the causes, contributing to their emergence.

In order to implement these tasks, a digital platform has been developed in Vologda to systematize citizens’ appeals and respond to them promptly. The platform combines the reception of appeals from different channels: official letters, VK group “Vologda is OK”, messages from social media, appeals through the system “Incident Management”, calls to the city call center. The analytical service “Heat Map” was also developed and began to operate. It is the information basis for making management decisions, through which incoming applications are sent to specialists of the relevant departments (Fig. 3).

However, in our opinion, for today it is not enough. It should be noted, that the presence of a whole complex of environmental, economic (low incomes of inhabitants, the existence of industries from the past technological mode, etc.), social

Figure 3. The model of the City Management Center of Vologda



Source: Pakhnina S.Yu. (2023). Eco-standard of Vologda as a tool for implementing the city development strategy: The report at the conference “Legal regulation of “green economy” in the context of sustainable development: National and international experience”. March 22, 2023, Vologda (Moscow State Law Academy).

(insufficient quality of education, medical care, high levels of migration, etc.) and environmental (global climate change, conservation of ecosystems, etc.) problems in the development of administrative centers creates risks of extinction of Russian cities. This, in turn, entails key problems at the state level: loss of territorial control at the state level; reduction of national security; loss of the cities' role in the nation's economic security framework; reduction of social cohesion; negative environmental impacts and biodiversity loss.

At the same time, Vologda has problems, common with similar municipalities: industries from the past technological mode in the city's economy; the city budget provides only minimal infrastructure maintenance tasks; a high share of state employees in the employed population (over 30%); falling GDP per capita, etc.

Thus, measures to eradicate poverty must go hand in hand with efforts to increase economic growth and address a range of issues in education, health, social protection and employment, climate change and environmental protection.

In this regard, further development of project management of socio-economic processes is required. We believe, that in today's rapidly changing geopolitical and macroeconomic environmental conditions the use of project approach in territory management based on ESG-principles, which are to protect the environment (E – environmental), create favorable social conditions, fair attitude to employees and customers (S – social) and high quality of corporate governance (G – governance) will be relevant.

This is the approach that allows us to simultaneously solve a set of problems and respond quickly to the high speed of environmental, social and public problems at the international and local levels. In particular, attention to health, poverty and hunger eradication, reducing inequality, providing quality education, etc., will contribute positively to the society development. Improving

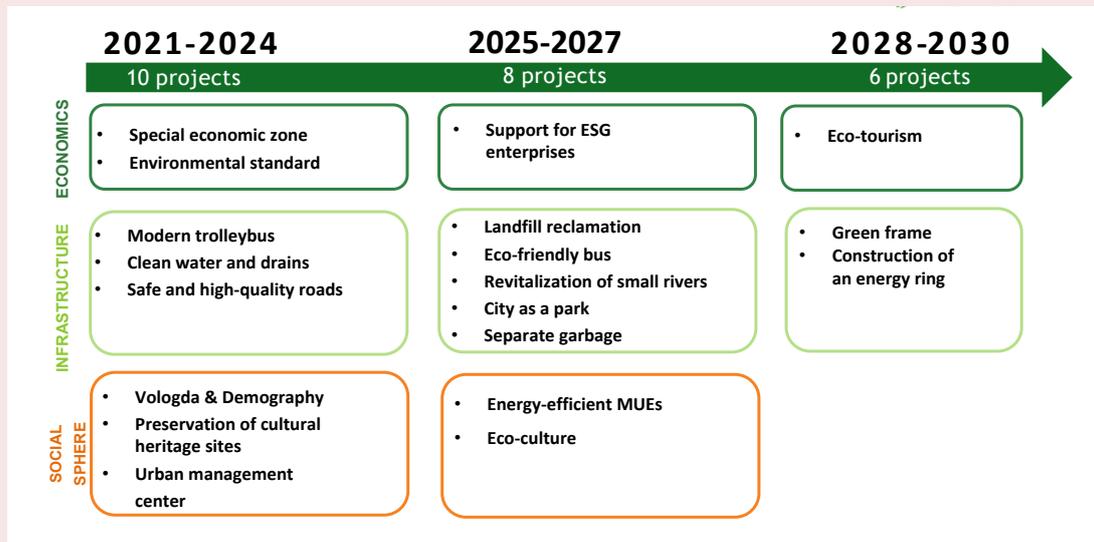
the environment through the formation of a responsible attitude to nature, conservation of ecosystems, etc. will provide cities and settlements with clean drinking water, low-cost and clean energy. The harmonization of interests and the organization of a constructive dialogue between the project participants will make it possible to achieve significant results in improving the quality of corporate management.

The successful experience of project implementation in Vologda allowed us to test a new technology of project management based on ESG-principles during the development strategy “EcoVologda–2030”. On the basis of the created institutional environment for the realization of the development strategy of Vologda it is planned to implement projects, divided by ESG directions, affecting such issues as revitalization of small rivers, preservation of cultural heritage sites, construction of the energy ring, etc. (*Fig. 4*).

It is worth noting that as part of the implementation of the Vologda development strategy, the authorities have set a goal to make Vologda one of the most environmentally friendly cities in Russia. However, in the environmental sphere of the city revealed a problem such as extremely low landscaping (less than 10%)⁵. Along with Vologda, Orenburg, Kaliningrad, Makhachkala, Tyumen, Astrakhan, Krasnodar, Salekhard and Anadyr are the cities with the lowest degree of landscaping. For comparison, the group of the greenest administrative centers of the country includes Gorno-Altai, Kemerovo, Magadan, Murmansk, Penza, Saransk, Stavropol, Ufa and Khanty-Mansiysk. In these constituent entities, the area of green spaces is more than 50% of the total area of the city.

⁵ ESG Assessment of Russian Cities: New Realities, New Challenges for Urban Areas. (2022). JSC “Expert RA”. July, 2022. Available at: https://raexpert.ru/researches/sus_dev/esg_city_development_2022/ (accessed: April 13, 2023); calculations by “Expert RA” based on data from Rosstat of Russia, EMISS, and the citylifeindex.ru website.

Figure 4. Directions for the implementation of projects until 2030 in accordance with ESG principles



Source: Voropanov S.A. (2023). ESG agenda and implementation strategy: The report at the International Conference “Ecology and society: Balance of Interests”, Vologda, April 27, 2023; Pakhnina S.Yu. (2023). Eco-standard of Vologda as a tool for implementing the city development strategy: The report at the conference “Legal regulation of “green economy” in the context of sustainable development: National and international experience”. March 22, 2023, Vologda (Moscow State Law Academy).

Realizing these dangers, the Vologda City Administration is actively working to change this situation. Thus, in July 2022, the Environmental standard of the regional capital, developed with the support of the Russian Ecological Society, was approved. Vologda was the first city in Russia to adopt such a document, which at the municipal level establishes the implementation of ESG principles in the territory. This is a kind of social contract, voluntary for its participants. It concerns the preservation of clean air, water, natural areas and a favorable environment for residents, improving the waste management system, but to achieve this is important in the further economic and social development of the city.

In addition, there is such a problem as an underdeveloped culture and practice of separate waste collection. One of the reasons is the low level of residents’ and business representatives’ knowledge, and also their weak interest in the

organization and use of this process. Therefore, it is necessary to form an environmental culture of the population and a harmonious relationship between human and environment, including the principles of respect for nature, the preservation of traditions of ethical attitude to the natural heritage, the knowledge regarding the rational use of natural resources.

We believe that authorities, environmental institutions, public associations and organizations in the field of culture, education, sports and tourism, and the media should be involved in environmental education activities.

In order to organize continuous environmental education, we consider it necessary to develop this direction at all levels of education, and in the framework of educational programs for all population categories. As a tool to popularize the principles of responsible attitude toward the environment, we can use the creation of Internet

resources, social media communities, dedicated to the ecology of Vologda; promoting the importance of nature preservation and ways for city residents to participate in this process; creating educational environmental education programs for different categories of citizens, from pre-schoolers to retirees; organizing and making environmental education centers accessible to the public; increasing the involvement of residents and businesses in solving specific environmental problems of the city; developing and implementing educational programs on environmental culture on radio and television channels and in the print media; organizing and conducting mass cultural environmental events; supporting initiatives and projects aimed at popularizing an environmentally responsible way of life; posting objective and reliable information about the state of the environment (environmental information) in Vologda in the public domain on official Internet sites.

Thus, the contribution of each resident helps to achieve the overall goal of socio-economic development of the territory. At the same time, the main task of the authorities is to create conditions for residents and businesses to act as partners in socially and environmentally significant initiatives. In particular, in order to create environmentally comfortable living conditions for Vologda residents, it is necessary to develop interaction between the authorities and the population by establishing a constructive dialogue on environmental issues, supporting civil initiatives in the field of environmental protection and environmental management, involving citizens in solving environmentally significant issues (*Fig. 5*).

In our opinion, within the framework of the project approach development in the Vologda economy management on the basis of ESG-principles the following projects can be implemented.

1) Promoting environmentally responsible business development in Vologda.

In Vologda there are companies that produce unique equipment for water disinfection by ultrasound, equipment for dust and gas purification and waste recycling, thermal insulation materials from recycled foam, etc. There are enterprises that switch to 100% recycling of waste. In addition, three new directions of study at universities in Vologda for the green economy and educational courses on the basics of ESG-business were opened. The project will create a register and map of green enterprises, and a special economic zone of industrial-production type (production of export-oriented high-margin and import-substituting products).

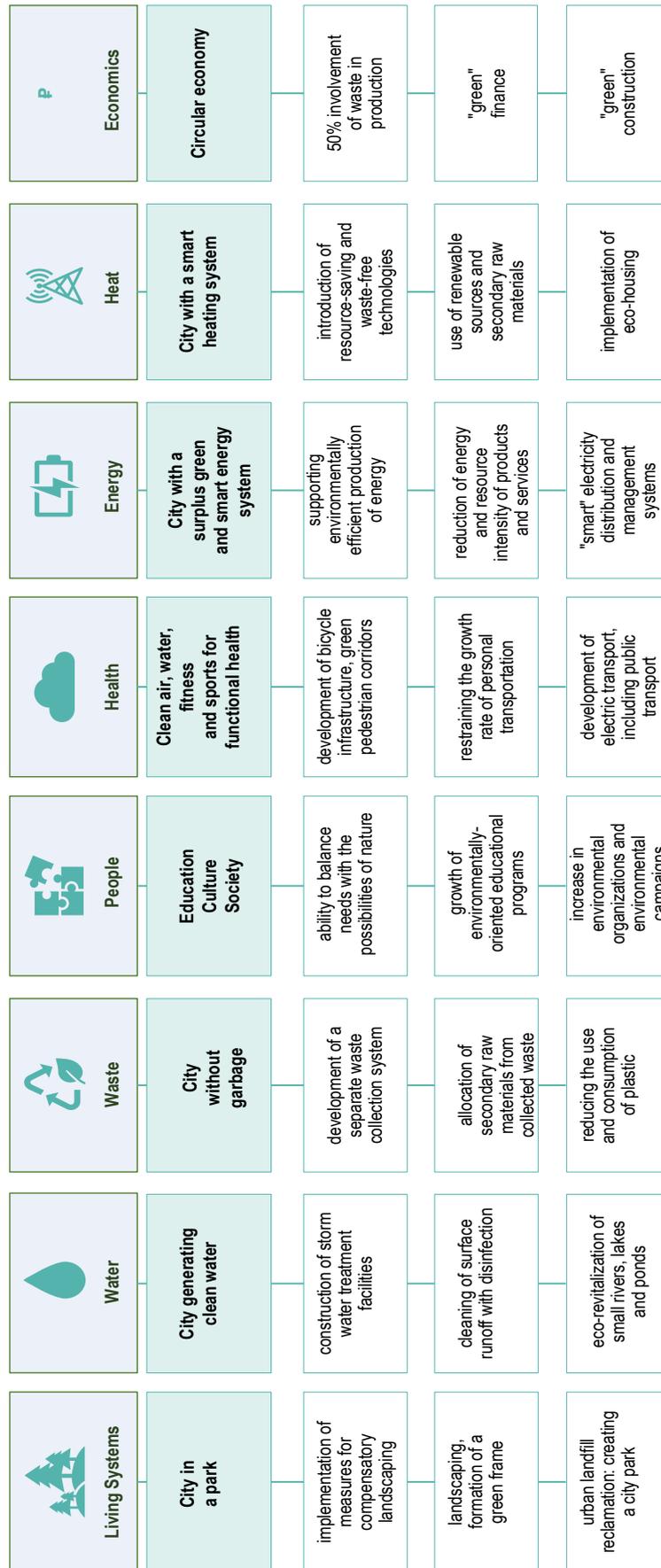
The result of these activities will be an increase in the proportion of businesses (up to 90% by 2030), conforming to the principles of ESG, and the creation of new jobs.

2) Environmental education for Vologda residents and their active involvement in implementing the “EcoVologda” strategy.

The essence of the project is to create a system, aimed at the formation of ecological thinking as a basic skill of city residents. The project is organized in the form of special events, contests involving conversations, lectures, meetings, roundtables on the principles of environmental responsibility of every citizen. In particular, special education and educational eco-programs for children “Green School” were developed; the ANO United center for development and support of environmental initiatives and projects “EcoLogic” and the Association of ecological squads were created; an interactive map of eco-points of the city, where environmental organizations and eco-volunteer groups are marked, and the collection points for paper, plastic, batteries, lids, etc., were developed.

The result of the project will improve the quality index of the labor potential (physical health, mental health, cognitive potential, creativity, communication skills, cultural level, moral level, etc.). In addition, by 2030 it is planned to increase the number of eco-oriented educational programs by

Figure 5. Directions for the implementation of projects in the environmental sphere of Vologda



Source: Pakhmina S. Yu. (2023). Eco-standard of Vologda as a tool for implementing the city development strategy: The report at the conference "Legal regulation of "green economy" in the context of sustainable development: National and international experience". March 22, 2023, Vologda (Moscow State Law Academy).

Voropanov S.A. (2023). ESG agenda and implementation strategy: The report at the International Conference "Ecology and society: Balance of interests", Vologda, April 27, 2023.

20%; reduce plastic consumption by 30%; involve 25% of active citizens in significant projects; and organize and implement separate waste collection and recycling (100%).

3) Energy-efficient urban businesses and households.

The economic development of Vologda consists in providing consumers with the necessary energy resources at minimal expenses for their production, transportation and distribution. The project is planned to be implemented in all educational institutions through the conclusion of an energy service contract.

As a result of the project by 2030, the energy efficiency of buildings will increase by 20%; a transition to 100% smart street lighting. It is expected to reduce municipal budget expenditures and lower household expenses due to energy-efficient technologies in the housing and communal services.

4) Corporate culture in the Vologda City Administration.

According to the CFA Institute survey, one of the key barriers to the use of ESG criteria is an underdeveloped corporate culture⁶. In this regard, it will be relevant to implement a project, aimed at increasing the involvement of employees in the implementation of the tasks, facing the City Administration, and their commitment to the requirements of office conduct and the principles of professional business ethics.

The main tools of the project implementation are:

- development of a corporate logo (emblem) and a motto of the City Administration;
- development of the Charter of municipal employees;
- fixing the mission of the Vologda City Administration – “Ensuring the well-being of citizens” in the Internal Labor Rules;

- visualization of unofficial symbols of the City Administration (stand at the entrance to the building, office signs, labels, pins, etc.);

- development and conducting trainings on team building;

- organization and implementation of the “Best Municipal Employee” and “Best Mentor” contests;

- involvement of employees in corporate events.

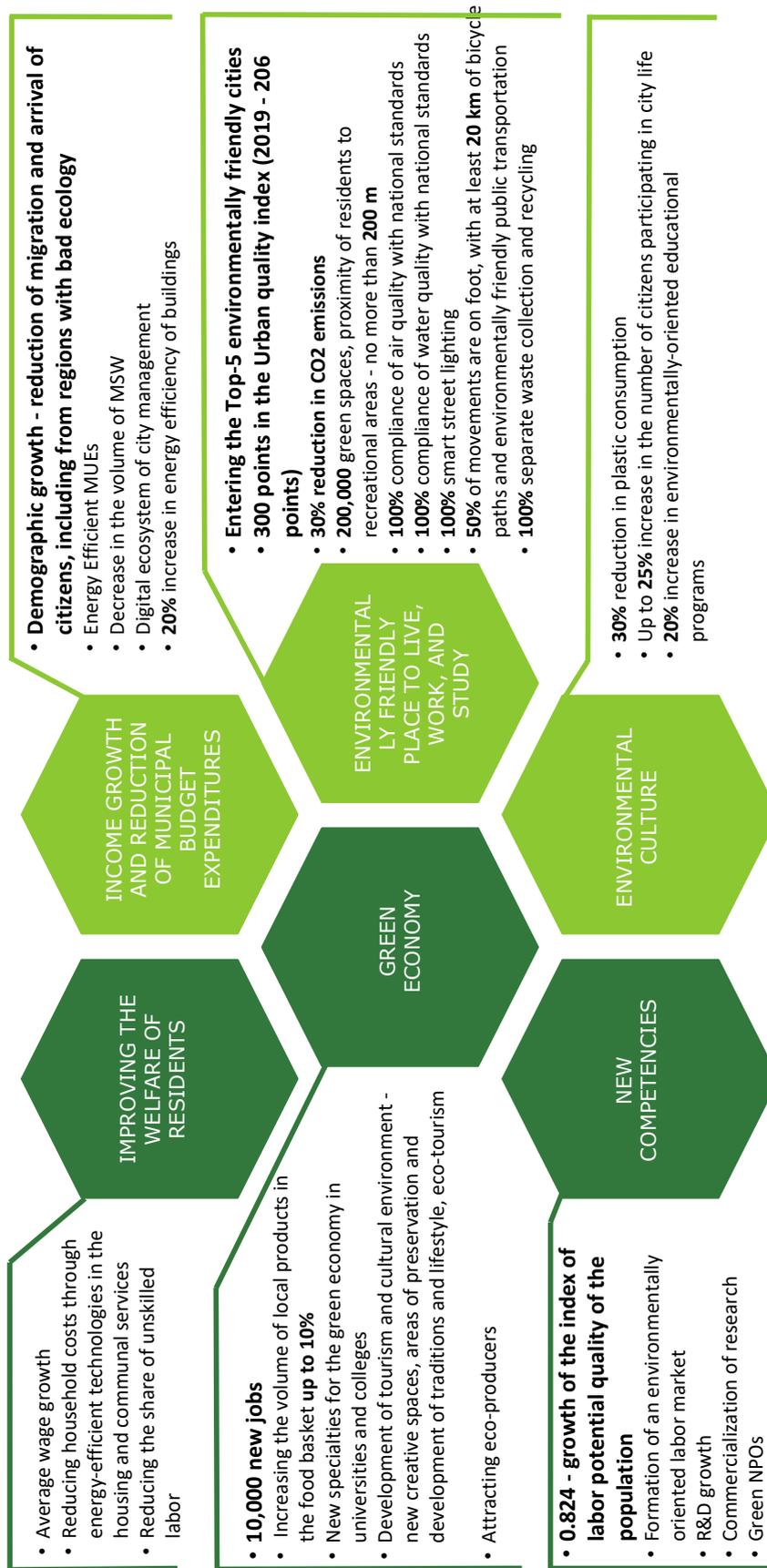
The results of the project “Corporate culture in the Vologda City Administration” will be strengthening the relationship between employees and the organization, understanding the principles of responsibility and raising awareness of the possible participation in projects for the territory’s development; the formation of a positive image of the representatives of the authorities.

The formation of a sense of patriotism, responsibility for the territory’s development, including the development of environmental culture, family values among young people, etc. is considered as the long-term goals of the proposed projects (*Fig. 6*).

An important role in the implementation of the project approach on the principles of ESG in the management of a large city is given to business. It is necessary to take into account the synergistic effect – to increase the environmental activity of economic entities with the help of tax incentives, support for the introduction of “green” technologies, assistance in voluntary eco-certification, eco-audits, etc. It is advisable to compensate for the lack of qualified personnel in this area by creating new jobs in the “green” economy, renovation of production facilities, and work with educational institutions to open new areas of training for the “green” economy. Attracting additional funds to implement projects is possible through participation in federal projects, contests and grants.

⁶ CFA Institute, *The Impact of ESG Factors on Capital Markets and Investment Practices*, 2019.

Figure 6. Planned effects from the implementation of projects within the framework of the Eco-standard of Vologda



Source: Pakhmina S.Yu. (2023). Eco-standard of Vologda as a tool for implementing the city development strategy: The report at the conference "Legal regulation of "green economy" in the context of sustainable development: National and international experience". March 22, 2023, Vologda (Moscow State Law Academy).

However, it should be taken into account that project management, typical for public authorities, differs from the implementation of initiatives by businesses: the need to act within the regulatory framework; accountability to higher-level authorities; public reporting and public control; involvement of state and local budgets; scale of projects; focus not on financial profit, but on the social effect.

In addition, public authorities of both Vologda and other municipal entities are often faced with the difficulty of forming project performance indicators due to the lack of an approved system of indicators for monitoring project implementation, and the rapid changes in the regulatory framework and its imperfections. We should note that there is no qualitative statistical information for municipal entities in the areas of implementation of the national projects in the territorial and type of municipal entities, which is necessary to assess the achievement of the national projects' goals.

As S.L. Postnikov, Deputy Head of the Analytical department of the Central Office of the Federation Council, noted in his report, the following problems of project management can be noted in the Russian Federation as a whole:

1) public officials have no experience in participating in project organizations and no understanding of what project management should be like;

2) there is no knowledge of what uniqueness is and at what level in the implementation of the project, at what hierarchy this uniqueness is completed;

3) the project office of the Government of the Russian Federation is the only organizational and staff unit in the country with a set structure and salary fund, established according to all the rules of project management; all other project offices are essentially temporary working groups;

4) there is a tendency for the established project offices to be structures, which will be mainly engaged in reporting activities⁷.

However, despite these difficulties, understanding the benefits and integrating the ESG-agenda into the socio-economic development of municipalities will have a positive impact on their development. Competent management of the city and municipal development, the implementation of projects, related to the positive impact on the environment, the development of social relations and other areas will improve the technology of project management and increase the ESG-status of cities.

Cities with the highest level of ESG-development are already more attractive to residents and businesses, and in the future the importance of all components (environment, society, quality of management) will only increase. Many investors are interested in responsible investment and prefer areas where the authorities share their interest and follow environmental behavior. In addition, a responsible approach to ecology, management and social issues leads to a better transformation in the current environment.

Since everyone is interested in responsible sustainable development of territories, there was a need to systematize ESG-principles at the state level in a unified document. In this regard, in 2022 the draft ESG Charter of Russian cities – a document containing the basic principles of sustainable urban development as an element of a comprehensive ESG-transformation in Russia – was presented on the platform of VEB.RF.

⁷ Krivov V.D. (2019). Materials of the seminar-meeting of heads of analytical services of the legislative (representative) and executive bodies of state authorities of the constituent entities of the Russian Federation, dated April 3, 2019. Federation Council. Available at: <http://council.gov.ru/media/files/bDf1zHgJAFmccgwsMu6Ohz0eK5AEAkB.pdf> (accessed: May 16, 2023).

At this time, representatives of heads of cities need to actively participate in the discussion of the draft Charter. A unified approach, on the one hand, will promote the development of interaction between city administrations, business and the population; on the other hand, it will help to use the best practices to develop competitive advantages, improve the quality of life in cities, and find their own way in the implementation of sustainable development agenda for territories.

Suggestions and conclusion

Thus, our contribution to the development of theoretical and applied science is as follows.

1. In an unstable geopolitical and economic situation in the world, ensuring economic development of territories as a prerequisite for improving the quality of life is possible through the improvement of management methods.

2. The use of project management at the municipal level of government in the implementation of urban development strategies is justified and effective, provided that all projects are linked to each other and subordinate to the general goal of the strategy. At the same time, all interested parties: authorities, business and residents need to increase the level of trust in each other. This will reduce the costs of implementing joint projects and promote a constructive dialogue between the main stakeholders.

3. In connection with the need to find a balance of interests between economic development and preservation of nature, increasing economic growth and solving complex issues in the fields of education, health, social protection and employment, the use of the project approach in area management based on ESG-principles will be relevant. It is this approach that allows us to simultaneously solve a set of problems: the restoration, rational use and protection of natural resources; ensuring the welfare, safety and comfort of human life; quality solution of management problems.

4. Currently, the implementation of the project approach based on ESG-principles in the management of socio-economic processes in Russia is at the initial stage of implementation and approbation in the pilot areas⁸, and it is facing a number of difficulties, requiring the development of a set of measures aimed at creating favorable conditions for the use of this method in the activities of public authorities.

First, due to the undeveloped awareness of the relevance of the transition to ESG principles and the weak interest of government officials, it is essential to scale positive practices to other cities. We consider that the experience of Vologda in implementing ESG principles in the practice of project management of a large city is an example for other regions and municipalities.

Second, the improvement of the project approach in solving socio-economic problems of territorial development requires the formation of methodological tools. In this case, it is necessary to involve the scientific community to develop tools for assessing the effect of the implemented ESG-activities.

Third, it is necessary to organize vocational training to improve the skills of management personnel in the implementation of project management on ESG-principles in order to form a staff capacity with knowledge, skills, competencies and the ability to develop the territory, using modern management methods, and discuss them within the city administration, with the involvement of business and residents.

5. It was found that the main problems of project management implementation in public authorities are the lack of a flexible management system and low motivation of employees. Consequently, in order to mitigate risks and most effectively implement new management technologies, it is necessary:

⁸ The ESG investment market in Russia: Present and future. July, 2021. Available at: <https://frankrg.com/>

- to develop a project management model, which will take into account the unique features of the authority, the RF constituent entity / municipality, including established management traditions and experience of program-targeted budgeting;

- to form a package of normative-legal acts and methodological documents, which are necessary for the continuous functioning of the project management system;

- to ensure the link of project activities in the public authorities of the municipal entity / constituent entity of the RF with the priorities, goals and objectives of socio-economic development of the territory, as reflected in strategic documents, with state programs and national projects;

- to improve the level of methodological and informational support of the state and municipal authorities' participation in the implementation of activities within the framework of national and other projects;

- to create conditions for stimulating the introduction of project management in public authorities of RF constituent entities and municipal entities by introducing a system of rating and encouraging authorities and municipal entities⁹.

6. Often, due to the lack of proper interaction between the main participants, the implementation of projects is reduced to the implementation of individual activities, the feasibility of which is not obvious. Consequently, one of the main tasks of the authorities is to create favorable legal and organizational conditions for increasing the active participation of residents, representatives of the business community and government agencies as partners in socially and environmentally significant initiatives at the local level.

Despite the above-mentioned difficulties and the turbulent situation in the world, the project approach, undergoing a significant transformation following the changing geopolitical and macroeconomic conditions, opens up new frontiers of territorial development.

The use of a new and more modern type of management activity can give a significant economic effect in the form of improved quality and efficiency of work, increasing the investment attractiveness of the state as a whole and its regions, job creation, GDP growth. Another positive side of this is increased efficiency and openness of public authorities, the formation of a favorable administrative environment. In addition, a competent organization of project management based on ESG-principles will make the project management process more predictable, as a result of which the authorities can more rationally manage the available resources.

Thus, we can conclude that the use of project management of socio-economic processes at the municipal level of government can achieve higher rates of territorial development. For this purpose, it is necessary to involve representatives of various social groups, scientists with a high level of knowledge, unique organizational competencies and successful experience in the development of management decisions.

In this regard, to achieve synergistic effects, public authorities need to ensure the equal development of the project approach in the management of the economy of the municipal entity, which will definitely help to accelerate the pace of socio-economic development of the territory.

⁹ Moiseev I. (2017). Implementation of project management in the public sector. LLC "BFT". Available at: <https://bftcom.com/expert-bft/3588/>

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Russia's Payment System in the New Geopolitical and Economic Conditions: Problems and Prospects



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Abstract. Taking into account an unprecedented number and quality of packages of external restrictive measures introduced against the financial and real sectors of the Russian economy, the mechanism for ensuring sustainable development of the national economy obviously needs comprehensive adjustment, from the point of view of updating priorities, and from the standpoint of monitoring the level of compliance and adaptation to the emerging challenges. Among the most sensitive restrictions, as envisioned by their initiators, are measures against the Russian financial sector, primarily the payment system and infrastructure. The article presents the results of analyzing the effectiveness of the national payment system in modern conditions. We highlight emerging trends in the activities of payment agents and payment system operators and substantiate promising directions for the development of the national payment infrastructure. The aim of the study is to determine the degree of influence of current challenges and threats on the efficiency and effectiveness of the national payment system. The novelty of the research

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is associated with the influence of unique external conditions that affect the functioning of the object of research. The set of indicators proposed in the work to assess the effectiveness of the national payment system allows for the system-wide integration of the most important aspects of the changes taking place in the infrastructure of payment systems. The results of the analysis confirm the need for the Bank of Russia to take and implement preventive decisions and introduce infrastructural changes to the operation of the national payment system in the context of escalating external restrictions. The conclusions of the study contain specific measures aimed at improving approaches to determining the effectiveness of the national payment system operators. Our key recommendation is to increase attention to the issues of priority development of payment turnover based on the implementation of innovation technologies and products, comprehensive infrastructure renovation, countering risks and threats in the policy of the Bank of Russia.

Key words: national payment system, efficiency of functioning of the payment system, payment infrastructure.

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Introduction

The payment system plays a decisive role in ensuring a reliable, uninterrupted, technological and efficient flow of money and financial flows in the economy in the context of enormous, in fact, unprecedented challenges and diverse impacts of trade restrictions and financial restraints on the national economy. It is obvious that participants of the payment market are forced to carry out activities in a state of permanent monitoring, technological and institutional transformation, system regulation, adaptation of economic entities to the changes, occurring in the national economic mechanism and in the external geo-economic and political contour (Orlov, 2022). For the purposes of monitoring, a set of indicators is needed, which would allow tracking institutional infrastructure changes, occurring in the national payment system (hereinafter – the NPS). Under conditions of growing threats, when an unprecedented number of multidirectional restrictions are acting on the economy and financial system of the Russian Federation, it is extremely

important to choose the right priorities, to set the accents, to determine the ways for development of the NPS, and to develop monitoring mechanisms that help to permanently monitor the effectiveness of the decisions made and the transformations implemented.

At a time of financial, information, technological, material, human and other resource restrictions, the largest companies and banks with a developed customer base have to rely on the implementation of the most modern organizational and technological systems, the development of production links, implemented in the form of ecosystem projects, offering an expanded list of various project solutions, including offers for the development and implementation of the specified transformation in order to maintain competitiveness. As a consequence, in some segments of the payment system of the RF at the moment there is a high level of concentration according to international criteria, as a result of

which several leading players (Sber, VTB, Tinkoff, Yandex, MTS) occupy a dominant position. In addition, in the NPS for obvious, quite objective reasons, the requirements for ensuring economic, primarily information, security have increased repeatedly.

Currently, the participants of the payment market have recorded a number of very significant challenges, listed below, in relation to ensuring the performance and efficiency of the payment infrastructure:

- expansion of opportunities for settlements in digital currencies, requiring the implementation of institutional changes, transformation and additional technological adjustments in the work of the national payment system;

- achievement by the “Mir” payment system of a unique, in fact monopolistic, position on the national market of payment systems;

- refusal of a number of foreign market participants to cooperate with the “Mir” payment system due to the fear of secondary sanctions from the USA, which makes it extremely difficult for Russians to make payments in foreign countries;

- updating the requirements and protocols of the pan-European payment system, which complicates the communication of Russian counterparties in payments with Western partners (De Portu, 2022).

The aim of the work is to study the issues of improving the efficiency of the national payment system in the face of modern challenges and threats.

The objectives of the study are to analyze the dynamics of changes in the quantitative parameters of the operation of payment infrastructure used to monitor the state of the NPS, to identify trends in the functioning of the national payment system, to develop priority proposals aimed at developing the NPS, the implementation of effective innovative approaches to successfully counteract modern challenges and threats.

The scientific novelty of the results is to develop a system of indicators to determine the level of the NPS efficiency to make management decisions to improve the payment infrastructure in the unique conditions that have a significant impact on the functioning of the object of research.

Literature review

Theoretical approaches to determining the effectiveness of the NPS are presented in the publications of Russian and foreign economists, such as E.P. Bondarovich, V.V. Kuznetsov, E.S. Ulanov, N.A. Markova, K.A. Prozorovskii, S.V. Vorontsova, O.M. Korobeinikova, L.V. Popova, E.S. Shemet, R.M. Kadraliev, etc. These authors mainly use approaches based on the comparison of macroeconomic indicators, on the analysis of financial stability parameters and financial performance of payment system participants (operators) based on the assessment of innovativeness of technologies used (digitalization factor), but also approaches based on risk assessment.

The developed methods for assessing the performance of payment systems are proposed to include indicators of NPS operators' financial stability and financial results of their activities (Bondarovich, Zhilkina, 2019; De Portu, 2022), speed and volume of funds circulating in the NPS, methodological support, development of private sector payments (Bondarovich, 2019; Bondarovich, 2021; Markova, Prozorovskii, 2020; Ulanova, 2020; Ulanova, Popkov, 2020), the level of payment transactions digitalization, and also to use for these purposes the digitalization coefficient, which characterizes the degree of penetration of electronic technologies in the process of payment transactions, defined as the proportion of the transactions volume performed electronically to the total volume of performed transactions (Vorontsova, 2020; Kadraliev, 2017; Korobeinikova, 2012; Kuznetsov, 2020; Popova et al. , 2017). With the development of digital settlements, some of these

indicators are losing their importance; the stability and “seamlessness” of payments, reducing their cost by reducing the number of intermediaries come first on this criterion.

Foreign experts Mukesh Srivastava, Sandhya Sinha and Rakesh Pratap Singh studied approaches to assessing the performance of Internet payment systems (Srivastava et al., 2023). In Russia these payment systems are an integral part of the NPS. Risto Gogoski analyzed the development of payment systems in international settlements, revealed the key components of the effective work of payment operators (Gogoski, 2012). Scientists have described the prospects for improving the national payment system on the example of China, identified the priority elements of infrastructure to maintain performance in order to ensure efficiency at a competitive level in comparison with international payment systems operating in the world market (Liu Shao Xiong, 2023; Li, 2021; Mu, Lee, 2017; Zhu Xuefeng, 2015).

Experience in the development of European and Asian payment systems is difficult to correlate with the current conditions of the Russian NPS, as a similar experience of forced autarchy of the payment system have only a few countries in the world, not comparable in the scale of the served economy, such as Iran and North Korea.

The acceleration of ongoing changes is reflected in the large number of various innovative ideas and proposals, discussed in the professional banking community in a very wide range of functioning of the payment sphere, from the adjustment of the NPS development strategy targets to the introduction of the digital ruble¹.

¹ Strategy for the development of the national payment system for 2021–2023. (2021). Central Bank of the RF. Moscow. Available at: https://www.cbr.ru/Content/Document/File/120210/strategy_nps_2021-2023.pdf

A special place in the discussion is taken by the introduction of regulations, such as Open Banking in relation to the Russian market, and also the use of the standard ISO 20022 integrated into domestic realities for the national payment instrument faster payment system (FPS). Transition to new international standards in payments, such as ISO 20022, allows us to use only financial messages in a transaction, which helps to reduce the duration of funds transfer processes to a few seconds; to clear transactions without waiting for the time cut-off².

Despite the existence of a significant number of publications containing diverse thematic reviews on the results of the payment systems performance, the current challenges and threats require significantly more attention to studying the issues, and also to finding solutions related to the improvement of the NPS efficiency evaluation methodology and identifying promising areas for its development.

Methods

The methodological basis of the study consisted of formal logic, methods of historical, statistical and comparative analysis, systematization, classification, grouping, content analysis, economic-statistical and economic-mathematical methods, graph theory, etc.

Results of the study

Payment systems are a mechanism for processing and conducting monetary settlements, serving the movement of gross domestic product in the national economy. It should be noted that the predominant part of settlements (about 80% of all payments) is made in noncash form. In this case, the value and dynamics of the indicator are,

² Concept of implementation of open API on the financial market of the Central Bank of the RF, 2023, ISO 20022 Message Definitions Universal financial industry message scheme 2021.

according to experts, a key indicator of changes in the level of confidence of payment agents in the national payment system. Summarizing the results of the analysis, when developing a methodology for assessing the effectiveness of the NPS functioning, we propose to use the following indicators as a priority:

- dynamics of changes in the share of the noncash component in the structure of the money supply (M2 aggregate);
- dynamics of the money transfer volume through the NPS in relation to the dynamics of the country's GDP indicator values;
- indicators dynamics of the NPS use by paying agents and assessment of emerging trends.

As a separate direction, the task of determining the impact of external challenges and threats to the stability of the indicators dynamics that characterize the effectiveness of the NPS is formulated.

In the dynamic series of indicators presented in *Table 1*, there are quite significant changes in the structure of money supply in the period from January 1, 2020 to January 1, 2023, the amplitude and duration of which are determined by the impact of, respectively, the pandemic and geopolitical events that occurred during the specified time frame. External challenges triggered a short-term decline in the share of noncash settlements from 81.3% to 75.12%. At the same time, the return to the initial level was recorded already as of January 01, 2023 (the value of the indicator amounted to 81.26%), which evidences the stability of the NPS and effective management of activities.

According to E.S. Ulanova (Ulanova, 2020), the value of the NPS efficiency factor should be calculated as the ratio of the quantitative value of the volume of all transactions in the NPS for the analyzed period of time to the value of the

Table 1. Money supply structure, %

Money supply (M2)	January 1, 2018	January 1, 2019	January 1, 2020	January 1, 2021	January 1, 2022	January 1, 2023
Cash in circulation	19.9	19.8	18.7	21.4	24.88	18.73
Noncash funds	80.1	80.2	81.3	78.6	75.12	81.26

According to: Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: <https://www.cbr.ru/statistics/ms/> (accessed: March 5, 2023).

Table 2. Calculation of the NPS efficiency coefficient (CNP_s)

Year	Volume of money transfers through the Bank of Russia payment system, billion rubles	Volume of GDP, billion rubles	NPS efficiency coefficient, turnovers per year	Chain growth rates of C_{NPS}
2022	X	151 455.6	X	X
2021	2 018 178.6	130 800.0	15.43	1.00
2020	1 657 584.7	106 967.5	15.49	1.08
2019	1 566 461.4	109 241.5	14.34	0.87
2018	1 715 133.0	103 861.7	16.51	1.06
2017	1 440 878.1	92 843.0	15.52	0.99
2016	1 340 034.2	85 880.6	15.60	0.93
2015	1 356 543.2	80 804.3	16.79	–

According to: Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: <https://www.cbr.ru/statistics/ms/> (accessed: March 5, 2023); Rosstat presents the first estimate of GDP for 2022. Federal State Statistics Service. Available at: rosstat.gov.ru/folder/313/document/198546#~:text=Номинальный%20объем%20ВВП%20в%202022,дефлятор%20-%20114%2C3%25 (accessed: March 9, 2023).

Figure 1. Dynamics of the NPS efficiency coefficient, turnovers per year



Source: own compilation.

gross domestic product indicator. The analysis of settlements in this work is based solely on noncash turnover, because its speed in modern conditions is many times greater than cash circulation, in addition, more complex management models are used for cash circulation (*Tab. 2*).

The dynamics of the NPS efficiency coefficient (*Fig. 1*) is characterized by a slowdown in the turnover of financial resources of paying agents. According to E.S. Ulanova, “the coefficient allows us to estimate how many times the NPS of the country could provide the reproduction cycle equal to the size of GDP. In a general economic sense, the indicator allows us to analyze the ability of the NPS to provide the volume of gross domestic product produced in the country with payments, and the higher the coefficient, the more accelerated the turnover of financial resources involved in the production of GDP” (Ulanova, 2020).

Based on these results, the conclusion is that the NPS efficiency coefficient, despite the fact that there is no stable growth dynamics in periods of

increasing external threats, nevertheless has the ability to accelerate recovery. As follows from the given data, after the events of 2014 the recovery of the coefficient value to the level of one occurred within two years; after 2019 the recovery took about a year and subsequently the indicator value did not reach the unit level (see *Tab. 2*). Thus, the timing for the recovery the dynamics of the rate of change in the efficiency factor in the period after the introduction of sanctions in 2022 was in the minimum time range (from one to two years).

During the analyzed period, significant infra-structural changes were introduced in the work of the NPS, the evaluation of the effectiveness of the transformations is presented in the form of data comparison on the dynamics of payments and the number of participants in the payment system.

To achieve comparability of data, the following indicators were selected for use (*Tab. 3*):

- number and volume of money transfers per one credit institution – the NPS operator;
- number and volume of money transfers per customer – the NPS payment agent.

Table 3. Estimated performance indicators of the NPS infrastructure and its forecast values for 2022 and 2023

Indicator	2015	2016	2017	2018	2019	2020	2021	2022 forecast	2023 forecast
Number of money transfers per operator, million units	1.625	1.934	2.271	2.726	3.185	3.643	6.224	7.385	9.315
Volume of money transfers per NPS operator, billion rubles	1403.8	1745.1	2085.8	2763.5	2836.4	3281.7	4464.7	4512.5	4977.1
Number of money transfers per one customer, million units	0.334	0.397	0.496	0.655	0.794	0.905	1.743	1,809	2,33
Volume of money transfers per customer, billion rubles	288.99	358.11	455.14	663.75	706.71	815.42	1278.11	1242.87	1390.50

According to: Statistics of the national payment system. Central Bank of Russian Federation. 2023; Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: <https://www.cbr.ru/PSystem/statistics/> (accessed: March 9, 2023).

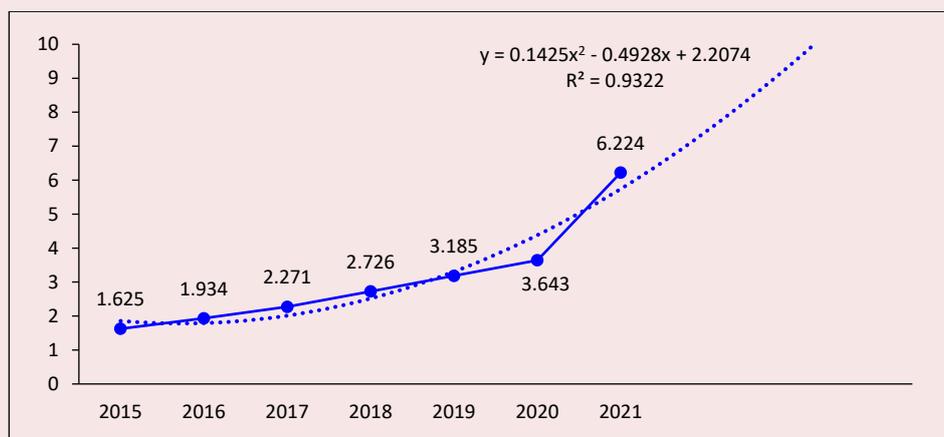
The forecast of the estimated indicators is based on the use of trend models (Fig. 2–5). The high degree of reliability of the obtained statistical dependencies is a criterion for stability and growth of the NPS efficiency, and the increasing rate of growth, even if they are adjusted due to the adverse effects of external and internal threats, maintains a positive trend.

Significant increase in the number of money transfer operations in relation to the number of

credit institutions, defined in the trend, indicates the sustainability and effectiveness of the institutional mechanisms of the NPS.

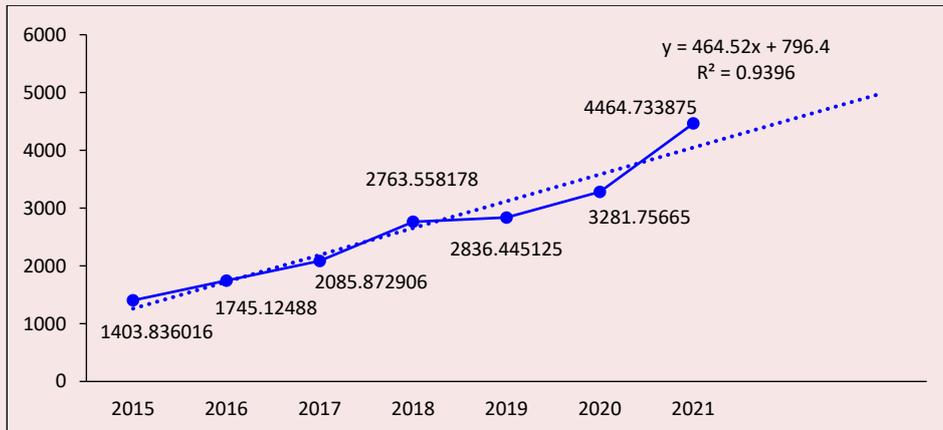
Based on the analysis of the data in Table 3, we conclude that there is a downward trend in the number of the NPS operators, caused by the reduction in the total number of payment systems and credit institutions due to the decision taken by the regulator (according to the Central Bank of the RF, there was a two-fold decrease in the indicator

Figure 2. Trend of the number of money transfers per the NPS operator, million units



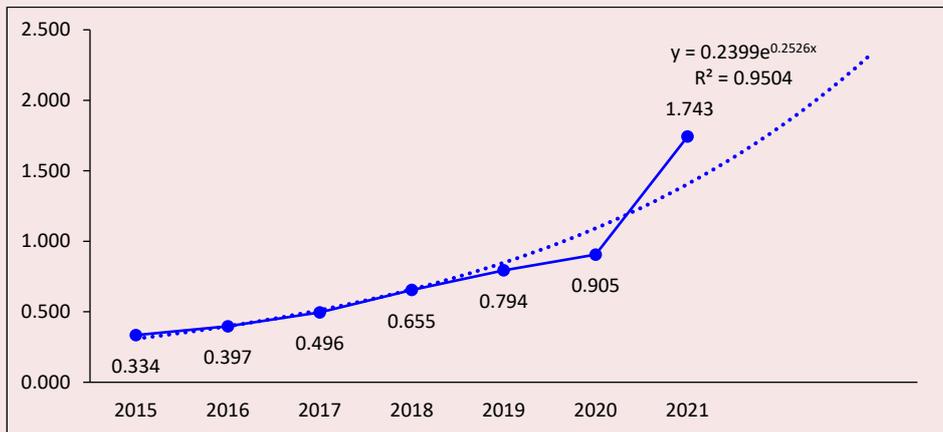
Source: own compilation.

Figure 3. Trend in the volume of money transfers per the NPS operator, billion rubles



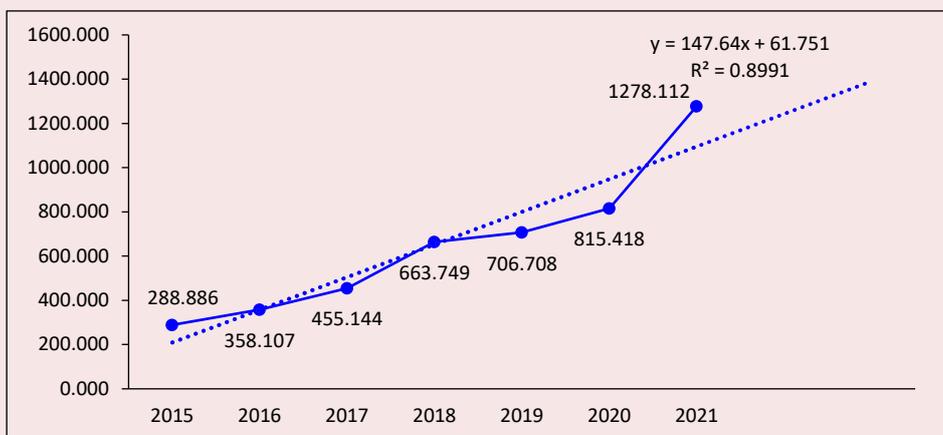
Source: own compilation.

Figure 4. Trend in the number of money transfers per customer, million units



Source: own compilation.

Figure 5. Trend in the volume of money transfers per customer, billion rubles



Source: own compilation.

during the study period), and the outpacing growth of the number of transfers of payment agents (according to the Central Bank of the RF, there was a four-fold increase during the period under study).

The level of workload of the NPS operators in these conditions remains the same and even grows, which is confirmed by the data of the trend model built (see Fig. 2, 3) and the forecast calculations made on the basis of the model.

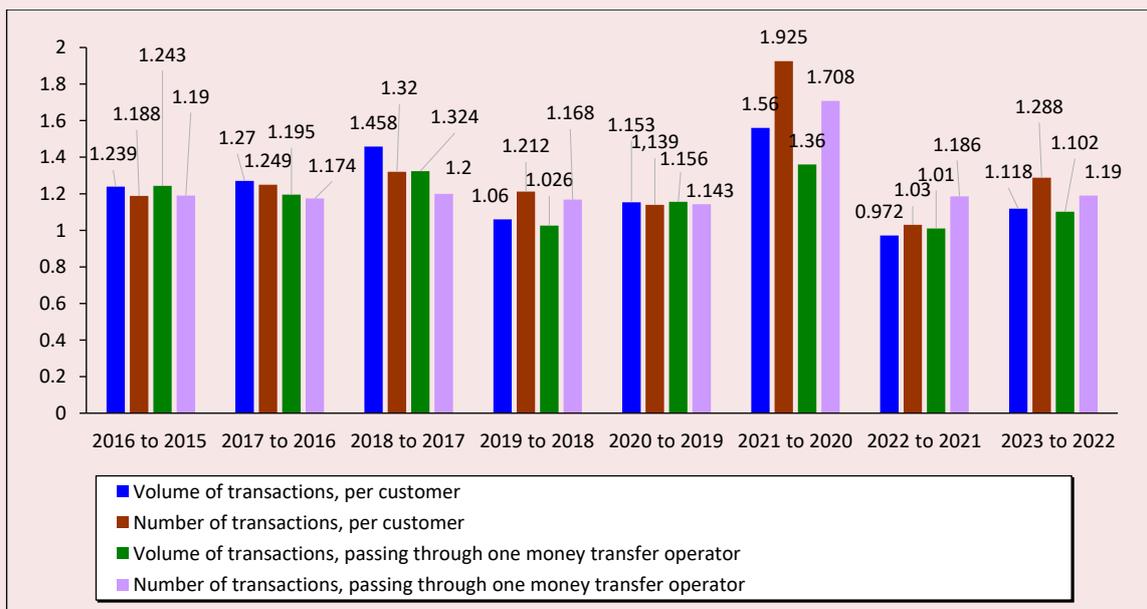
We should note that the line of quantitative characteristics is described and obeys the exponential dependence, and the trend, corresponding to the dynamics of changes in volume indicators, is described by a linear function. Thus, the results of the analysis allow us to state the formation and gradual development of the trend of slowing cash turnover. The dynamics of the growth rates of the above estimated indicators (Tab. 4) confirm the above trend.

Table 4. Growth rate of the estimated performance indicators of the NPS infrastructure, shares of unit

Name/period	2016 to 2015	2017 to 2016	2018 to 2017	2019 to 2018	2020 to 2019	2021 to 2020	2022 to 2021 (forecast)	2023 to 2022 (forecast)
Growth rate of money transfers per the NPS operator	1.243	1.195	1.324	1.026	1.156	1.360	1.010	1.102
Growth rate of the number of money transfers per the NPS operator	1.190	1.174	1.200	1.168	1.143	1.708	1.186	1.190
Growth rate of money transfers volume per customer	1.239	1.270	1.458	1.06	1.153	1.56	0.972	1.118
Growth rate of money transfers number per customer	1.188	1.249	1.320	1.212	1.139	1.925	1.03	1.288

According to: Statistics of the national payment system. Central Bank of Russian Federation. 2023. Money supply (national definition). Central Bank of Russian Federation. 2023. Available at: <https://www.cbr.ru/PSystem/statistics/> (accessed: March 9, 2023).

Figure 6. Chain rates of change in the estimated performance indicators of the NPS infrastructure



Source: own compilation.

The data presented in *Figure 6* shows, that significant increases in the efficiency of operators and payment agents were observed in 2021. Until 2021, the number and volume of money transfers varied almost equally. During the crisis periods, including the period starting from 2021, in the short-term forecast, the quantitative values of payment transactions outstripped the volume indicators.

Summarizing the above, let us cite the opinion of D. Tut (Tut, 2023), who recorded a significant increase in the intensity of online payments in the “pandemic” years and the “post-pandemic” period, which confirms the validity of our conclusions regarding the anomalous changes that have occurred, expressed in a sharp increase in the number of transactions made by customer.

Conclusion

Based on the results of the analysis of the NPS functioning efficiency, we concluded that the current situation due to increased geopolitical pressure on the Russian Federation and financial constraints has not practically affected the dynamics of key performance indicators of the NPS: both the system as a whole and individual operators and payment agents. This fact indicates, that the anti-crisis measures taken by the Bank of Russia to regulate the market of payment services were quite effective and maintain a positive impact on the positive trend in the development of the Russian NPS in the forecast period of time.

Under the conditions of increasing external restrictions, the national payment system in general successfully adapts to the current situation, acquires additional qualities and is characterized by stable share of noncash money turnover in the structure of payments and settlements; growing load on the NPS operators; stable growth of quantitative and volume characteristics of customer payments; accelerated

development of national payment instruments (for example, the “Mir” payment card), which has a positive effect on the country's economy.

Analysis and forecasts of the state of the NPS infrastructure revealed a number of negative moments: the slowdown of the turnover of financial resources of payment agents; lack of necessary conditions for market competition among the existing payment systems.

We suggest the following solutions to overcome the negative trends.

1. Implementation of measures to strengthen the confidence of payment agents in the national noncash payment instruments, expanding the list of national payment instruments – payment cards, improvement and development of the NPS services using distributed ledger technology (smart contracts, marking payments). Also accelerating the introduction and use of digital ruble, including the implementation of settlements in public finance, which will increase the targeting of targeted budget payments, simplify the procedure for administration and calculation of smart contracts for private businesses and payments of the population, which contributes to the efficiency of cross-border payments and settlements through further integration with similar digital currency platforms of other countries' central banks³.

For the successful implementation of the digital ruble project, the functioning of the former payment systems is not necessary, because as a technology for the implementation of the digital ruble is supposed to use open bank APIs and distributed ledgers, which implies the distribution of a trusted environment among the connected operators. The creation of the digital ruble infrastructure will increase the

³ Decentralized Finance. (2022). Central Bank of the RF. Moscow; The Concept of the Digital Ruble. (2021). Central Bank of the RF. Available at: https://www.cbr.ru/Content/Document/File/120075/concept_08042021.pdf

smoothness and reliability of the payment system and reduce the number of intermediary operators in the payment chain. In the context of the above, the structure of the national payment system must be largely transformed. Since the activities of retail payment systems are carried out in a highly competitive market, as a consequence, there may be a real threat of reducing the share of operators in the payment services market, which stimulates the improvement of quality and reduce the cost of services for end consumers – individuals and legal entities. The NPS operators will continue to perform the function of storing and processing information, tariffing transactions and in the case of the introduction of digital ruble.

2. To maintain the level of competition in the payment services market, the relevant systems of Sberbank, VTB and other major payment agents should support the promotion of innovative payment services and technologies. Overcoming the monopoly position of the “Mir” payment system is

one of the key strategic problems, the solution of which will help to increase the effectiveness of the NPS.

To overcome monopolistic trends in the financial market, it is necessary to increase the number of payment systems operating within the NPS. In the context of the above, the Central Bank of the Russian Federation must take the necessary measures to stabilize the financial market, promote the registration of newly introduced payment systems, and develop existing services, which in the future will lead to the emergence and increase the number of systems – competitors of the “Mir” payment system.

3. In order to maintain high rates of development, the “Mir” payment system should be reoriented to the segment of economic agents with high- and middle-income levels. One of the directions of creating innovative payment instruments is to improve the services of investment orientation, capable to attract additional financial resources to the national economy.

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The Employment Quality Potential of Generation Groups of Workers and the Economic Sustainability of Their Households



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Abstract. The exacerbation of external sanctions pressure on Russia in 2022, which continues to increase at present, has brought to the fore the national agenda of improving the quality of life and standard of living of Russians, achieving national benchmarks in this area and solving problems on the “inner circuit” in the face of new (including existential) challenges. There is a growing need for the development of a scientific and informational basis for the in-depth elaboration of effective responses to the challenges posed. The article presents the results of the research, which continues our developments in the field of studying the relationship between the quality of employment and living standards, focusing on the identification of features in generation groups: young people (up to 35 years), middle generation (36 years – retirement age), the older generation (retirement age). In this study, based on original developments, we have set out with the aim of identifying the unused potential of employment quality in generation groups of workers

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and its connection with the economic (un)sustainability of households, which determines their standard of living. The empirical basis was the data from the Russia Longitudinal Monitoring Survey of the HSE and the Comprehensive Monitoring of Living Conditions of the Population by Rosstat. The potential quality of employment of generation groups of workers is revealed, which is determined by the mismatch between education and employment (mismatch between the level of education and specialty, required in the workplace), the presence of precarious employment revealed on the basis of the indicators we have proposed. We consider the dynamics of economic sustainability of workers' households, determined on the basis of our developments and formed by the income from employment in generation groups of workers, as a whole and depending on the characteristics of the quality of employment. The results of this study allow us to update public policy decisions in the areas of employment and vocational education to improve the performance of the chain "education – employment – economic sustainability – standard of living".

Key words: generation groups, education, quality of employment, precarious employment, standard of living, economic sustainability of households, social standards, income from employment.

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Introduction

New challenges to Russia's development after February 2022 create risks to the national interests defined in the National Security Strategy of the Russian Federation – "preservation of the Russian people, development of human potential, improvement of the quality of life and well-being of citizens"¹ and determine the need to actualize a set of program-targeted tools of public policy, aimed at the realization of national interests of the country.

The period of the COVID pandemic, the consequences of which in the field of employment "layered" on global transformation processes in the labor sphere (increasing role of digital competencies, expansion of nonstandard social and labor relations, etc.), clearly highlighted the increasing role of employment and its quality in maintaining and improving living standards of households. The new challenges of 2022, reflected in the Russian labor

market and employment², create risks (changes in the number of the working in households, etc.) and opportunities (labor shortages, etc.) for the economic sustainability of Russian households and the improvement of their standard of living.

The need for further scientific developments in the study of the employment quality and its impact on the situation of households is of particular importance, actualizing the comprehension of the already accumulated scientific results.

The problematic of employment quality occupies an important place in the research agenda, including the study of its features in different segments of employment (standard/nonstandard) and economic sectors (formal/informal) (Baskakova, Soboleva, 2017; Leonidova, 2021; Chernykh, 2021; Peckham

¹ On the Strategy of National Security of the Russian Federation: Presidential Decree 400, dated July 2, 2021. Available at: <http://publication.pravo.gov.ru/Document/Vow/0001202107030001>

² The labor market is transforming – what will happen to salaries and employment? Available at: <https://www.finam.ru/publications/item/rynok-truda-transformiruetsya-cto-budet-s-zarplatoy-i-zanyatostyu-20230415-1658/>; Staff shortage and local unemployment: Expectations for the labor market in 2023. Available at: <https://www.vedomosti.ru/economics/articles/2023/01/18/959434-kadrovii-golod-i-lokalnaya-bezrabotitsa>

et al., 2022), for different groups of workers (Veredyuk, 2018; Bobkov et al., 2021), in the context of legal regulation in the labor sphere (Korshunova, 2020; Labor Relations..., 2022), and with the impact on other areas of life (Standard of Living and Quality..., 2022; Fokin, 2013).

Due to the complexity of the category “employment quality”, experts continue to develop an instrumental infrastructure for its qualitative-quantitative identification, and the reflection of the findings (Berten, 2022; Burchell et al., 2014; Muñoz de Bustillo et al., 2011) to improve the objectivity and comprehensiveness of measurement, including considering the application to employment quality and social development policies. At the international level, a number of so-called indicator “frameworks” have been developed to measure various aspects of employment quality: the Decent Work Indicators of the International Labor Organization³, the statistical framework for measuring employment quality of the UN Economic Commission for Europe⁴ and for measuring and assessing jobs quality of the Organization for Economic Cooperation and Development⁵, etc.

The index approach to assessing the employment quality is proposed for practical application: the index of job quality, developed by the European Trade Union Institute for multidimensional (wages; forms of employment and job security; working time and work-life balance; working conditions; skills and career development; representation of collective interests) measurement of job quality in

European countries⁶; job quality indices (physical environment, intensity of work, quality of working time, social environment, skills and discretion, prospects, income from employment), which allow us grouping jobs according to their quality profiles⁷; employment quality deprivation index, providing indicators on the following dimensions: labor income, stability, security and employment conditions (González et al., 2021); etc.

The peculiarity of our study is the consideration of the employment quality in connection with education. The authors focus on identifying the mismatch between education (level and specialty) and the requirements of the workplace. This problem of professional-qualification imbalance (“skills mismatch”), due to its scale and consequences, is the subject of study by both Russian and foreign researchers (Varshavskaya, 2021; Kolosova et al., 2020; Soboleva, 2022; Arvan et al., 2019; Erdogan, Bauer, 2020).

In addition, the employment quality is revealed through the identification of signs of precarious employment. Precarious employment in the context of the employment quality concept is a segment of employment with low quality due to the forced loss of labor, social and economic rights of workers (Precarious Employment..., 2019). The problematic of precarious employment is actively studied in the Russian and foreign research field (Kuchenkova, Kolosova, 2018; Precarious Employment..., 2019; From precarious employment..., 2022; Campbell, Price, 2016; García-Pérez et al., 2017; Padrosa et al., 2021; Standing, 2011), attention is focused on the consequences of such employment (reduced quality of employment, standard of living and quality of life, etc.) (Bobkov et al., 2021; Lewchuk et al., 2016; Popov, Solov'eva, 2019; Pun et al., 2022).

³ Decent Work Indicators: Guidelines for Producers and Users of Statistical and Legal Framework Indicators: ILO Manual: Second Version. (2013). International Labour Office. Geneva: ILO.

⁴ Handbook on Measuring Quality of Employment: A Statistical Framework, prepared by the Expert Group on Measuring Quality of Employment. (2015). UNECE. United Nations, New York & Geneva.

⁵ Cazes S., Hijzen A., Saint-Martin A. (2015). Measuring and assessing job quality: The OECD job quality framework. OECD Social, Employment and Migration Working Papers, 174. OECD Publishing, Paris.

⁶ Piasna A. (2017). “Bad jobs” recovery? European Job Quality Index 2005–2015. Working Paper. European Trade Union Institute. Brussels: ETUI aisbl.

⁷ Working conditions survey: Job quality indices. Job quality. Eurofound. Available at: <https://www.eurofound.europa.eu/topic/job-quality>

The economic sustainability of households, which is the second (but not in importance) aspect of the study in the framework of this article, is part of the problem field of research on living standards and the identification of population groups, differing in living standards, based on monetary criteria. These criteria for identification can be constructed based on objective (absolute and relative) and subjective approaches (Ovcharova, 2009; Tikhonova et al., 2018; Chen, Ravallion, 2013; Cutillo et al., 2022; Decerf, 2021; Mareeva, Lezhnina, 2019; Ravallion, Chen, 2019). We follow an absolute approach relying on consumer budgets of different affluence levels (Mozhina, 1993; Rzhantsyna, 2019; Rimashevskaya et al., 1979; Sarkisyan, Kuznetsova, 1967; Deeming, 2011; Mäkinen, 2021; Penne et al., 2020) to distinguish different patterns of living standards (Standard of Living and Quality..., 2022). We also consider it advisable to link employment income to the criterion boundaries of standard of living models, thereby determining their required level (taking into account the dependency burden) to get into the strata of the population with different standard of living. This allows us to study employment and its quality, and the standard of living of households in their relationship.

This article continues our research into the generation characteristics of the relationship between employment quality and living standard. **The aim** of the work is to identify the unused potential of employment quality in generation groups of the workers and its relationship to the economic (un)sustainability of households, which determines their standard of living.

The scientific novelty of the study lies in the consideration of the impact of employment quality characteristics on the economic sustainability of households of generation group of the workers on the basis of our original findings.

The significance of this work consists in identifying the characteristics of employment quality that are sensitive to the economic sustain-

ability of households and their quantitative identification, which allows us to update public policy decisions in the field of employment, vocational education to improve the performance of the chain “education – employment – economic sustainability – standard of living”.

Methodology of research and data

1. Generation perspective of employment. We focus our research on the generation groups of the workers: young people (up to 35 years), middle generation (36 years – retirement age) and older generation (retirement age). Singling out generation groups makes it possible to trace the dynamics of employment quality and the dynamics of economic sustainability determined by it at three different stages of the life cycle, related to the formation and realization of labor potential and the formation of standard of living (Bobkov et al., 2021).

2. Household economic sustainability of generation groups of the workers. We define economic sustainability as the financial situation sustainability, assessed on the basis of the original system of household per capita cash income (PCI) standards (Standard of Living and Quality..., 2022). The economic sustainability boundary, according to our developments, is the lower boundary of per capita income standards, identifying entry into the middle-income group (3.1 subsistence minimums – (SM) (Bobkov et al., 2021; Standard of Living and Quality..., 2022).

Thus, the households, in which the level of PCI is not lower than 3.1 SM, i.e. they belong to the middle- and high-income groups by cash income, are defined as economically stable. Accordingly, households with a PCI lower than 3.1 SM, i.e., those who are poor, low-income, or below middle in terms of cash income, are classified as economically unstable.

We consider economic sustainability in relation to employment; we analyze whether the economic sustainability of households of generation groups of the workers is ensured at the expense of income from main employment.

The formation of standard of living of households is linked to main employment for the following reasons. First, the main source of income, as follows from the official statistics, is wages⁸. Second, our study focuses on the employed, and according to Rosstat, 98% of the employed have only one job⁹, so their household income is mainly formed by income from primary employment. Third, in examining the relationship between household income and employment income, we assume that economic sustainability in employed households should be achieved through their main employment, rather than through multiemployment, welfare payments, etc.

The assessment of the income level from main employment was differentiated for workers of different generational groups. Two boundaries of employment income were applied according on the presence of dependency burden and generation group.

2.1. The main employment income boundary, that ensures the economic sustainability of households, which is 3.1 subsistence minimums of the working population (SMw). This is a boundary, that does not take into account dependency burdens in workers' households. It was applied to older workers and youth and middle-generation workers with no underage children.

2.2. The boundary of basic employment income, that ensures the economic sustainability of households, is 3.9 SMw. This is a boundary that takes into account the minimum dependency burden in the households of workers, in the calculation of which the "model" dependency burden in the average family (two working and one child) and the savings on joint consumption were taken into account. This boundary applied to workers with underage children from the youth and middle generation.

⁸ Volume and structure of money incomes of the Russian Federation population by sources of income (new methodology). Rosstat. Available at: <https://rosstat.gov.ru/folder/13397>

⁹ Results of the sample labor force survey. 2022. Rosstat. Available at: <https://rosstat.gov.ru/folder/11110/document/13265>

3. Employment quality of generation groups of the workers. The study examined the economic (un) sustainability of households of generations groups of workers, depending on the employment quality. We focused on identifying the unused potential of employment quality, which was determined by the following criteria.

3.1. Matching the level of education to the required level in the workplace. To assess and measure the extent of discrepancies between the available level of education and the required level of education at the workplace in international practice different methods are used: subjective (based on self-assessment of employees), normative (based on the classifiers of professions (occupations), in which they are correlated with the levels of qualification, determined on the basis of educational levels), empirical (statistical, identifying average (modal) level of education for professions), etc.¹⁰ In this study, we applied the normative method. The assessment was based on the analysis of the distribution of the employed by occupational groups (groups of occupations), allocated by the All-Russian Classifier of Occupations (AKO)¹¹, and the level of education (correlated in the AKO with a certain level of qualification). When comparing the level of education available to employees with the required level of education in the workplace (the main employment), the identification of its (1) compliance, (2) redundancy, (3) insufficiency was carried out.

3.2. Compliance of the work to the received specialty. We considered how much the available employment (main employment) corresponds to the received specialty: a) work fully corresponds to the received specialty; b) work in a close specialty; c)

¹⁰ Skills and jobs mismatches in low- and middle-income countries (2019). International Labour Office. Geneva: ILO. 193 p.

¹¹ All-Russian Classifier of Occupations (adopted and enacted by Order of Rosstandart, dated December 12, 2014 2020-st) (edited on February 18, 2021). Available at: <http://www.consultant.ru/cons/cgi/online.cgi?from=177953-0&req=doc&rnd=DbWQcA&base=LAW&n=386337#CnS2UwSwTN6zap5t>

work not in the specialty. Assessment of compliance was based on the subjective method: workers' self-assessments on a dedicated "scale" (a) – (c) were taken into account.

On the basis of two criteria, the employment quality potential of workers of generation groups was evaluated in terms of the presence of so-called "vertical" (criterion 3.1) and/or "horizontal" (criterion 3.2) discrepancies between education and employment. They also allow us to make conclusions about the effectiveness of the educational potential in employment realization.

3.3. Absence/presence of the precarious employment manifestation. In order to identify precarious employment, we used the list of indicators previously verified by the authors (Bobkov et al., 2022).

3.3.1. Precarious employment by type of contractual agreements – employment on the basis of 1) verbal agreement without paperwork; 2) civil law contract or 3) labor contract (service contract) for a certain period of time; 4) employment not for hire in the informal sector.

3.3.2. Precarious employment by its terms – 5) forced unpaid vacation at the employer's initiative; 6) absence of paid vacation; 7) reduction in wages or reduction of working hours by the employer; 8) wage arrears; 9) unofficial (partial or full) income from main employment; 10) working hours deviating from the standard: the length of the working week is more than 40 hours or not more than 30 hours (at the main place of work).

Among the manifestations of precarious employment, we also consider the employment income level (Bobkov et al., 2022), but in accordance with the intention of this study it was not included in the list of precarious employment indicators by its conditions (3.3.2), but was considered as an independent, resulting aspect of the study, characterizing the employment quality.

The presence of precarious employment manifestations among workers of the generation groups was taken into account in the following way.

Workers with precarious employment by the type of contractual agreements (presence of any indicator from the list (1) – (4) and workers with precarious employment by its conditions (presence of three or more indicators from the list (5) – (10) were identified.

The empirical basis of the study was formed on the basis of the following data (the most relevant data available for processing at the time of the study):

(1) data from the Russia Longitudinal Monitoring Survey of the HSE University¹² (hereinafter – RLMS): data from the 30th round of RLMS (September 2021 – January 2022), and the 10th round of RLMS (October – December 2001)¹³;

(2) microdata from the Comprehensive Survey of Living Conditions conducted by Rosstat in May – June 2022¹⁴ (hereinafter – CSLS–2022).

Thus, in this study, we record the situation in the period after the pandemic and the exacerbation of external sanctions pressure on Russia in 2022, which continues to grow at the present time.

¹² The Russia Longitudinal Monitoring Survey of the HSE University (RLMS HSE), conducted by the National Research University Higher School of Economics and "Demoskop" LLC with the participation of the Population Center of the University of North Carolina at Chapel Hill and the Institute of Sociology of the Federal Research Sociological Center RAS (RLMS HSE Survey Websites: <http://www.hse.ru/rlms> и <https://rlms-hse.cpc.unc.edu>).

¹³ RLMS has been conducted since 1994. Nationwide representative surveys are based on a probability-based, stratified, multistage territorial sample. The survey collects data on households and household members. In the 30th wave of the RLMS, 4,800 households and 12,100 household members were interviewed. For more details see: *The Russia Longitudinal Monitoring Survey of the HSE University*. Available at: <http://www.hse.ru/rlms>

¹⁴ Monitoring is carried out in accordance with Russian Federation Government Decree 946, dated November 27, 2010 "On the organization in the Russian Federation of a system of federal statistical observations on socio-demographic problems and the monitoring of economic losses from mortality, morbidity and disability of the population". In 2022, observation was conducted in all constituent entities of the Russian Federation, covering 60,000 households. The observation collected data on households and household members (persons aged 15 and older, and children under the age of 15). For more information, see: *Comprehensive Survey of Living Conditions – 2022*. Available at: https://gks.ru/free_doc/new_site/GKS_KOUZH_2022/index.html

In the course of the study, the CSLS and RLMS databases were used as “complementary” to each other, taking into account the “power” of each of them – the absence of data necessary for analysis in one database was “compensated” by data available in the other one. The RLMS database was the main one for the assessment, because it more fully presents the list of indicators required for the purposes of the study. The CSLS database was used as an additional database to compensate for the absence/insufficiency of data in the RLMS database¹⁵.

From each database, a sample was drawn – individuals aged 15 or older, who were employed¹⁶. Next, we identified generation groups – young people (up to 35 years), the middle generation (36 years – retirement age), the older generation (retirement age), which were further analyzed in accordance with the concept of research.

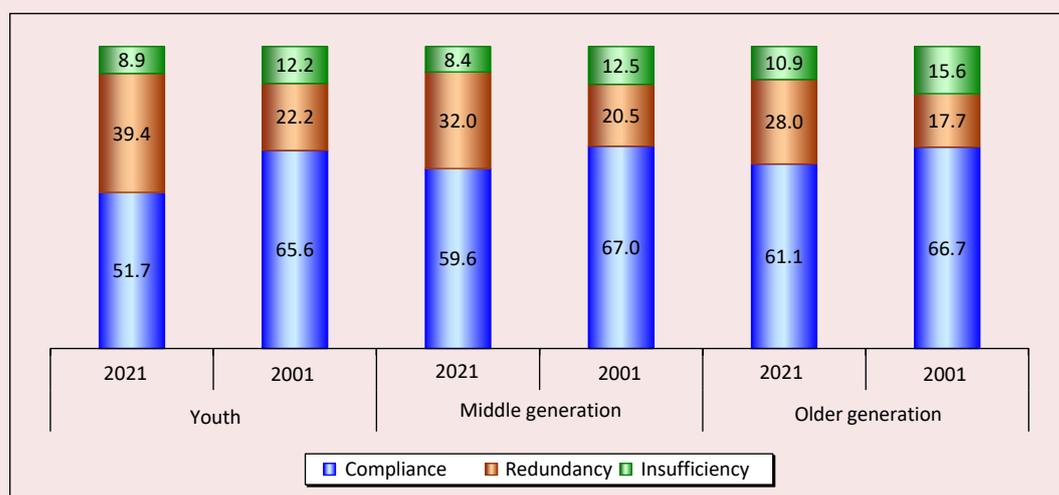
Main results of the study

The results obtained show generation specifics of the employment quality and economic sustainability of workers’ households.

In the generation groups of the workers 50–60% had an education level, which corresponded to the level required at the workplace (*Fig. 1*). In the transition from the youth group (51.7%) to the older generation (61.1%), the proportion of workers, whose education level corresponded to the complexity of the workplace, increased.

A comparison of two measurements of the state of education level compliance with job requirements (2021 – current data; 2001 – the beginning of the country’s economic recovery after the systemic crisis of the 1990s) showed that this “model” of educational potential realization in employment has become less common in the generation groups of the workers, the greatest

Figure 1. Matching of the available level of education with the required level of education in the workplace in generation groups of the workers, 2001 and 2021, %



According to: data from the 30th and 10th round of the RLMS. We used data, which recorded belonging to the group of occupations according to the classifier of occupations and the education level.

¹⁵ In particular, we assessed the presence of manifestations of precarious employment by the type of contractual agreements (see Tab. 2), the matching of the job to the specialty obtained (see Fig. 2) and the matching of the specialty and/or education level to the job requirements (see Tab. 1) on the basis of the CSLS base.

¹⁶ The sample based on RLMS data was 5.5 thousand people, sampling error $\pm 1.32\%$ (at 95% confidence level). The sample based on the CSLS data was 56,500 people, sampling error $\pm 0.41\%$ (with 95% confidence level).

negative dynamics are observed among young people (-13.9 p.p.). Young people began to adapt in the labor market, more often (+17.2 p. p.) turning to another “model” – with excessive education levels, implementing (for various reasons) the education level in less qualified employment (39.4% in 2021 and 22.2% in 2001). The potential for “excess” education by 2021 also increased in the other two generation groups of the workers: the middle generation by 11.5 p.p. (32.0% in 2021), and the older generation by 10.3 p.p. (28.0% in 2021).

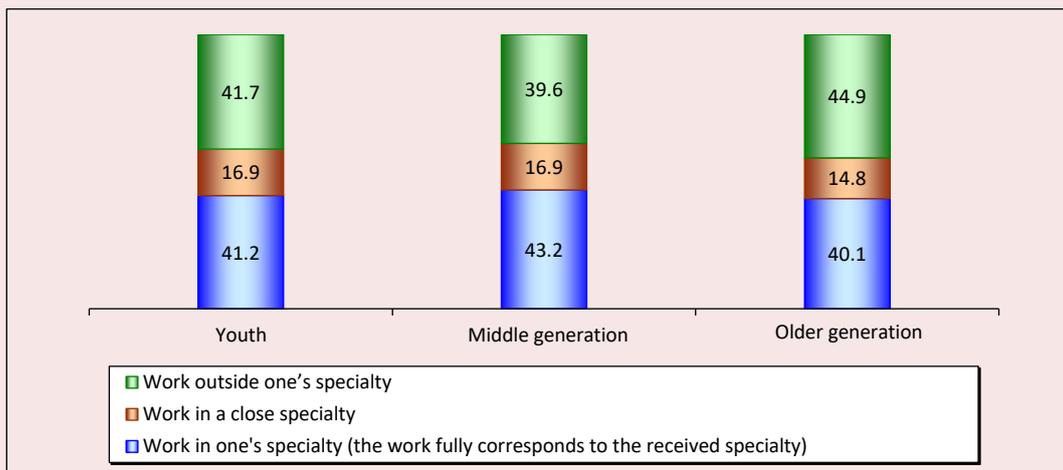
At the same time, a significant number of workers in all generation groups are employed in jobs, which require a higher education level (insufficient education level for the complexity of the job). In the youth group of employment their share was 8.9% in 2021, in the middle group – 8.4%, in the older generation group insufficient education level compared to the qualification requirements had 10.9%. In 2021 this disproportion decreased: in youth – by 3.3 p.p., in the middle generation – by 4.1 p.p., in the older generation – by 4.7 p.p.

Cumulatively, the share of workers, whose educational potential (education level) is not fully used or is insufficient for the job complexity, was 48.3% in the youth generation, 40.4% in the middle generation and 38.9% in the older generation (2021). These generation groups of the workers have so-called “vertical” (education level) mismatches between education and employment.

“Horizontal” mismatches – work outside one’s specialty – are also widespread. In generation groups of the workers, only about 40% (2022) worked in their specialty (*Fig. 2*). Among young people, 41.2% worked in their specialty, almost as many (41.7%) were employed outside their specialty, and 16.9% were employed in a closely related specialty.

In the middle generation, the share of those, who work in their specialty, increases (43.2%). The share of those, who work in a close specialty, corresponds to the share in the youth group (16.9%) and the share of those, who work in a non-specialty, is the lowest among the generation groups (39.6%).

Figure 2. Distribution of the employed generation groups, depending on the compliance of work with the received specialty, 2022, %*



* The proportion of workers, who found it difficult to answer, in the generational groups is not presented, was 0.2–0.3%. According to: CSLS–2022 data. We used information about the matching of the main job to the received specialty (the answers “Yes, this job fully corresponds to the received specialty”, “Yes, this job is close to the specialty”, “No, this job is not a specialty” were taken into account).

The older generation has the highest proportion of out-of-specialty workers (44.9%) and the lowest proportion of in-specialty workers (40.1%) relative to the other two generation groups. Working in a close profession in the older generation is 14.8%, which is lower, than among the youth and the middle generation.

In general, more than 70% (2022) of generation groups of the workers revealed unrealized potential of employment quality (*Tab. 1*). In the older generation 76.0% had “vertical” and/or “horizontal” mismatches between education and employment, in the middle generation their share was 76.7%, and in the youth group it reached 77.3%.

At the same time, a significant share of workers was characterized by employment with both “horizontal” and “vertical” mismatches in educational potential. They worked not in their specialty with the education level not corresponding to that required at the workplace. Among young people the share of such workers was 33.0%, in the middle generation it is slightly lower – 32.2% and in the older generation it reaches a maximum – 38.4%.

Thus, a large part of the workers (more than 70%) of the three generation groups under consideration have unrealized opportunities to improve the quality of employment in terms of more complete use of the received specialty and/or qualification (education level). Of these, one third or more of the workers found both specialty and qualification were not in demand for the available employment.

Having implemented their educational potential in employment with different results, workers may additionally face a decrease in the employment quality due to the presence of precarious employment manifestations (*Tab. 2*). Youth (18.3%) and older generation (17.6%) employment is more likely to be precarious due to the type of contractual arrangements, than middle-generation workers (15.3%). They work for hire, but not under an open-ended employment contract (employed under a civil law contract or labor contract (service contract) for a certain period of time) or without formal registration; or employed not for hire in the informal sector.

Youth workers (8.4%) are more likely to experience precarious employment by its terms. The older (6.0%) and middle (5.5%) generations are less likely to experience a decline in employment quality due to the presence of three or more indicators of precarious employment.

Thus, unrealized employment quality potential due to the presence of manifestations of precarious employment, indicating low employment quality, was identified in less than 10–20% of generation group of the workers (depending on the type of contractual agreements or employment conditions assessment).

Basic employment incomes for the vast majority of workers in all three generation groups, as the results obtained show, do not ensure the economic sustainability of households (*Tab. 3*). The greatest risks that employment will not be able to ensure the

Table 1. Distribution of employed generation groups depending on the relevance of the job obtained and the compliance of the available education with the required level of education at the workplace, 2022, %

Mismatches	Youth	Middle generation	Older generation
Work not in their specialty and/or their education level does not match the required in the workplace, including:	77.3	76.7	76.0
Work not in their specialty with education level, which does not correspond to the required in the workplace	33.0	32.2	38.4

According to: CSLS–2022 data. We used information about the matching of the main job to the received specialty (the answers “Yes, this job fully corresponds to the received specialty”, “Yes, this job is close to the specialty”, “No, this job is not a specialty”) and also information the belonging to the group of occupations according to the classifier of occupations and the education level.

Table 2. Presence of manifestations of precarious employment in the employed generation groups, 2021–2022, %

Employment	Youth	Middle generation	Older generation
Precarious employment by type of contractual arrangements (employment for hire based on verbal agreement without paperwork, civil law contract or labor contract (service contract) for a certain period of time); employment not for hire in the informal sector)*	18.3	15.3	17.6
Precarious employment by its conditions (presence of three or more indicators** of precarious employment conditions)***	8.4	5.5	6.0

According to: data from the 30th round of the RLMS and the CSLS–2022.

* We used the information in the CSLS database on the working conditions of the employed for hire (the answers “Based on verbal agreement, without paperwork”, “Based on a civil law contract”, “Based on a labor contract (service contract) – for a certain period of time”) and also on work in the informal sector for the self-employed were taken into account.

** We took into account the following indicators: forced unpaid vacation at the employer’s initiative; absence of paid vacation; reduction of wages or reduced working hours by the employer; wage arrears; unofficial (partial or full) income from main employment; working hours, which deviate from the standard: working week of more than 40 hours or not more than 30 hours (in the main place of work). The indicators, characterizing precarious employment by its conditions, did not include the indicator of income from employment, which does not provide a stable economic situation of households. It was considered as an independent, resulting aspect of the study, characterizing the employment quality. Therefore, the share of workers with precarious employment due to its conditions has a lower value, different from its values obtained, when taking into account this indicator among others characterizing precarious employment conditions (see “Discussion of the results”).

*** The following questions in the RLMS database were used: “During the last 12 months, did the administration send you on forced unpaid vacation?” (answers “Yes” were taken into account), “Have you been on paid vacation during the last 12 months?” (answers “No” were taken into account), “During the last 12 months, have you had your salary reduced or have your working hours been reduced against your wishes?” (the answers “Yes” were taken into account), “Does your company currently owe you any money, which for various reasons was not paid on time?” (answers “Yes” were taken into account), “Do you think all this money was spent officially?” (the answers “Some officially, some not”, “All – unofficially” were taken into account), “How many hours on average does your regular work week last?” (the duration of the work week was considered more than 40 hours or not more than 30 hours).

economic sustainability of households are found among older workers (87.3%), whose income from employment is not the only source of income, and social benefits (pensions) can “smooth out” the sharpness of their household income situation. Among young people these risks are lower, than in the older generation – 82.3%, in the middle generation they decrease to 77.8%.

Accordingly, the chances of ensuring the economic sustainability of workers’ households at the expense of income from main employment are highest for middle-generation workers (22.2%), the chances are almost half as high for the older generation (12.7%) and for young people they are 17.7%.

During a review of the employment income levels of generation groups of the workers by generalized characteristics of employment quality, it is found that regardless of these, employment income for the vast majority (over 70–80%) of

workers does not provide economic sustainability for households (see Tab. 3). This is a demotivating factor for the development of employees’ labor potential, professional development, professional growth, etc.

We should note, that for young workers, the mismatch between education and employment increases the chances of economic sustainability for households. In contrast, in the older generation, economic sustainability of households is more likely to result from employment in accordance with education. The absence of precarious employment manifestations for older and younger workers is more likely to lead to the economic sustainability of their households. In the middle generation there are no noticeable differences in the ability of employment to ensure the economic sustainability of households, depending on these characteristics of the employment quality.

Table 3. Distribution of the employed generation groups by standards of income from basic employment in general and according to the quality of employment (compliance of education and employment; presence of precarious employment manifestations), 2021, %

Generation group	Level of income from main employment*	
	Does not ensure the economic sustainability of households	Ensure the economic sustainability of households
Youth		
Total	82.3	17.7
Depending on the employment quality		
Matching between education and employment**		
Matches	83.4	16.6
Does not match	81.5	18.5
Presence of precarious employment manifestations (by type of contractual arrangements and/or by terms of employment)		
Available	83.2	16.8
Not available	80.4	19.6
Middle generation		
Total	77.8	22.2
Depending on the employment quality		
Matching between education and employment**		
Matches	77.2	22.8
Does not match	78.8	21.2
Presence of precarious employment manifestations (by type of contractual arrangements and/or by terms of employment)		
Available	77.5	22.5
Not available	78.1	21.9
Older generation		
Total	87.3	12.7
Depending on the employment quality		
Matching between education and employment**		
Matches	86.0	14.0
Does not match	89.9	10.1
Presence of precarious employment manifestations (by type of contractual arrangements and/or by terms of employment)		
Available	88.9	11.1
Not available	85.3	14.7
* When assessing the income from main employment (information on the amount of money received at the main place of work was taken into account), differentiated income limits were taken into account: for older workers, and workers from the youth and middle generation with no underage children – without considering the dependency burden (3.1 SMw); for youth and middle generation workers with underage children – with considering the dependency burden (3.9 SMw).		
** The presence of “vertical” mismatches between education and employment was taken into account.		
According to: data from the 30th round of the RLMS.		

Discussion of the results

The data obtained during the study confirm the relevance of the problem of vocational and qualification imbalance, which is widely represented in Russian employment, but also exists in other countries¹⁷ (Soboleva, 2022). The results of the study show that more than 70% of generation groups of employed/workers do not work in their specialty and/or their education level does not match the required level of education in the workplace. The employment of these generation groups of the workers identifies the so-called “skills mismatch”. This refers to “vertical” and “horizontal” mismatches between education and employment¹⁸. There are international comparisons on this issue, which confirms its importance for improving employment effectiveness. Thus, Russia (more than 40% of the labor force) is among the countries with the highest size of the “skills mismatch”, the impact of which for country economies leads not only to losses in labor productivity (estimated at an average 6%), losses in GDP (global GDP losses are estimated at \$5 trillion), but also to social consequences (uncertainty and concern of workers about their future employment, career development, income levels, etc.)¹⁹. The consequences of this problem actualize the need for a comprehensive solution and harmonization of education and employment.

The mismatch between the available education level and the required education level at the workplace, in our opinion, should be analyzed through the contradictions, which arise and are resolved as a result of this mismatch. We believe,

¹⁷ Mass uniqueness. A global challenge in the fight for talent. (2019). BCG; Fixing the Global Skills Mismatch. BCG, 2020. Available at: <https://www.bcg.com/publications/2020/fixing-global-skills-mismatch>; etc.

¹⁸ Skill mismatch in Europe. Europe’s challenge is not just to improve skill levels, but to match people with the right skills to the right jobs. Briefing note (2010). European Centre for the Development of Vocational Training. 4 p.; Skills and jobs mismatches in low- and middle-income countries (2019). International Labour Office. Geneva: ILO.

¹⁹ Mass uniqueness. A global challenge in the fight for talent. (2019). BCG. P. 21.

that the partially developed scale of unused potential of education is the result of an objective process of “imbalance” between the qualifications of the labor force and its number and complexity of jobs and their number. Over the past 20 years the unused potential of the so-called “excess” education has increased significantly in all generation groups: in the youth – by 17.2 p.p. (significantly more, than in other generation groups); in the middle generation – by 11.5 p.p.; in the working older generation – by 10.3 p.p. At the same time, the disproportion manifested in the lack of vocational education for the complexity of jobs has decreased during this time: in the youth – by 3.3 p.p.; in the middle generation – by 4.1 p.p.; in the working seniors – by 4.7 p.p.

In this aspect, the outpacing growth of education, compared to the complexity of jobs, in our view, is a positive process in the development of any social system. This is primarily due to the fact that a higher level, and most importantly, the education quality becomes a social elevator for people, it creates opportunities to move to higher strata in terms of income from employment and the standard of living and quality of life. Education allows people to develop and meet their needs more fully and creates conditions for greater economic sustainability of workers’ households. The outpacing growth in education compared to the increasing complexity of jobs is also a driver of scientific and technological progress.

If the development of a person/labor force is ahead of the complexity of his environment, in our case the complexity of the work environment, a person (society) can manage its development. Regarding the employment quality and its performance, this means that a higher education level (provided that a higher level of formal education corresponds to its higher quality) compared to the complexity of jobs creates opportunities for their transformation, improving the quality (complexity) and increasing labor productivity, and therefore, other things being equal, increasing employment income and

economic stability, living standards of households.

Part of the problem of the imbalance between the qualifications of the labor force and its size, on the one hand, and, the complexity of jobs and their number, on the other hand, is the result of a number of mistakes in public policy for the development of high-tech and knowledge-intensive sectors of the Russian economy. In the post-Soviet period, until 2014, there were no normal conditions for the production of complex knowledge-intensive products, allowing us to have a normal profitability, clear prospects and to attract highly qualified specialists. In this situation, there was a mass reassignment of graduates with technical, natural science and a number of social science specialties, and their movement to higher-paying sectors of the economy.

Other reasons for the imbalance between the education of workers and the complexity of jobs are a variety of circumstances: territorial mismatches (either a workers' shortage or a shortage of jobs in a particular area of employment); a change in professional specialization by workers who have "discovered" new abilities and realize more acceptable for them areas "application" of their knowledge, skills and experience; lack of competitiveness in the basic profession; health conditions, etc.

As a consequence of all this, the problems of harmonization of professional education and complexity of jobs, in our opinion, must be solved taking into account all the diverse circumstances, identifying their specific causes and consequences, their positive and negative aspects and ways to harmonize them, including taking into account sectoral and territorial specifics and in connection with improving the economic stability of workers' households.

The unused employment quality potential of generation group of the workers identified in the study, determined by its decline due to the type of contractual agreements and employment conditions, illustrates the prevalence of the precarious employment problem, including its risks for different

socio-demographic, professional and territorial population groups (Precarious Employment..., 2019; Precarious Employment..., 2021).

The consequences of precarious employment, which spread to the living standards of workers' households, leading to a decline in its monetary indicators (Bobkov et al., 2021; Kuchenkova, Kolosova, 2018; Lewchuk et al., 2016), and also the precarization of all aspects of life (From Precarious Employment..., 2022), require its further study in the paradigm "from employment quality to quality of life", including the characteristics of workers in different generation groups and their households.

A significant negative impact of low employment income on all aspects of workers' and their households' lives is noteworthy. Accounting of employment income as an indicator of its sustainability or unsustainability leads to differences in the results of estimating the scale of precarious employment. In our study, as mentioned above, this indicator was not included in the verified list of indicators of precarious employment. It was considered as an independent, resulting aspect, characterizing the quality of employment.

If we take into account its influence as a part of employment conditions indicators, and it is such, then the scale of precarious employment in generation groups by employment conditions would be, in contrast to the data given in Table 2: among the youth – 13.9% (1.6-fold more), among the middle generation – 13.9% (2.5-fold more), among the older generation – 13.3% (2.2-fold more). It follows, that the problem of low income from employment has an important independent significance. It characterizes both precarious and stable employment and indicates an undervalued labor force, so it becomes a priority to improve the employment quality and quality of life of Russians.

Conclusion

The conducted research has shown, that in generation groups of the workers, there are large scales of unrealized potential of employment quality due to the mismatch of jobs with the educational

potential of the employed and the precarity of their employment, which directly affects large scales of economic instability of different generation groups' households.

The results of the study demonstrate the importance for the national agenda of Russia of increasing the efficiency of the use of workers' labor potential and increasing income from employment as the main source of formation of households' economic sustainability, increasing the standard of living and quality of their lives.

Our study contributes to the development of scientific knowledge about the relationship between the employment quality and economic sustainability of workers' households, complements the scientific

information base with new data obtained on the basis of our developments about generation features of the relationship between the basic components of the quality and standard of living. The results of the study, demonstrating the specifics for workers of three generation groups – the youth, middle and older generation, can be in demand to improve public policy to harmonize vocational education and employment quality; increase the effectiveness of the chain “education – employment – economic sustainability – standard of living” and influence through improving the employment quality on the quality of life of Russians, including taking into account the characteristics of workers of different generation groups and their households.

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The Inflation and Unemployment Processes During and After the COVID-19 Pandemic



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Abstract. The article considers the features of the dynamics of the main macroeconomic indicators in related developing economies during the economic crisis and after it. Latin American countries (2020–2022) are the object of the study. The aim of the work is to empirically verify the presence and closeness of significant relationships between the processes of inflation and unemployment, including the possibility of taking into account other macroeconomic variables affecting the processes of inflation and unemployment during and after the COVID-19 pandemic. The relevance of the study is determined by the possibility of monitoring the development of the economic crisis. The analysis of linear regressions on pseudo-panel data was carried out. The general model took into account the size and features of the economy, economic policy, as well as some social effects (the dynamics of unemployment and inflation, specific mortality due to coronavirus, the size of the labor resources for the economy). The models constructed help to study the general crisis dynamics and show the rate of recovery for the trends. The novelty of the results includes an assessment of the effectiveness of management tools in the context of strong external shocks. It is empirically confirmed that there was no direct relationship between the processes of inflation and unemployment in Latin American countries during the period under consideration. A detailed analysis of the impact of macroeconomic factors and factors reflecting the behavior of state institutions may be useful for considering the risks of anti-crisis measures. Inflation is the most controllable process that can be influenced by tools. Unemployment, as a subject of regulation, is a more complex process involving various state institutions; at that, the success of decisions depends mainly on taking into account the country's export specialization, the pace and severity of anti-crisis measures.

Key words: inflation, unemployment, crisis, COVID-19, macroeconomics, behavior, finance, modeling, regulation.

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Introduction

In our opinion, the relevance of the research is conditioned by three interrelated factors, which can be designated as temporal, socio-political and scientific-theoretical. Unprecedented in its depth and catastrophic for the world economic system, the crisis associated with the consequences of the COVID-19 pandemic differs from previous ones in that it is not a purely economic crisis, but rather the result of active intervention in economic processes by state institutions (Mau, 2022). The experiences of different countries ranged from “pouring money” policies to “containing inflation and preventing

unemployment” (Ohchr, Ocha, 2023). In the above context, we have articulated the need to empirically test the rationale of economic policies, typically relying on Phillips' assumption that there is a trade-off between inflation and unemployment that can be used to reduce unemployment (Phillips, 1958). The validity of policies to curb inflation is criticized in times of severe crises, the main risks of which are often cited as rising unemployment.

The World Bank in its Global Economic Report 2021 pointed out that the world economy is experiencing an exceptionally strong but highly

uneven post-crisis recovery¹. The reasoning that the economic shock caused by the spread of COVID-19 and the announced lockdowns brought many industries to a halt, disrupted supply chains, and shifted the global economy to a new employment model has been confirmed by authoritative studies both for the world as a whole and in terms of specific countries and regions (Takes, 2020). In order to maintain population and working capacity of economies, governments increased budget expenditures, removed a number of restrictions for monetary policy, which caused an increase in inflation in 2021 around the world (Bratersky, 2022).

There is an ongoing debate about how adequate the strongest restrictive and paternalistic measures have been and what their long-term effects have been. On the one hand, there is convincing evidence that coronavirus mortality rates are declining under strong restrictions, and it justifies any economic sacrifice by national governments. On the other hand, World Health Organization (WHO) reports and publications have indicated that excess mortality in developing and economically weak countries has more to do with restrictions for a variety of social, economic, and health reasons than with the coronavirus itself. Twenty countries, representing approximately half the world's population, account for more than 80% of the estimated global excess mortality in the two years after January 2021. The first 15 are Brazil, Colombia, Egypt, Germany, India, Indonesia, Iran, Italy, Mexico, Nigeria, Pakistan, Peru, the Philippines, Poland, and Russia². Moreover, the WHO referred the countries of Latin America to the most affected ones. According to E.G. Ermolieva,

mass spread of infection and high mortality rates from COVID-19 in Latin American countries were caused by slow reaction of the authorities, especially in the first epidemic wave, underestimation of the disease risk, weakness of national health systems (Ermolieva, 2021).

Research problematic

Based on the above, we formulate the aim of the research – to empirically test the presence and closeness of significant relationships between the processes of inflation and unemployment, including the possibility of accounting for other macroeconomic variables affecting the processes of inflation and unemployment, during and after the pandemic COVID-19.

In accordance with the aim, the research problems are related to:

(1) the analysis of theory and empirically testing of the possible relationships between the processes of inflation and unemployment in a real economic system, which is exposed to crises;

(2) the identification of the drivers affecting the processes of inflation and unemployment, taking into account the features of economic development and socio-economic policy of state institutions in the context of the overall crisis dynamics;

(3) the choice of the research object – twelve Latin American countries, characterized by a great variety of approaches to macroeconomic and financial policies, especially in times of crisis; the justification of possible theoretical and empirical comparisons of the identified trends with other national economic systems, such as Russia.

We consider these relationships using twelve Latin American countries as examples. Choosing the research region is conditioned by a number of general and specific factors. First, these are developing countries with a high degree of interconnectedness of their economies and a strong influence of the large economy (USA) (Tolmachev, Nikiforova, 2021). Second, Latin American countries are characterized by the social

¹ World Bank. (2021, June). Global economic prospects [World Bank Group Flagship Report]. Available at: <https://thedocs.worldbank.org/en/doc/600223300a3685fe68016a484ee867fb-0350012021/original/Global-Economic-Prospect-2021.pdf> (accessed: April 5, 2023).

² Available at: <https://www.who.int/data/stories/global-excess-deaths-associated-with-covid-19-january-2020-december-2021> (accessed: April 5, 2023).

and economic interconnectedness of national economies against the background of a great variety of approaches to macroeconomic and financial policies, especially in times of crisis. In addition, Latin American countries have specific trade specializations, which allows classifying the effects of the crisis depending on the countries' position in the global specialization of labor.

Unemployment, as one of the macroeconomic indicators, belongs to the sphere of regulation on the part of government institutions related to the Ministry of Labor, the Ministry of Finance (represented by tax authorities), and sectoral ministries. When we talk about inflation, this is a group of indicators, which belong to the sphere of regulation by the institutions of the monetary system, with the main functional role of the regulator belonging to the central bank of the country (Central Bank). From the position of tasks of state management of the national economy, the financial system institutions and the monetary system institutions are in constant conflict of interests. The practice of the world economy knows various examples of optimal accounting of these interests, for example, the practice of weekly closed-door meetings of heads of the Ministry of Finance and the Central Bank of Japan.

We chose the following Latin American countries as the object of our research: Argentina (ARG), Brazil (BRA), Guatemala (GUA), the Dominican Republic (DR), Colombia (COL), Costa Rica (CR), Mexico (MEX), Panama (PAN), Peru (PER), Uruguay (URU), Chile (CHI), and Ecuador (ECV). The symbols are applied to Figures 1–4 and later in the text. We excluded Venezuela from the sample due to strong data outliers. The island states differ significantly from continental Latin America, both in size and type of economy, so we did not consider them in the analysis.

To achieve this goal, we built models of the relationship between the behavior of basic macroeconomic indicators (inflation and unemployment),

taking into account the economy's specialization and the current conjuncture in the development of crisis processes in the world economy. The novelty of this formulation of the problem is determined, first, by taking into account export specialization, and second, by expanding the sample of related developing economies in the crisis period from 2020 to 2022. The third aspect of the novelty is determined by the attempt to bring together in a single comprehensive model the behavior of various related economies during the global crisis. The theoretical significance consists in the analysis of the theory and empirical verification of the possible existence of relationships between the processes of inflation and unemployment in the real economic system, which is exposed to crises. Practical significance includes the identification of factors influencing the processes of inflation and unemployment, taking into account the features of economic development and socio-economic policy of state institutions under conditions of general crisis dynamics.

We use quarterly data covering the period from the 1st quarter of 2021 to the 3rd quarter of 2022 to build models. This interval allows studying the patterns of post-crisis recovery of the economies of the region under consideration without the direct influence of internal factors on the crisis processes. Our analysis is based on the fact that the export specialization of the countries affects the nature of economic relations within the economy, and hence the processes of adaptation of the economy in crisis.

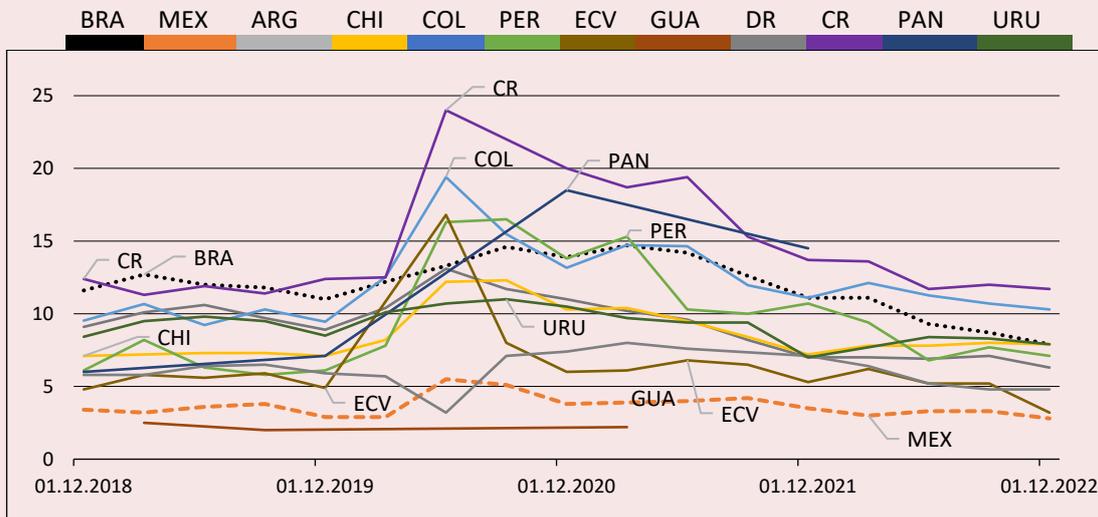
The two parameters that characterize inflation and the unemployment rate, respectively, show the extent to which monetary policy and macroeconomic policy in a country, in a group of countries, can be linked and complement each other; or government institutions, while implementing their functions and achieving their set goals, interact weakly with each other. As a result, the relevant indicators turn out to be unrelated.

We have formulated the following hypotheses: (1) there is a mutual influence of the dynamics of the unemployment rate and the consumer price index; (2) the dynamics of the unemployment rate and the consumer price index (taking into account reciprocity) can be influenced by the specialization of the country's export; (3) the dynamics of the unemployment rate and the consumer price index (taking into account reciprocity) can show the combined effect of the country's export

specialization, the severity of the COVID-19 pandemic, the characteristics of financial regulation and the functioning of the economy.

Here is a brief description of the countries, starting in 1st quarter of 2020. Brazil, Mexico, and Argentina are the largest economies in the region (see Appendix). Brazil, with (as of 2019) an annual GDP of 1873.27 billion U.S. dollars, entered the global crisis with an annual inflation rate of 3.31% and unemployment at 11% (Fig. 1, 2). Further,

Figure 1. Unemployment rates in the countries under consideration



According to (Fig. 1–4): data from official websites of central banks and stock exchanges of the countries under consideration.

Figure 2. Inflation rates in the countries under consideration (Argentina is on auxiliary scale)

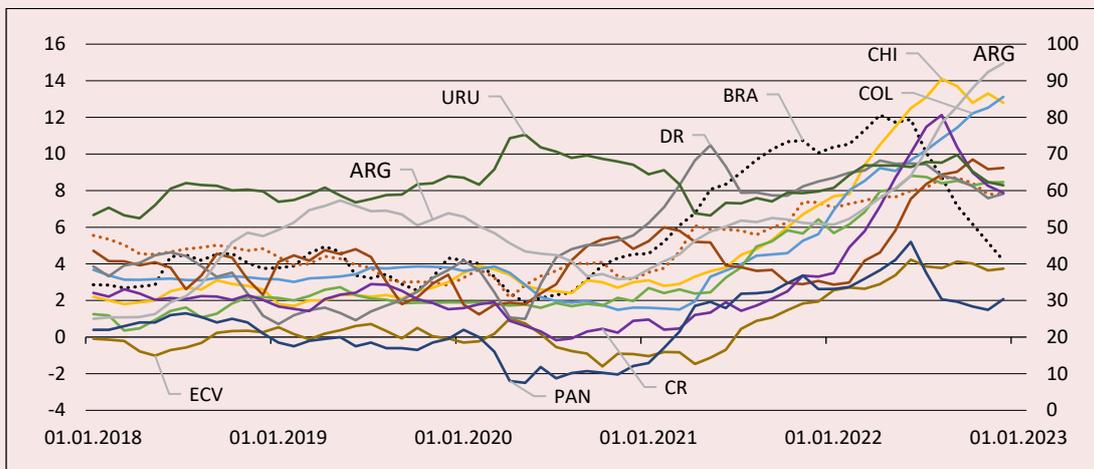


Figure 3. Index of exchange rates of the national currencies of the countries under consideration

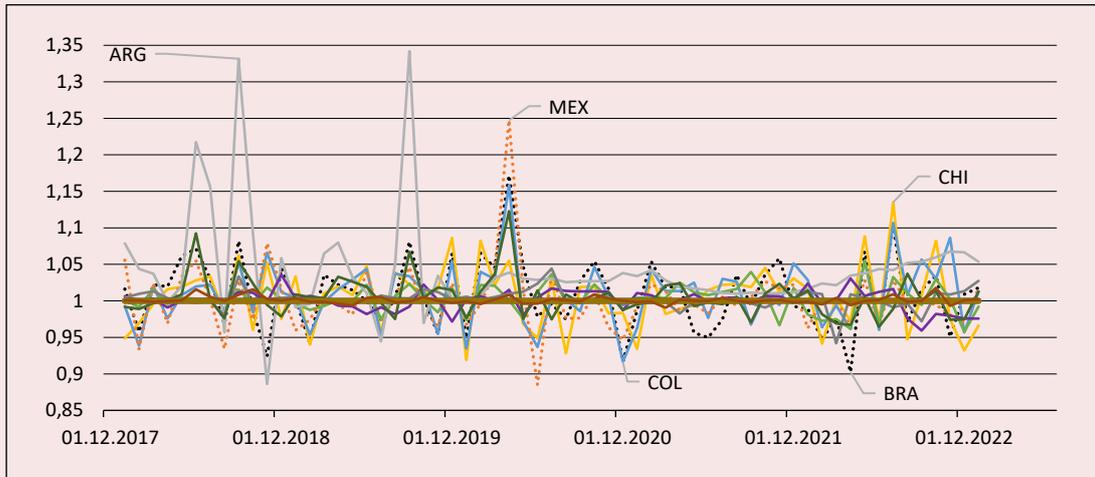
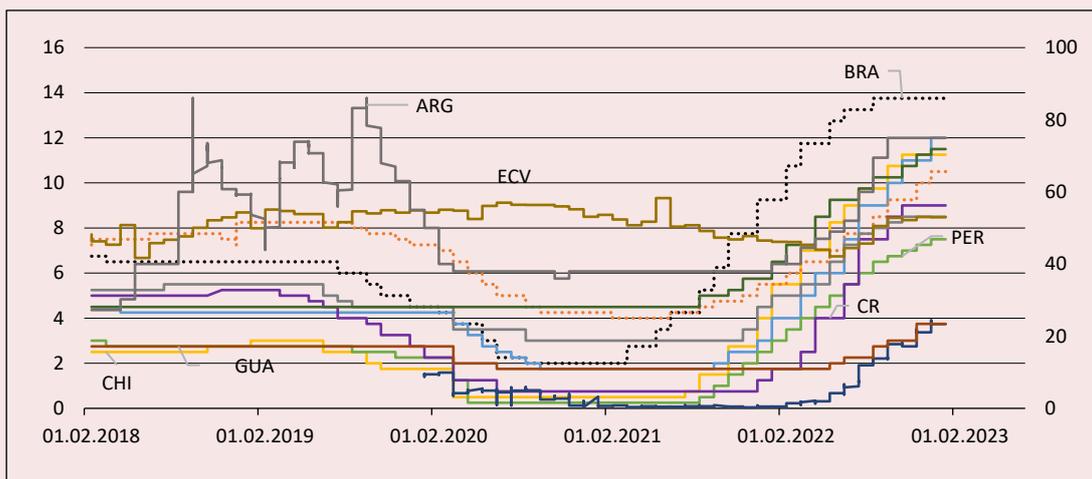


Figure 4. Dynamics of rates of central banks of the countries under consideration (Argentina is on the auxiliary scale)



Brazil failed to recover its GDP even by 2022 (see Appendix). By early 2020 its public debt was 74.44% of GDP. According to Spector’s conclusions, the Brazilian economy grew rapidly until 2020, after which it went into recession, accompanied by high inflation, which caused a decline in population’s solvency. Brazil’s economy is a good model to demonstrate the “middle-income trap”: stagflation, rising social inequality, production inefficiencies, declining production competitiveness and economic growth, and difficulties in implementing institutional reforms (Spector, 2022, p. 25). Brazil’s

economy is very similar to Russia’s in a number of macroeconomic indicators (Spector, 2022).

Figures 1–4 show the dynamics of key indicators for 2018–2022.

The size of Mexico’s economy for 2019 was estimated at 1269.01 billion U.S. dollars, annual inflation was 2.8%, and the unemployment rate by early 2020 was well below the Brazilian rate of 2.9%. The public debt level was 45.1% of GDP. During the crisis year of 2020 and the two next years, both economies were able to return unemployment to pre-crisis levels. Meanwhile, Brazil managed to

stabilize inflation at 5.79% (by the end of 2022), while inflation in Mexico remains at a much higher (relative to pre-crisis) level of 7.82%. For Argentina, the region's third-largest economy, the global crises have overlaid a dire economic situation caused by domestic causes. The country greeted 2020 with inflation at 53.8%, at the end of 2022 it was 94.8%, and at the beginning of 2023 the figure was already over 100%, with unemployment at its lowest values since 2015 by the beginning of 2023 (see Fig. 1, 2, Appendix).

The remaining nine countries can be classified as small economies, characterized by considerable variation in macroeconomic indicators (see Fig. 1–4). Chile, Colombia, Peru, and Costa Rica had the highest rates of inflation during the period under consideration. The next (in descending order of inflation rate) are Guatemala, Paraguay, Mexico, the Dominican Republic, and Ecuador.

For all of the countries under consideration except the Dominican Republic, there was a sharp jump in the unemployment rate in the 2nd quarter of 2020; Costa Rica was a kind of anti-leader with an unemployment rate of 24%. Further periods were characterized by a smooth decline in unemployment in all countries. By the end of 2022, the leaders in unemployment were Costa Rica (11.7%) and Colombia (10.3%; see Appendix). Figures 3, 4 show the indices of exchange rates and central bank rates in the countries under consideration. It is important to note how the speed of decision-making on financial regulation is significant in determining the nature of the crisis dynamics.

Thus, we form a sample of developing Latin American countries, which are in a period of high volatility in terms of unemployment and inflation, as well as other indicators of economic dynamics. At the same time, the countries differ significantly in the behavior of financial authorities and other national economic institutions, which allows empirically testing the above assumptions.

Literature review

A large number of scientific publications have been devoted to study the inflation and unemployment in their relationship and dependence on other macroeconomic factors. It is impossible to give a complete bibliography here, let us point out the general outline of the discussion about the existence of a trade-off between inflation and unemployment according to the Phillips hypothesis to justify and test the economic policies chosen by state institutions; some publications focused on the analysis of Latin American countries; important, in our opinion, methodological clarifications for further modeling and accounting for the features of the 2020–2022 crisis.

A. Phillips showed the correlation between unemployment and the growth rate of wages using the example of the United Kingdom on a long time period from 1861 to 1957. He introduced the concept of the Phillips curve into economic theory, a graphical relationship between inflation and unemployment (Phillips, 1958). Long-term evaluation finds evidence of a negative relationship between inflation and employment, leading to the conclusion that inflation hurts job creation, for example, according to U.S. data (King, Watson, 1994). The explanation of this relationship has traditionally differed between monetarists, followers of the classical school of economics, and institutionalists. The more recent academic literature more often fails to support a level of trade-off between inflation and the unemployment rate in the short run, which many economists believe reinforces the orthodox view (Gokal, 2004). At the same time, there is evidence of a positive relationship between inflation and employment growth over the long run. Inflation, according to followers of the classical school, appears if the money supply grows with full employment in production (Weitzman, 1982). For the classical economic school, overproduction and

unemployment are temporary as the market adjusts to full employment (Tobin, 1995). The monetarist school changed the view of unemployment based on Milton Friedman's hypothesis (Juhn et al., 2002). Its representatives believed that the decline in current income and employment affects only the production volume due to the expected decline in income. Each academic school offered different policy solutions (Vermeulen, 2017). According to the general consensus among central bankers and monetarist economists, a restraining monetary shock increases unemployment, at least temporarily, and leads to a delayed and gradual fall in inflation. However, standard dynamic models of price adjustment cannot explain such a pattern (Mankiw, 2021). Criticism of central banks' over-targeting of inflation, which many economists believe constrains economic growth, has been persistently replicated in developing countries (Vermeulen, 2017).

The main focus of the debate around the Phillips hypothesis has gradually shifted toward justifying or refuting various economic policies. For example, after failing to find conclusive empirical evidence for the truth of the Phillips hypothesis, Daniel et al. argue, using Nigeria as an example, that inflation and unemployment problems stemmed from inefficiencies in both monetary and fiscal policies (Daniel et al., 2021). In our research, we also include relevant characteristics in the models.

A theoretical explanation of the processes is beyond the scope of our study. We will focus on the short-run effects associated with economic shocks and identify the mutual influence of these shocks and relevant macroeconomic indicators using the example of Latin American countries as a model. Continuing the controversy with a sample of Latin American countries, E.P. Caldentey and co-authors empirically tested the relationships described by the Phillips curve for 1992–2016 in Argentina, Brazil, Chile, and Mexico using different models (Caldentey et al., 2020). The researchers concluded

that the data did not provide evidence of such a relationship for most countries. E.P. Caldentey and co-authors provided extensive tools to test the hypothesis, but the data for each country were examined independently, in isolation from other countries. In addition, constructing regressions over long periods can blur the effects of interactions at stages of sufficiently large structural transformations (both political and economic) in the countries under consideration, which can distort the patterns revealed by the construction of the end-to-end regression.

Based on short-term panel regression, one can observe the development of the economic crisis associated with the pandemic, as different regions and countries were affected by the COVID-19 threat and responded to it in different ways. In many countries, including the Latin American countries listed above, there has been an increase in excess mortality, unemployment and inflation, leading to increased social tensions. Klaas de Vries and co-authors analyzed short-term productivity trends during the COVID-19 pandemic in France, the United Kingdom, and the United States, emphasizing that such crisis trends would be offset if one considered regressions on a longer time series (de Vries et al., 2021). They used quarterly data from three countries for 2019 and 2020, aggregating the reallocation of labor in industries with varying degrees of value added and product price dynamics, were able to capture the specifics of productivity growth by applying an industry taxonomy method. Also, countries were considered separately, which did not allow the effect of the relationship between the dynamics of the measured parameters to be taken into account for the group of countries as a whole.

It is worth noting the works devoted to studying the influence of various factors on inflation and unemployment in Latin America, but without taking into account the interaction between these

factors. For example, R. Frenkel and J. Ros in a sample of large countries for 1990–2002 have showed that unemployment can be influenced by exchange rates, the number of labor force in the economy and economic growth measured as the GDP logarithm, among other factors (Frenkel, Ros, 2006). We note that the authors considered the determinants for unemployment without taking into account inflation and country specialization and only on the example of large Latin American economies.

L. Ball and co-authors considered individual episodes of sharp increases and decreases in the inflation rate (Ball, 2013). They concluded that sharp changes in unemployment can be related to economic growth cycles, government policies, and exchange rates. Export specialization is rarely found in the academic literature as a factor for economic processes, but a number of researchers confirm that it is important for economic development (Naudé et al., 2010).

All of the papers we reviewed above refer to the period through to 2020, which started a kind of chain of upheavals in the global economy. After 2020, the works focus on how the coronavirus epidemic affected individual macroeconomic indicators in different countries. K.B. Kostin and E.A. Khomchenko presented an original methodology aimed at increasing the heuristic ability to predict the crisis using the impact of the COVID-19 pandemic as an example, but all indicators were considered separately, which in our view does not allow for structural variability (Kostin, Khomchenko, 2020). A. García-Herrero analyzed why the coronacrisis in Latin America had a greater negative impact on the economy than in Asia, and showed that it was caused by the high debt burden of governments and the availability of dollar liquidity (García-Herrero, 2021).

Multivariate analysis of the dynamics of interrelated economies is used by researchers to

identify relative characteristics, which becomes relevant for short-term periods in the analysis of crisis phenomena. For example, R. Nijskens and W. Wagner showed that the main cause of the 2007–2009 crisis was the various ways in which banks transferred credit risk into the financial system (Nijskens, Wagner, 2011). A. Fontana and M. Scheicher on panel regressions of euro area countries reflected how in the global crisis financial institutions reallocated risk to weak economies (Fontana, Scheicher, 2016). An even larger study was conducted by H. Addi and A. Abubakar, showing the interaction of state institutions and economic development characteristics using examples from 27 countries over the period 2005–2018 (Addi, Abubakar, 2022).

We should note an interesting article from a methodological point of view by C. Albuлесcu, devoted to a detailed modeling of the positive impact on financial volatility in the U.S. and euro area countries of COVID-19 mortality information according to daily reports for the period March – May 2020 (Albuлесcu, 2021). The author details the analytical possibilities of stepwise regression at the global level, for a group of interconnected countries and the USA. An interesting finding is that data reported at the global level have a stronger impact than data at the national level (the example is the U.S.). The external effects were stronger than the characteristics of the economies themselves.

Based on the studied literature, we conclude that there is scientific novelty and theoretical validity of the research of interrelated economies in the crisis period. Our work is designed to continue the logic of empirical search.

The Russian Federation, being one of the largest economies in the world, is characterized by extremely diversified values of the most important indicators of socio-economic and innovation and technological development. Such diversification, both in terms of the levels of indicators and their

significance for the economy, creates significant difficulties for a balanced socio-economic policy, especially in periods of crisis. O. Dmitrieva and D. Ushakov have analyzed the Russian economy using data up to 2010 and conclude that there is no correlation between inflation and unemployment (Dmitrieva, Ushakov, 2011). The authors show that inflation in Russia is a cost inflation due to the transfer of raw material rents into final consumption prices. It seems to us that simply analyzing correlations cannot be a convincing argument, and this statement has been confirmed by many foreign researchers of similar problems. To test the validity of the arguments of monetarism in public administration, it seems important to study how decisive was the influence of macroeconomic indicators on the crisis dynamics, or to a greater extent reflected the influence of state institutions on the example of other countries. Latin American countries can act as a model precisely because of the differences in the policies of the monetary authorities, with at least one economy (Brazil) being a testing ground for comparative analysis in a number of indicators. The simulation of interrelated dynamics allows assessing the direction of the influence of relevant characteristics. It is worth noting that following V.M. Polterovich, that simple borrowing of economic support and development institutions is inefficient (Polterovich, 2022, p. 41).

Based on the above, we believe that the theoretical and empirical conclusions obtained in this research can be useful in assessing the relevant risks for the Russian economy, identifying effective management tools in the face of strong external shocks, including from the perspective of assessing the current Russian economic model.

Data and methodology

As an indicator measuring unemployment, we chose the unemployment rate at the end of the quarter (Unemp) as a share of the unemployed (in %) in the total working-age population. Inflation

was measured through the Consumer Price Index (CPI) – the ratio of the cost of the consumer basket in the current quarter to the cost of the consumer basket in the previous quarter. The data source for inflation and unemployment indicators is local statistical bodies.

We entered four dummy variables determining the export specialization of countries into the data set. To calculate the export specialization of countries, we used data on the export volume of the UN Conference on Trade and Development (UNCTAD). For each export group, we calculated the ratio to total exports in 2021. An export group was recognized as a country's specialization if its share in total exports exceeded 20%, then the corresponding dummy variable took a value of one: Food (agricultural products – Argentina, Brazil, Guatemala, Dominican Republic, Costa Rica, Peru, Uruguay); Energy (energy resources – Ecuador, Colombia); Product (industrial production – Guatemala, Dominican Republic, Costa Rica); Metals (metals and ores exports – Panama, Peru, Chile). A specialization for Mexico is the export of motor vehicles and machinery. Since such specialization is unique to Mexico, when included in the regression model, this variable could aggregate all the variation that is specific to Mexico. In order to avoid this situation, we decided not to include such a variable and to limit ourselves to the four specializations presented.

To control for pandemic severity in each country and time interval considered, we used the cumulative ratio of coronavirus deaths to 1 million people (Covid_death). We used a dataset based on data from Johns Hopkins University³.

As a characteristic of export-oriented developing economies, we considered the change in the exchange rate of the national currency, calculated as the ratio of the current exchange rate to the basis

³ Yandex Lens. Available at: <https://datalens.yandex.ru/marketplace/f2eb8io5l5q4rp84fe01> (accessed: April 5, 2023).

(the basis is the average value of the 1st quarter of 2020) (Currency). We should note that in a number of studies, it has been attributed to the factors determining inflation (for instance, Frenkel, 2006).

Since the instrument of the monetary policy of the state is the central bank rate (or its analogue measured in %), the role of not only the rate itself, but also its deviation from the comfortable value for the economy, which allows forming the basic financial policy, is important. In addition to the deviation value, we took into account the speed at which the decision to raise the rate is made. For example, the Brazilian Central Bank was one of the first to raise the SELIC rate target (Brazil's analogue of the key rate), which led to a fairly rapid decline in inflation in the country, and as of the first quarter of 2023, Brazil's inflation is one of the lowest in the region. To account for these factors, the models used two variables: the central bank rate itself at the start of each period (CB_rates) and the "central bank reaction" to the key rate (the rate at which central banks raise rates). The indicator of "CB_reaction" (CB_reaction) was calculated according to the following formula:

$$\sum_{t_0=01.02.2021}^{t_n} \frac{RG}{\ln(t_n - t_0)},$$

where RG – value of the rate increase on the date t_n , t_n – each date, t_0 – February 1, 2021.

To aggregate data on financial indicators, we used data from local central banks.

We also added a number of macroeconomic variables to the model: GDP size (GDP) in billion USD and GDP per capita (GDP_PC) in USD to control for the size of the economy and the level of economic development (intensity) at the beginning of 2020.

The ratio of government borrowing through Eurobonds to GDP (calculated as ratios) and the ratio of domestic credit to GDP (in %) to control

the degree of indebtedness of the economy (Eurobonds). Depending on the degree of indebtedness and the borrowing policy of the authorities, the macroeconomic policy and hence the degree of impact of crises on the economy may differ significantly.

For the unemployment model, the logarithm of Labor force (hereafter Labor) is included as a variable indicating the size of the labor force for the economy. According to the definition on the Worldbank website, the labor force is the sum of working-age people who are employed, engaged in self-employment, income-generating activities, or looking for work⁴.

All control variables were taken at the beginning of 2020 to exclude the influence of crisis phenomena on them, i.e. the presence of endogeneity. The data were also sourced from local statistical agencies and Worldbank data.

The feature of the model of interconnected economies is the comparative aspect, which is implemented through the evaluation of regression models not for each country separately, but for a group of countries. We were interested in the speed and drivers of the economy's return to "pre-crisis" trends, so short time periods were chosen. When each country is modeled by regression separately, comparisons are usually made by regression coefficients, which, strictly speaking, is not correct for multivariate models, since coefficients account for the relative effect on average for that particular regression. In addition, structural variables describing the size and type of economy, financial instruments, and mortality from COVID-19 were included in our models. Panel and pseudo-panel regression analyses allow dynamically accounting for the relative effect between countries, which makes the analysis of the effect of country

⁴ Available at: <https://data.worldbank.org/indicator/SL.TLF.TOTL.IN?locations=MX>

(structural) variables more reliable. The latter is particularly important because short time intervals impose additional limitations on the dimensionality of the model. Regression models on long time intervals, as the analysis of the literature has shown, level out crisis dynamics, as they highlight long-term effects, which may lose their relevance during crisis periods.

Data quality issues

The data were collected from databases provided by national statistical authorities, the UN Conference on Trade and Development (UNCTAD), and the World Bank databases⁵. Due to the fragmentation of sources, a certain challenge was the aggregation of all necessary parameters in a single database for the subsequent use of models. In particular, the absence of some parameters led to the need to replace some of the data with their estimates for inclusion in the model of the third economy of the country – Argentina.

Due to the fact that the World Bank database does not provide data on the variable “domestic credit to GDP ratio” for Argentina after 2017, instead we used estimates obtained by linear approximation from the indicator “household debt as a % of GDP”. The theoretical rationale for the obtained estimates is that domestic credit is a debt in the form of credit mass of commercial enterprises and households to the banking system, with household debt for any economy constituting a significant part of the value of domestic credit. Empirically, the correlation coefficient between the two indicators was 0.52, with significance at the 5% level. For 2020, the estimate obtained and used in the models was 15.28%.

Models and their calculation methodology

We used six sequentially computed linear multivariate regression models to find relationships. *Table 1* presents the variables of the models and their descriptive statistics.

Table 1. Descriptive data statistics for relevant countries in the region

Variable	N	Average	Min	Max	Meaning
Unemp	71	9.079	2.200	19.400	Unemployment rate for the period, reporting at the end of the quarter, %
CPI	84	1.028	0.974	1.220	Consumer price index for the quarter
Food	84	0.75	0	1	Specialization in the export of agricultural products
Energy	84	0.167	0	1	Specialization in energy exports
Product	84	0.25	0	1	Specialization in the export of industrial products
Metals	84	0.25	0	1	Specialization in metal and ore exports
Covid_death	84	2270.78	284.214	6952.282	Number of coronavirus deaths cumulative total since the beginning of 2020 by the end of the quarter, persons per 1 million population
Currency	84	1.061	0.905	1.918	Change in the exchange rate, calculated to the basis (the basis – the average value of the 1st quarter of 2020)
CB_rates	84	7.338	0.04	52	Value of the central bank rate at the beginning of the quarter, %
CB_reaction	84	0.457	-0.291	5.949	Скорость подъема ставок центральными банками
GDP	84	407.241	61.23	1873.27	GDP 2020, billion USD without PPP
GDP_PC	84	10029.24	4263.08	16192.16	GDP 2020, USD excluding PPP, per capita
Eurobonds	84	0.164	0.02	0.381	Ratio of total volume of government Eurobonds to GDP (2020, USD)
Loan	84	55.457	15.283	124.6	Ratio of domestic credit to GDP, %
Labor	84	2.314	0.532	4.6	Logarithm of the labor force at the end of the quarter

Source: own compilation.

⁵ World Bank Group (vsemirnyjbank.org) (accessed: April 6, 2023).

We conducted the research by the least squares method (LSM) on pseudo-panel data in three steps. *Table 2* presents the simulation results. In the first step, we checked the level of correlation and built simple regression models by pairwise LSM, assigning inflation and unemployment as the target variables, respectively, to check the presence of these patterns described by the Phillips curve.

The correlation coefficient between the unemployment rate in the period and inflation in the corresponding period is 0.12, the significance level is higher than 0.05, we should accept the hypothesis H0. Next, we constructed models of the form (1) and (2) in this step.

$$\text{CPI} = b_1 * \text{Unemp} + \text{Const} \quad (1)$$

$$\text{Unemp} = b_1 * \text{CPI} + \text{Const} \quad (2)$$

In the second step, we added the control variables of country specializations for each of the equations of the previous step. The general form of equations of the second step (3) and (4) is shown below.

$$\text{Unemp} = b_1 * \text{CPI} + b_2 * \text{Food} + b_3 * \text{Energy} + b_4 * \text{Product} + b_5 * \text{Metals} + \text{Const} \quad (3)$$

$$\text{CPI} = b_1 * \text{Unemp} + b_2 * \text{Food} + b_3 * \text{Energy} + b_4 * \text{Product} + b_5 * \text{Metals} + \text{Const} \quad (4)$$

In the third step, we added all other listed variables to the models. Due to the differences in the fundamental assumptions for the analysis of inflation and unemployment the equations used a slightly different set of variables for their analysis.

For example, following the results of R. Frenkel

Table 2. Results of model building by the linear LSM

Variables	Models					
	(1)	(2)	(3)	(4)	(5)	(6)
Unemp	-0.0013		-0.0005		-0.0007	
CPI		-11.3876 **		-4.4710		13.4879
Food			0.0212 **	0.8011	0.0014	4.0946 **
Energy			-0.0283 **	1.7706	0.0437	50.5079 ***
Product			-0.0373 ***	1.8615	0.0201	26.8144 ***
Metals			-0.0334 ***	1.3481	0.0705 **	53.5203 ***
Covid_death					-0.0008 ***	-0.1661 ***
Currency					0.1415 ***	11.8764 **
CB_rates					0.0014 ***	0.1795
CB_reaction					0.0025	-1.4586 ***
GDP					0.0026 **	3.6463 ***
GDP_PC					0.0036 *	2.4509 ***
Eurobonds					-0.0604**	-50.3291***
Loan					-0.0007 **	-0.4586 ***
Labor						-8.0409 ***
Const	1.044 ***	20.818 ***	1.038 ***	12.054*	0.861 ***	-33.628*
R^2	0.0016	0.0016	0.1356	0.0009	0.9049	0.6546
N	71	71	71	71	71	71

(1) – pairwise regression with the dependent variable CPI; (2) – pairwise regression with the dependent variable unemployment; (3) – multiple regression with specializations, dependent variable CPI; (4) – multiple regression with specializations, dependent variable unemployment; (5) – full model, dependent variable CPI; (6) – full model, dependent variable unemployment.

* – significant value of the parameter (p < 0.05); ** – high value of the parameter (p < 0.01); *** –maximum meaningful value of the parameter (p < 0.001).

Source: own compilation.

and J. Ros, the labor force logarithm variable was added for unemployment models, which showed significance (Frenkel, Ros, 2006). We did not use this variable for the model with CPI as a dependent variable, due to the fact that the relationship between inflation and unemployment is not recognized as a prerequisite for job purposes, but rather is tested.

This is a type of model in which the target variable is inflation:

$$\text{CPI} = b_1 * \text{Unemp} + b_2 * \text{Food} + b_3 * \text{Energy} + b_4 * \text{Product} + b_5 * \text{Metals} + b_6 * \text{Covid_deth} + b_7 * \text{Currency} + b_8 * \text{CB_rates} + b_9 * \text{CB_reaction} + b_{10} * \text{GDP} + b_{11} * \text{GDP_PC} + b_{12} * \text{Eurobonds} + b_{13} * \text{Loan} + \text{Const} \quad (5)$$

This is a type of model in which the target variable is unemployment:

$$\text{Unemp} = b_1 * \text{CPI} + b_2 * \text{Food} + b_3 * \text{Energy} + b_4 * \text{Product} + b_5 * \text{Metals} + b_6 * \text{Covid_deth} + b_7 * \text{Currency} + b_8 * \text{CB_rates} + b_9 * \text{CB_reaction} + b_{10} * \text{GDP} + b_{11} * \text{GDP_PC} + b_{12} * \text{Eurobonds} + b_{13} * \text{Loan} + b_{14} * \text{Labor} + \text{Const} \quad (6)$$

Discussion of the results

Table 2 presents the results of the simulation. Models (1), (2) and the model with the dependent variable unemployment (4) have a significance level below the critical one and explain too small a share of the variance. We should note another general consideration: the direct relationship between the volatility of unemployment and inflation is leveled by taking into account the socio-economic parameters we selected earlier.

The main conclusion from the data of models (1) and (2) is that the assumptions of the Phillips curve are not empirically confirmed.

Model (3) has a higher level of significance at $R^2 = 0.1356$ than models (1) and (2). Based on model (3), we can assume that the inflation is higher

in countries with specialization in the export of agricultural products during the period under consideration. In countries with specialization in the export of energy resources, industrial products and metals inflation was lower on average. Hence, we can conclude that to a greater extent the economic crisis caused by international restrictions in connection with the COVID-19 pandemic affected the growth of consumer prices in countries focused on the export of agricultural products. However, the development of our models gives no grounds to confirm this assumption.

Model (4) demonstrates that the variation of the unemployment rate in the given period for the countries under consideration cannot be explained by the complex of influencing variables characterizing the inflation level and export specialization of the countries.

Model (5), in which the target variable is the quarterly consumer price index (CPI) and all external variables are included, has the highest explanatory power (except for the labor force logarithm) $R^2 = 0.9049$. This model has several important features. First, the variation in consumer prices in the countries under consideration is not explained by variation in the unemployment rate (which once again confirms the absence of relationships described by the Phillips curve), and the influence of agrarian, energy and industrial export specialization was leveled by other indicators. Second, consumer inflation rises significantly only in countries specializing in the export of metals and ores, while for the rest of the countries the variation is largely explained by other economic indicators. First of all, it is the change in the exchange rate, the value of the Central Bank rate, the static indicators of the size of the economies – GDP and GDP per capita – are also significant. A paradoxical conclusion can be called the revealed negative correlation between the level of indebtedness, with

which economies entered the crisis, and the growth of inflation. Thus, according to the data obtained, the economies with a higher ratio of domestic credit to GDP and a higher ratio of Eurobonds to GDP showed a smaller increase in inflation. In general, this can be explained by the fact that borrowed funds were effectively used to support economies, which allowed countries to feel the effects of the crisis to a lesser extent. We can conclude that the indicator of the indebtedness of the economy, along with other indicators of the financial depth of the economy (the level of monetization and capitalization of the economy - according to the methodology of the World Bank) can act as indicators-predictors of the possibility of the economy to overcome the crisis period if the above-mentioned conditions are met.

Model (6), in which the dependent variable is the unemployment rate at the end of the quarter and all variables are included, is significantly worse in explanatory power than model (5), which is understandable, since unemployment in general is quite a difficult process to regulate. The consumer price index for the quarter and the central bank rate at the beginning of the quarter are insignificant, while the other variables are significant. The country's specialization in the export of metals and ores, energy resources, and industrial exports significantly increased the dynamics of the unemployment rate. The negative effect of the labor force logarithm fully confirms the theoretical assumptions and indirectly testifies in favor of the consistency of the model. An important result is the negative coefficient of the logarithm of labor at positive coefficients of the "macroeconomic size" of economies, GDP. Econometric calculations show that the amount of labor force at the same level of GDP has a downward effect on unemployment. Conversely, when the labor force is stationary, the size of GDP has an upward effect on unemployment. An economy is considered to be more productive if

GDP increases at stationary values of labor force and industry specialization. Thus, economies with low productivity (in World Bank terms) have been less affected by rising unemployment.

Among the dynamic variables, the weakening of the national currency had a greater impact on unemployment. Faster and tighter central bank rate hikes on average were associated with lower inflation.

Contradictory is the behavior of the variable showing COVID mortality, with countries with higher mortality showing a smaller increase in the unemployment rate. This fact may show the nature of the inverse relationship, explained by the fact that the countries that did not impose lockdowns (and thus had higher morbidity and mortality rates) had a smaller increase in unemployment caused by these lockdowns. Moreover, combined with the smaller drop in unemployment in countries with higher labor force participation rates, this fact may indicate the implementation of a mercantilist economic model in which workers are forced to work extra hours at lower wage rates.

Conclusions

In this paper, we have confirmed the effectiveness of inflation management through the instrument of central bank rate regulation. In addition, we have shown that the construction of institutions of unemployment management should take into account industry specifics in the economy.

Most data for Latin America during the period under consideration show no evidence of a direct relationship between inflation and unemployment. However, both inflation and unemployment are influenced by macroeconomic and financial indicators.

In terms of looking at the indicators individually, the most regulated process is the inflation rate. In general, instrumental methods of regulating inflation rate belong to the main objectives of

central banks' activity, but local shocks and other indicators of the state of economy (for example, specialization of economies) can have quite a strong influence on the processes of regulation.

Unemployment as a subject of regulation is a more complex process. In this respect, the factors that have been empirically tested in the course of this work are of scientific novelty. One of the main conclusions concerning unemployment is that the decisions made to influence this indicator should take into account the export specialization of countries as well as the factor of labor intensification, which in the conditions of crisis processes can become a precursor of unemployment growth in the most science-intensive sectors of the economy.

The paper confirms the inverse relationship between the COVID-19 mortality rate and the unemployment rate. The same conclusion is true for the inflation rate. Thus, we show the social negative result of the choice of the governing state authorities of the analyzed countries to abandon the active "antipandemic" policy in favor of supporting the economy.

Based on the analysis, we can assume that the mercantilist model of the economy in modern conditions is more implemented in developing economies of the commodity type.

Inflation was influenced to a greater extent by the central bank rate, while the volatility of the unemployment rate was influenced by the exchange rate, which can only have limited influence by national regulators and which itself is dependent on a variety of factors outside the scope of our study.

Opportunities for research development

Inflation management is successfully implemented through an instrument of interest rate regulation. This will allow policymakers to formulate policies affecting inflation and unemployment by controlling other variables that may directly or indirectly affect inflation and unemployment.

Considering the economic situation in the Russian Federation, when developing models of the economy's reaction to the crisis, it is necessary to take into account corrections to the raw material component. Additional research in this aspect requires the relationship of export specializations with underemployment, which is a specific feature of the Russian economy's reaction to crises. In matters of employment maintenance, it is also worth paying attention to the highly skilled categories of workers, as our analysis shows that this category is more exposed to the risk of unemployment in crisis periods.

We see the development of research in order to take into account these effects in the analysis of possible risks of economic policy in times of crisis. We should note that Russia has historically had an extremely low level of financial depth of the economy. On the one hand, we can say that this fact shows a low level of borrowing of the economy, but, on the other hand, the current trend characterizes the low level of monetization of the Russian economy and, therefore, the inability to quickly redistribute the available money supply to the neediest sectors in crisis periods. The latter creates difficulties for effective overcoming of crises with the least economic losses.

The need for active use of monetary and fiscal stimulus, which the Russian government faced in this period, is characterized by low efficiency, which is confirmed by the analysis of the Central Bank. In countries with a more "favorable situation" among those considered in the model, shocks mitigation was achieved, among other things, by monetary instruments, such as debt instruments. The Eurobonds variable had a strong downward effect on inflation, which can also serve as an instrument of anti-crisis policy. The Russian monetary authorities understand such a need, so a serious work on the replacement of the relevant instruments was carried out in late 2022 – early 2023.

The conclusions about the risks of implementing the mercantilist model of economy are interesting for understanding the specifics of the development of the Russian economic model. The Russian Federation historically implements the mercantilist model of economic development both theoretically and practically. During the 2020–2022 crisis, the Central Bank of the Russian Federation held rates rather tightly, targeting inflation, which, according to the experience of other countries, proved to be an effective measure. However, in the crisis period we are considering, the countries with the highest return on labor (in terms of the World Bank) were subjected to the greatest risks. Consequently, to mitigate the effects of the crisis it was necessary to support more decisively the high-performing sectors

of the economy. Measures related to job support without taking into account industry specifics proved to be ineffective.

Arguments that hard lockdowns and over-reaction to a pandemic would collapse economies and disperse unemployment have proved untenable. Drawing on the experience of Latin America, we note that in countries whose governments chose soft and incomplete lockdowns, the interlocking factors triggered a dramatic increase in COVID mortality. The latter led to strong social tensions and rapid inflation associated with panic. In countries that imposed fast and hard restrictive measures, the shocks were strong but short-lived, and the economy was already back on its pre-crisis trajectory by 2022.

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Appendix. Main economic indicators of the countries under consideration, 2021

	Share of unemployed in working-age population, %	Consumer price index, %	Ratio of the national currency exchange rate to the basis	CB rate, %	GDP excluding PPP, billion USD	GDP excluding PPP per capita, USD
BRA	7.9	5.79	1.018	13.75	1608.98	8537.94
CHI	7.9	12.8	0.966	11.25	317.06	14115.96
COL	10.3	13.12	1.013	12	314.46	6418.1
MEX	2.8	7.82	1.017	10.5	1272.84	9525.41
PER	7.1	8.46	0.992	7.5	223.25	6437.1
ARG	6.3	94.8	1.054	75	487.23	12402.49
CR	11.7	7.88	0.976	9	64.28	12894.3
DR	4.8	7.83	1.027	8.5	94.24	8410.61
URU	7.9	8.29	1.013	11.5	59.32	15874.74
PAN	14.5*	2.08	1	3.74	63.61	13921.26
ECV	3.2	3.74	1	8.48	106.17	5492.49
GUA	2.2**	9.24	1.002	3.75	85.99	4388.44
RF	3.5–4	10–11 ⁶	0.78–1.8	7.5–8.5	1775.8	10216.3

Notes:
All indicators except GDP are as of December 31, 2022, GDP data are as of December 31, 2021; unemployment data are as of December 21, 2021; * as of March 03, 2021; ** as of September 30, 2021.
Data for the Russian Federation are given as a spread for 2022, compiled according to official statistical reports⁷, data on nominal GDP as of December 31, 2021 (according to the IMF).

⁶ Available at: https://buh.ru/news/uchet_nalogi/161618/#:~:text=%D0%A2%D0%B0%D0%BA%D0%B8%D0%BC%20%D0%BE%D0%B1%D1%80%D0%B0%D0%B7%D0%BE%D0%BC%2C%20%D0%BF%D0%BE%20%D0%B4%D0%B0%D0%BD%D0%BD%D1%8B%D0%BC%20%D0%A0%D0%BE%D1%81%D1%81%D1%82%D0%B0%D1%82%D0%B0,%D0%B3%D0%BE%D0%B4%20%D1%81%D0%BE%D1%81%D1%82%D0%B0%D0%B2%D0%B8%D0%BB%2011%2C94%25 (accessed: April 5, 2023)

⁷ Available at: http://www.cbr.ru/hd_base/inf/_/ (accessed: April 5, 2023).

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Specifics of Reproductive Behavior of Female Residents of Moscow



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Abstract. Birth rate dynamics in Russia's population remains one of the major objects of attention of demographic science and politics. In 2019, the aggregate birth rate in Moscow exceeded the Russian average, giving rise to assumptions about the likelihood of the emergence of a new trend, despite the fact that studies of reproductive behavior of city dwellers indicate the prevalence of intentions to have fewer children. The article presents estimates of birth rates in metropolitan megacities of Russia, indicating that the values of indicators are still lower than the Russian average and even lower than the same indicators for Russia's urban population. According to the data of an up-to-date survey of female Moscow residents, we find the prevalence of intentions to have fewer children and postpone childbirth. Significant factors influencing the intentions of female Moscow residents to have children are marital behavior, level of education, standard of living and value orientations. Birth rates in female Moscow residents with higher education in real generations are slightly lower than the Russian average. A slightly less pronounced inclination toward getting married in a civil ceremony also has a significant determinant role. The impact of income level cannot be assessed unambiguously. Indeed, in groups of women with relatively lower welfare, fertility rates are higher, but this is due to the ratio of satisfaction with the standard of living and the importance of children (the need for children). A higher level of income (and satisfaction with it) contributes to the realization of reproductive intentions. Female Moscow residents tend to have fewer children since such an attitude is passed down from previous generations; besides, among them, there is a higher proportion of those focused on individual values, which also determines a lower birth rate in a metropolitan megacity. Taking into account birth rate trends and the peculiarities of reproductive behavior of female Moscow residents can contribute to improving the effectiveness of demographic policy.

Key words: women's reproductive behavior, reproductive behavior of female Moscow residents, drivers of women's reproductive behavior.

Introduction

Metropolitan areas are traditionally characterized by a relatively lower birth rate. First of all, this is probably due to the features of population lifestyle there. Greater opportunities for self-realization in professional activities often determine the postponement of having children. A wider range of recreational opportunities may also contribute to this. At the same time, according to the 2020 census, 14% of Russian women of reproductive age live in the two main cities of the country.

Until 2002, the lowest total fertility rate among Russia's constitute entities was recorded in Saint Petersburg and Moscow. Only in 1997 in the Moscow Oblast, (0.984) it was slightly lower than in Moscow (0.985). In 1993–2001 in Saint Petersburg and in 1993, 1997–2001 in Moscow its value was

less than 1.0. Since 2003, the total fertility rate in the Leningrad Oblast has been lower than in Saint Petersburg, and in subsequent years it has also been lower than in Moscow. In 2019, for the first time, the total fertility rate in Moscow (1.505) was slightly higher than in Russia as a whole. In 2021, its value in the capital (1.597) was already much higher than in Russia as a whole (1.505). It would seem that there are grounds to speak of a higher birth rate in the capital's metropolitan area.

However, we should keep in mind that according to the law "On acts of civil status" both parents' place of residence and a child's actual place of birth may be indicated as a child's birthplace in the birth certificate. In Moscow, there is a very high rate of births from other towns. For example, in

2021 it was 25.8%¹. In this regard, the numerator (number of births) and the denominator (number of women) may not be comparable, and the birth rate in Moscow may be overstated (Stepanova, 2014). The same is probably observed in Saint Petersburg, while in the Leningrad Oblast fertility rates are, on the contrary, underestimated.

At the same time, the fact of increased fertility among urban residents, including in the measurement of reproductive orientations, requires verification and competent interpretation. Our article is devoted to finding an answer to the question about a statistical artifact or the emergence of a new trend.

Research methods

A more correct assessment of the ratio of fertility levels in Moscow and Saint Petersburg compared to other RF constituent entities and Russia as a whole is given by indicators of fertility in real generations, calculated with the use of census data based on women's answers about the number of children born. Such a way of obtaining information naturally ensures comparability of the numerator and denominator. The use of fertility indicators for real generations makes it possible to level the impact of timing shifts. However, one should bear in mind that this applies only to the final (at the end of the reproductive period) number of children born. The

¹ The statistical form p58 "Distribution of births by place of maternal registration" identifies three groups of births: those whose mother resided in this Russia's constituent entity, in another Russia's entity, and the "other" group. In 2021 in Moscow, the first group included 64.2% of births, the second group included 25.8%, and the third group included 10.0%. Only the second group, and not the second and third, was counted as births to nonmigrants due to a certain uncertainty of the "other" group, as well as the fact that in the statistical form p211 "Born alive by age of mother and source of information on father" for Moscow with the allocation of municipalities the number of births with an unspecified municipality, unspecified district code for 2021 (33,475 persons) almost coincides with the number of births for which the statistical form p58 indicates that the mother resided in another Russia's constituent entity (33,415 persons).

fertility indicators in the real generations of women of a given age will be affected by timing shifts. Also the fertility indicators in real generations allow estimating the degree of replacement of mothers' generations by daughters' generations somewhat differently (than on the basis of total fertility rate and net reproduction rate): such estimation can be made directly for each generation taking into account the average number of children born, adjusted for the share of girls among births.

Within the framework of the article it is important to note the comparability of fertility indicators just for real generations with reproductive orientations according to sociological research data, as their characteristics are also calculated in relation to real generations.

For an in-depth analysis of possible reasons for the lower birth rate in Moscow in September 2021, the Department of Medical and Sociological Research (head – Candidate of Sciences (Politics) Ignat V. Bogdan) of the Research Institute for Healthcare Organization and Medical Management of Moscow Healthcare Department conducted a sociological study of reproductive behavior.

We conducted the research by telephone survey from September 2 to 24, 2021. We carried out the data collection by OOO "Spektr". The final sample size was 611 people. The maximum sampling error does not exceed 3.96% with a 95% confidence level. We conducted the survey using a random stratified cell phone sample (CATI – computer assisted telephone interview). Women of reproductive age (18–49 years old) permanently residing in Moscow participated in the study. The representativeness of the sample was controlled with the help of given strata according to the criteria of age groups (18–24, 25–29, 30–34, 35–49 years old), as well as the presence and number of their own children (1 child/2 or more children) based on Rosstat data for 2020.

Women's reproductive behavior and its determinants

Among the determinants of fertility much attention is paid to women's reproductive behavior, which under certain circumstances is able to correct the influence of structural factors, shifting the indicators of childbearing. Attention to the features and drivers of female reproductive behavior is due to the fact that in the Russian reality reproductive decisions are made by women, according to formal and informal norms.

Modern women increasingly use male strategies of life activity, giving priority to self-education and professional career rather than family. Society has set coordinates for taking women out of private sphere, which has seriously changed their role functions and influenced reproductive behavior. Patriarchal views on women's place and role in the social continuum have been preserved in Russia since ancient times. Women's strategies assumed the role of a housewife, a mother. Traditionally, marriage and childbirth were the main and only ways of asserting women's status. In public opinion, the legitimization of a woman's career was paired with failures in her personal life as some kind of social compensation (Beginina, Kalugina, 2018). Such tendencies are more characteristic of city dwellers. One-child families remain dominant in urban and rural areas, but the share of two- and three-child families in rural areas is higher than in urban areas (Blinova, Vyalshina, 2012). At the same time, the decline in urban population's fertility began in the generations of the 1920s (Denisov, 2015).

Studies of the impact of urban lifestyle on the reproductive behavior of the population unambiguously testify to radical changes in the behavior of city dwellers. E.N. Novoselova notes: "Today's urban dweller is much more attached to things than to family. <...> Thus, the city has changed people and practically defeated them. The consequences of this victory are the destruction of the value of family and children, the formation of

families consisting of single individuals, children's education in the extra-familial space of megapolis, a profound change in the psychology of both women and men" (Novoselova, 2014).

For city dwellers, Muscovites in particular², there is a greater tendency to have little or no children, a more significant postponement of marriage and the birth of a first-born child to the level of women in European countries, where it reached 29 years (Frejka, Sardon, 2005; Sobotka, 2004). However, there is also evidence of a higher underrealization of the reproductive intentions of Muscovites due to the presence of determinants, such as employment and housing problems, as well as the interiorization of cultural values (Zhuk, 2016).

The influence of material and living conditions and living standards on reproductive behavior is not so obvious. The results of most studies indicate an inverse relationship between living standards and fertility, number of children: higher fertility rates, number of children in a family are combined with lower living standards. Correct analysis, which excludes the influence of the available number of children on the average per capita income, shows that higher living standards can contribute to a fuller realization of families' need to have several children and thereby increase fertility rather than decrease it (Sivoplyasova et al., 2022). Reproductive choice determines the correlation between the importance of the values of children and material well-being (Arkhangelskii et al., 2021). Every family has to make a choice, and the weak relationship between the total fertility rate and the share of the population with incomes below the subsistence level indicates the presence of other non-material determinants of fertility and reproductive behavior.

² For example, data from the sociological study "Gender profile of socio-economic problems in the capital region", conducted in 2019 at the request of the Commissioner for human rights in the city of Moscow.

Health is undoubtedly one of the factors promoting reproductive behavior. The role of women's reproductive health as a driver of fertility and reproductive behavior is evidenced by the research of E.V. Zemlyanova³, A.A. Shabunova (Shabunova, 2010). The relationship between reproductive health, which in turn determines the behavior, and healthcare system activities is due to the need for medical support for women and couples at different stages of reproductive cycle. The research of N.E. Rusanova and A.A. Ozhiganova proves the medicalization of women's reproductive intentions, including the use of assisted reproductive technologies, and also notes the growing demand for humanization of obstetric care, which is manifested in women's desire to be thorough in the organization of delivery and the choice of a team of assistants, attend courses for future parents, be more informed and prepared (Rusanova, Ozhiganova, 2022).

One of the proven factors promoting fertility is nuptiality. A.B. Sinel'nikov found that annual changes in the number of births are strongly influenced by changes in the number of registered marriages with a lag of one year (Sinel'nikov, 2015), and the transformation of marital behavior in general contributes to fertility decline. "Women in registered marriages have more children by the end of their reproductive years than women in unregistered partnerships. Women in remarried legal marriages have more children than those in first marriages. But even for them, the average number of children born is well below the minimum required for simple generational replacement. Only one of every five women of reproductive age whose first marriage ended was legally married at the time of the survey. The average number of children among women in unregistered unions is higher than among never-married and divorced women, but lower than among married women" (Sinel'nikov, 2019).

³ Zemlyanova E.V. (2003). Women's reproductive health as a factor in fertility in Russia: Candidate of Sciences (Economics) thesis. Moscow: ProfSof.

A number of works have studied the impact of education on women's reproductive behavior. Both Russian and foreign demographers reveal lower fertility in women with higher education (Arkhangelsky et al., 2019; Gustafsson, 2005), postponement of motherhood until obtaining a profession and economic security (Marini, 1984; Gustafsson, Worku, 2005; Lappegård, Rønsen, 2005).

Thus, the research results show the presence of features of reproductive behavior of urban women, namely markedly large timing shifts, the spread of small children, due to the values and lifestyle, which are characterized by the choice in favor of welfare and professional self-realization.

Research results

The results of the census in 2021 showed that in Moscow and Saint Petersburg the birth rate in real generations is significantly lower than in Russia as a whole and in urban population of the country (*Tab. 1*).

In Moscow the average number of children born in real generations is slightly higher than in Saint Petersburg (except for the age groups of 30–34 and 35–39). Among Russia's constituent entities, the average number of children born to urban women is lower than in Moscow (but higher than in Saint Petersburg) only in Voronezh (age 40–44 and 45–49) and Tula (age 45–49 and 50–54).

One of the factors promoting lower fertility in real generations in Moscow and Saint Petersburg may be the significantly higher education level of population. The share of women aged 15–49 who have higher education, according to the 2021 census, is 35.7% for Russia as a whole, 40.5% for the country's urban population, 47.1% in Moscow, and 47.4% in Saint Petersburg⁴. It is possible to eliminate the influence of these differences by comparing the average number of children born to women with higher education (*Tab. 2*).

⁴ Results of 2020 All-Russian Population Census. Volume 3. Education. Table 1 (https://rosstat.gov.ru/vpn_popul).

Table 1. Average number of children born in real generations of women in Moscow, Saint Petersburg and Russia as a whole (per woman)

Age (years)	Moscow	Saint Petersburg	Russia	
			Whole population	Urban population
20–24	0.13	0.10	0.31	0.25
25–29	0.48	0.45	0.90	0.79
30–34	0.93	0.94	1.37	1.26
35–39	1.24	1.26	1.61	1.50
40–44	1.37	1.36	1.66	1.54
45–49	1.34	1.29	1.60	1.48
50–54	1.31	1.24	1.60	1.45
55–59	1.31	1.26	1.68	1.52
60–64	1.35	1.32	1.77	1.62
65–69	1.34	1.32	1.80	1.65
70 and over	1.32	1.28	1.84	1.66

Source: Results of 2020 All-Russian Population Census. Volume 9. Fertility. Table 1. (https://rosstat.gov.ru/vpn_popul).

The difference in fertility rates in real generations in Moscow and Saint Petersburg from the whole and urban Russian population for women with higher education is significantly lower than for all women (for example, while the average number of children born in Moscow for all women aged 45–49 is 0.26 lower than in Russia as a whole, and by 0.14 compared to urban population, for women with higher education – by 0.12 and 0.08, respectively; at the age of 35–39 for all women as a whole – by 0.37 and 0.26, for women with higher education – by 0.26 and 0.21), but still remain.

We should note that, according to census data, in Moscow and Saint Petersburg, women with higher education have a higher average number of children born in the age groups of 40 to 55 years than women with lower education levels and, consequently, than all women (see Tab. 1 and 2).

In the cohorts of younger women in Moscow and Saint Petersburg the indicator of the average number of children born differs more significantly from the value for the country as a whole. Age differences may be both generational in nature (i.e. more significant in younger generations) and related

Table 2. Average number of children born in real generations of women with higher education in Moscow, Saint Petersburg and Russia as a whole (per woman)

Age (years)	Moscow	Saint Petersburg	Russia	
			Whole population	Urban population
20–24	0.12	0.07	0.18	0.17
25–29	0.40	0.34	0.64	0.60
30–34	0.89	0.86	1.20	1.15
35–39	1.24	1.24	1.50	1.45
40–44	1.39	1.36	1.56	1.52
45–49	1.37	1.30	1.49	1.45
50–54	1.32	1.25	1.46	1.40
55–59	1.31	1.25	1.49	1.43
60–64	1.35	1.31	1.58	1.52
65–69	1.35	1.31	1.62	1.55
70 and over	1.29	1.26	1.57	1.51

Source: Results of 2020 All-Russian Population Census. Volume 9. Fertility. Table 5 (https://rosstat.gov.ru/vpn_popul).

to a later, on average, onset of childbearing, a shift in the age pattern of fertility toward older ages in Moscow and Saint Petersburg. The share of women who give birth to their first child aged under 30 in Moscow is 80.0%, 79.6% in Saint Petersburg, 88.6% for Russia as a whole, and 87.0% for the country's urban population, while the share of women under age 25 is 49.4%, 47.8%, 65.1% and 61.4%, respectively⁵.

One of the factors that may contribute to a lower birth rate in Moscow is the relatively high proportion of people in unregistered marital relationships. Among those who consider themselves married, the share of those whose marital relations are not registered is 16.8% for women aged 25–29 (this age group has the highest fertility rate) in Moscow and Saint Petersburg, 12.9% for Russia as a whole, and 12.7% for urban women in the country⁶.

At the same time, according to a sociological study conducted in Moscow in 2021, the average number of children born varies depending on whether the marital relationship is registered or not (*Tab. 3*).

In all age groups of interviewed women, the average number of children born is significantly higher in married women than in those without marriage ($p < 0.05$): the difference ranges from 0.48 for 40–44-year-old women to 0.89 for 20–24-year-olds.

Among those whose marital relationship began in 2010–2018 (i.e., at least 3 years have passed since the beginning of the relationship), if the marriage is registered (at the time of the survey), the proportion of those who have no children born is 18.5%, and 38.8% if the marital relationship is unregistered.

Depending on marital status and marriage registration, reproductive orientations differ as well, which primarily include the expected and desired number of children.

In this sociological research in order to check the influence of question wording on answers about reproductive orientations, in contrast to most of the earlier studies of reproductive behavior, first we asked the expected number of children (“How many children, including the existing ones, are you going to have?”), and then the desired number. And we emphasized on the situation with all the necessary conditions for having children (“Imagine a situation where you have all the necessary conditions to have children. Would you like to have more children than you are going to have now?”). Only those who answered “yes” were asked about the desired number of children “How many children in total, including those you have now, would you like to have if you had all the necessary conditions?”⁷. As a result, the average desired number of children,

Table 3. Average number of children born by age and marriage registration

Age, years	Married	Living together (civil marriage)	Difference
20–24	1.00	0.11	0.89
25–29	0.83	0.20	0.60
30–34	1.17	0.64	0.53
35–39	1.47	0.89	0.58
40–44	1.88	1.40	0.48
45–49	1.74	1.00	0.74

Source: hereinafter, data from the sociological survey, 2021.

⁵ According to: Results of 2020 All-Russian Population Census. Volume 9. Fertility. Table 4. (https://rosstat.gov.ru/vpn_popul).

⁶ According to: Results of 2020 All-Russian Population Census. Volume 2. Age and gender composition and marriage status. Table 5 (https://rosstat.gov.ru/vpn_popul).

⁷ In calculating the distributions for the desired number of children and its average value, those who answered “no” to the question about wanting more children than they were going to have and, accordingly, who did not answer the question about the desired number of children, the expected number, it means that the number they were going to have, was noted as the desired number.

according to the survey, was very high (2.73), one and a half times higher than the average expected number of children (1.81). For comparison, according to data from the Sample survey of population's reproductive plans, conducted by Rosstat in 2017, the average expected number of children for women in Russia as a whole (1.88) is slightly higher than in this study, while the average desired number (2.15)⁸ is significantly lower.

Those who are in a registered marriage have not only a higher average number of children born, but also significantly higher reproductive orientations (*Tab. 4*), as compared to those whose marital relations are not registered.

The average expected number of children of married couples (2.00) is 0.43 more than that of those who are not married (1.57). Those who live together without registration have even fewer children than those who were married before (1.76) and never married (1.62). The average desired number of children of those who have been married before (2.90) is slightly higher than that of those who are registered (2.86), but for those who live together without registration it is significantly lower (2.55).

Thus, there are reasons to talk about the relationship between registration of marital relations and reproductive behavior. Probably the absence of registration determines the orientation to have fewer children. However, the main determinant here, apparently, is the importance of family life, which affects both marital and reproductive behavior.

Another factor determining the relatively lower number of children born to Muscovite women is, if it is possible to say so, the generational transmission of the tradition of small children. In most Moscow families, the norms of small children have been formed for a relatively long time. And our research results, as well as a number of others conducted at different times in various Russia's regions, show a significant dependence of the number of children and reproductive orientations on the number of children in the parental family (*Tab. 5*).

In almost all age groups of respondents (except 45–49 years old) the highest average number of children born is recorded for women who grew up in a parental family with three or more children, and the lowest (except for 25–29 and 45–49 years old groups) for those who grew up in one-child families.

Table 4. Average expected and average desired number of children and age at first birth

Marital status	Average expected number of children	Average desired number of children	Difference
Married	2.00	2.86	0.86
Living together (civil marriage)	1.57	2.55	0.98
Nor married, but previously married (divorced, widowed)	1.76	2.90	1.14
Never been married	1.62	2.51	0.89

Table 5. Average number of children born depending on age and number of children in the parental family

Age, years	Number of children in the parent family		
	one	two	three or more
20–24	0.13	0.21	0.25
25–29	0.48	0.39	0.59
30–34	0.86	0.95	1.17
35–39	1.16	1.22	1.80
40–44	1.15	1.58	1.75
45–49	1.38	1.50	1.27

⁸ https://gks.ru/free_doc/new_site/RPN17/index.html

Table 6. Average expected and average desired number of children in women depending on the number of children in the parental family

Number of children in the parent family	Average expected number of children	Average desired number of children	Difference
One	1.76	2.64	0.88
Two	1.78	2.64	0.86
Three or more	1.99	3.07	1.08

Women who grew up in families with a large number of children not only have a higher average number of children born, but also a lower average age at first birth and a shorter interval between the registration of marriage and the birth of the first child (protogenetic interval). Those who were an only child in the family have a mean age at first birth of 26.3 years; those who had two children in the parental family have a mean age of 25.7 years; three or more children have a mean age of 25.6 years. Those who grew up in a parental family with one child had an average protogenetic interval of 30.9 months, those with two children 24.1 months, and those with three or more children 21.9 months.

Respondents who grew up in families with three or more children have significantly higher average expected and average desired number of children (Tab. 6).

The average expected number of children for women who grew up in one-child families (1.76) and two-child families (1.78) is almost identical, and for those who grew up in families with three or more children – 0.2 more (1.99). Differences in the average desired number of children are even more

noticeable. For women who had one or two children in their parental families, it is the same, making 2.64, and for those who grew up in families with three or more children, the average desired number of children exceeds 3 (3.07; see Tab. 6).

It would seem that a relatively higher living standards in Moscow could contribute to a higher birth rate. In 2021, the share of population with incomes below the subsistence level in Moscow was 5.5%, which is half as high as in Russia as a whole (11.0%⁹). However, the research results (as well as most of the earlier ones) showed that a higher standard of living, relatively high average per capita income is associated with a smaller number of children (Tab. 7).

In most age groups of interviewed women, a significantly higher average number of children born occurs in the group with the lowest average per capita income (up to 20 thousand rubles). The only exceptions were the groups of women aged 25–29 and 45–49, where the average number of children born is the highest in the group with average per capita incomes of 20 to 50 thousand rubles. On the contrary, the lowest average number of children

Table 7. Average number of children born by age groups of women and average per capita income

Age, years	What is the amount of your family's income per family member per month? (thousand rubles)			
	up to 20	from 20 to 50	from 50 to 80	over 80
20–24	0.41	0.22	0.00	0.00
25–29	0.67	0.69	0.32	0.17
30–34	1.56	1.00	0.69	0.60
35–39	2.08	1.21	0.67	1.11
40–44	2.06	1.28	1.11	1.50
45–49	1.24	1.53	1.11	1.10

⁹ <https://rosstat.gov.ru/folder/13397>

born is in the group with the highest average per capita income (over 80 thousand rubles). Only the age groups of 35–39 and 40–44 years are an exception (see Tab. 7).

It does not follow, of course, that lower average per capita income determines higher fertility and more children. First, average per capita income is taken into account at the time of the survey, not at the time of childbirth. Second, and most importantly, the data presented show only an inverse relationship between median per capita income and the number of children born, not an effect of income on the number of children. It is likely that, on the contrary, there is an effect of the number of children born on per capita income. With a larger number of children, other things being equal, the average per capita income in the family is lower on average.

However, a lower average per capita income is characterized by a higher number of children not only born, but also expected and desired (Tab. 8).

We note that the group with the lowest average per capita income has the biggest difference between the average desired and expected number of children. It is 1.18, while in other income groups it is from 0.81 to 0.89.

In assessing the relationship between average per capita income and reproductive orientations, at least three circumstances must be kept in mind.

First, living standards in general and income in particular influence mainly the conditions of realization of the need for children, so it is correct to consider this influence on the average expected number of children in groups homogeneous in terms of the desired number of children.

Second, reproductive behavior is probably influenced to a greater extent not by an objective characteristic of living standards, but by its subjective assessment.

Third, the desired number and the expected number of children include the number of children already present, so there is not only an impact of living standards on reproductive orientations, but also partly their impact on living standards.

While in general for all respondents, regardless of the desired number of children, with a higher average per capita income the expected number of children is on average lower, in the groups differentiated by the desired number of children there is no such pronounced inverse relationship (Tab. 9).

Table 8. Average expected and average desired number of children and average per capita income

Average per capita income, thousand rubles	Average expected number of children	Average desired number of children	Difference
Up to 20	2.06	3.24	1.18
From 20 to 50	1.79	2.68	0.89
From 50 to 80	1.72	2.53	0.81
Over 80	1.66	2.50	0.84

Table 9. Average expected number of children as a function of average per capita income and desired number of children

Average per capita income, thousand rubles	Desired number of children				
	1	2	3	4	5
Up to 20	0.80	1.41	2.05	2.45	2.95
From 20 to 50	0.80	1.63	1.86	2.31	3.06
From 50 to 80	0.93	1.52	1.96	2.00	3.27
Over 80	1.00	1.50	1.81	2.50	3.57

For women with the desired number of children 1 and 5 one can speak about the direct connection between the average per capita income and the average expected number of children. In other groups by the desired number of children there is no expressed connection between these indicators.

And, of course, it is important to note that differences in the value of the average expected number of children depending on the desired number of children in the groups homogeneous by the average per capita income are incomparably larger than, on the contrary, depending on the average per capita income in the groups homogeneous by the desired number of children, it means that the need for children differentiates reproductive intentions to a much greater extent than does the average per capita income.

As we have noted above, it is likely that people consider not only and not so much the amount of income as their satisfaction with their reproductive intentions when determining the degree of favorability of their living standards to realize their reproductive intentions.

If with the average per capita income, the relationship with the average expected and desired number of children is inverse, when using the indicator of satisfaction with family income the inverse relationship takes place only with the average desired number of children (*Tab. 10*).

The average expected number of children varies little depending on family income satisfaction: it is slightly higher in the medium range and lower in the low range. The average desired number of children is highest for those with the lowest income satisfaction scores, and lowest for those with the highest income satisfaction scores. Accordingly, with the worst

assessment of income satisfaction there is a big difference in the value of the average desired and expected number of children: 0–3 points – 1.16; 4–7 points – 0.93; 8–10 points – 0.70 (see *Tab. 10*). This is logical, as we can assume that the assessment of income satisfaction influences the perception of the conditions for the realization of the desired number of children.

Given this dependence of the difference between the average desired and average expected number of children on income satisfaction estimates, we can assume a direct relationship between these estimates and the average expected number of children in groups homogeneous in terms of desired number of children.

The most significant direct correlation between the assessment of satisfaction with family income and the average expected number of children is typical for women who would like to have two children given all the necessary conditions: when assessing the satisfaction of family income 0–3 points, the average expected number of children is 1.29; 4–7 points – 1.49; 8–10 points – 1.86. A direct correlation between the family income satisfaction score and the average expected number of children also takes place among those who would like to have five children (*Tab. 11*).

When the desired number of children is equal to 1 and 3, there are practically no differences in the average expected number of children depending on the assessment of income satisfaction, according to the research data. Those who would like to have four children have a significantly lower average expected number of children recorded with a low assessment of income satisfaction, and the highest with an average assessment of income satisfaction.

Table 10. Average expected and average desired number of children and income satisfaction ratings

Current family income satisfaction rating (on 10-point scale)	Average expected number of children	Average desired number of children	Difference
0–3	1.74	2.90	1.16
4–7	1.83	2.76	0.93
8–10	1.81	2.51	0.7

Table 11. Average expected number of children as a function of income satisfaction and desired number of children

Current family income satisfaction rating (on 10-point scale)	Desired number of children				
	1	2	3	4	5
0–3	0.88	1.29	1.93	2.14	3.00
4–7	0.90	1.49	1.93	2.47	3.08
8–10	0.85	1.86	1.95	2.40	3.38

The presented data testify to the presence of some connection between the average expected number of children and the average per capita income, its estimation. However, strictly speaking, they do not allow speaking correctly about the influence of living standards on reproductive intentions. Taking into account that the expected number and desired number of children include already existing children, the nature of the connection may also be affected by the influence of the number of children on living standards parameters.

To avoid this influence and to make a correct assessment of the influence of income, satisfaction with it, and living conditions on reproductive intentions is possible only for those who do not have children yet.

For the interviewed women who have no children, the group with the lowest average per capita income (up to 20 thousand rubles) is characterized by the highest average expected

and desired number of children. However, the differences in the values of these indicators in other groups in terms of average per capita income are comparatively insignificant (*Tab. 12*).

As we have already noted, it is reasonable to estimate the impact of average per capita income (as well as other characteristics of living standards) on the expected number of children in groups that are homogeneous in terms of the size of the desired number of children.

Almost in all groups of respondents by the desired number of children the average expected number of children is higher in those with the average per capita income over 50 thousand rubles than in those whose income does not exceed 50 thousand rubles (although the differences are insignificant among those who would like to have two and four children). The only exception is those who would like to have three children: they have a higher average expected number of children at a lower income (*Tab. 13*).

Table 12. Average expected and average desired number of children and average per capita income for those without children

Average per capita income, thousand rubles	Average expected number of children	Average desired number of children
Up to 20	1.82	3.26
From 20 to 50	1.44	2.31
From 50 to 80	1.53	2.31
Over 80	1.38	2.30

Table 13. Average expected number of children as a function of average per capita income and desired number of children for those who do not have children

Average per capita income, thousand rubles*	Desired number of children				
	1	2	3	4	5
Up to 50	0.60	1.48	2.10	2.08	2.36
Over 50	0.92	1.52	1.73	2.17	3.00

* Due to the small number of groups of respondents without children, differentiated by average per capita income and the desired number of children, in this case only two groups are distinguished by the value of average per capita income.

Those who have no children have a higher estimate of satisfaction with family income and, on average, a higher expected number of children. On the contrary, the average desired number of children is inversely related. With a higher assessment of income, it is lower. Accordingly, at a lower assessment of satisfaction with incomes there is a considerably bigger difference between the average desired and the average expected number of children (0–3 points – 1.14; 4–7 points – 0.97; 8–10 points – 0.65), which is logical, as in this case women probably assess the possibility of having children and the desired number of children worse (Tab. 14).

A relatively larger, on average, expected number of children with a higher estimate of satisfaction with income among women who have no children is also recorded in most groups of women on the desired number of children (Tab. 15).

Women who have no children yet and would like to have two, three or five children given all the necessary conditions have a higher average expected number of children with a higher estimate of income satisfaction. If at the desired number of children equal to three the differences are relatively small, then at those who would like to have two or five children they are significant. At that time, we should note that while 11.1% would like to have

five children given all the necessary conditions, 30.8% would like to have two children, and this is the largest group by the desired number of children among those who do not have children yet (25.0% would like to have three children).

A lower average expected number of children with a higher estimate of family income satisfaction is typical only for those women who would like to have one or four children given all the necessary conditions. Apparently, it is necessary to keep in mind that the difference in the average expected number of children depending on income satisfaction score for those who would like to have one child is not high at all (0.03), and the average expected number of children for them is calculated for small groups of women (income satisfaction score of 0–5 points for 5 women, 6–10 points for 13 women).

It is worth noting once again that the differences in the average expected number of children in the groups of respondents with the same income or its estimation depending on the desired number of children are incomparably greater than in the groups with the same desired number of children depending on the income or its estimation (see Tab. 13 and 15). In other words, the need for children differentiates reproductive intentions to a much greater extent than does the average per capita income.

Table 14. Average expected and average desired number of children and income satisfaction scores for those without children

Current family income satisfaction rating (on 10-point scale)	Average expected number of children	Average desired number of children	Difference
0–3	1.38	2.52	1.14
4–7	1.47	2.44	0.97
8–10	1.69	2.34	0.65

Table 15. Average expected number of children as a function of income satisfaction and desired number of children for those who do not have children

Current family income satisfaction rating (on 10-point scale)*	Desired number of children				
	1	2	3	4	5
0–5	0.80	1.13	1.89	2.40	2.00
6–10	0.77	1.61	1.97	2.00	3.17

* Due to the small number of groups of respondents who have no children, differentiated by assessment of satisfaction with family income and the desired number of children, in this case only two groups are distinguished by assessment of satisfaction with family income.

The desired number of children is largely determined by value orientations. In the course of the sociological research, two extreme groups of respondents were identified: family-oriented and individual values-oriented. The first group included those who gave a score of 5 to the value of living in a registered marriage and a score of 1 to the value of “being free, independent and doing what only I want”. The second group, on the contrary, includes those who gave 5 points for the value “to be free, independent and do what only I want” and 1 point for the value of living in a registered marriage. The first group included 46 female respondents, while the second group included 67.

In the family-oriented group, the average expected number of children is 2.20, and in the individual values-oriented group it is 1.30. The differences are even greater for the average desired number of children, 3.33 and 1.90, respectively. Whereas in the Moscow study, among the respondents from the two extreme groups of family-oriented and individual values, 40.7% were family-oriented and 59.3% were individual values-oriented, according to the 2022 Rosstat Sample Survey of Reproductive Plans of the Population, the proportion of family-oriented respondents from the two extreme groups was 87.7% and individual values were 12.3%, for example.

Discussion and conclusion

Thus, the fact of increased fertility among urban residents is not confirmed by calculations of fertility indicators for real generations of women, including in the largest megacities of the country – Moscow and Saint Petersburg. Sociological research confirms the influence of traditional factors (attitude to marriage, level of education, financial situation) on the reproductive strategies of Muscovite women.

For example, V.M. Medkov wrote about the influence of income on reproductive intentions in groups homogeneous in terms of need for children: “It is methodologically correct to analyze

the relationship between income and reproductive behavior results only in groups with the same need for children and with the same ratio of family and non-family orientations, as only in such homogeneous groups can the influence of various socio-economic factors be studied in pure form” (Medkov, 1983). The need to consider the influence of living conditions on fertility taking into account differentiation of the need for children was noted by V.A. Borisov, but as applied not to income but to living conditions: “The main shortcoming of the studies conducted so far, as it seems to us, is that researchers actually look for a direct link between living conditions and fertility, axiomatically assuming the same need for children among respondents...” (Borisov, 1976).

V.A. Borisov wrote: “The nominal value of income does not yet give an idea of family well-being without taking into account differences in the level of needs and the dynamics of their development” (Borisov, 1976, p. 152–153). According to V.M. Medkov, “a much larger role in determining the preferred numbers of children should probably be played not by family income itself, but by orientations on the desired level of income and the degree of satisfaction with the income available” (Antonov et al., 2002, p. 85). V.A. Belova and L.E. Darskii emphasized: “It is the subjective assessment of the material situation that underlies family planning” (Belova, Darskii, 1968, p. 35). R.I. Sifman noted: “From a theoretical and methodological point of view, when studying the influence of family income on the number of births in women, it is important to proceed from the position firmly established now in demographic research that it is not the absolute size of income that influences, but its evaluation by the family” (Sifman, 1976, p. 88). It means that the conclusion that income significantly less determines reproductive intentions than the need for children should be taken into account when developing forecasts and demographic policy

measures. At the same time, the influence of the level of income on the degree of realization of reproductive intentions has been proved: the higher the satisfaction with income, the lower the difference between the desired and expected number of children.

The influence of value orientations is also undeniable. A significantly higher proportion of female residents of Moscow, oriented toward individual values, as compared to the all-Russian

study, determines a lower fertility level (if we talk about fertility rates in real generations) in the metropolitan megacity. Characteristically, childlessness is fixed and transmitted: for Muscovite women, there is a special factor – the generational transmission of traditions of families with few children. Consideration of these fertility trends and peculiarities of reproductive behavior of Muscovite women may contribute to the effectiveness of demographic policy.

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Educational Migration of School Leavers from Karelia: Arctic Specifics



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Abstract. Studying the migration plans of school leavers is important in the context of the reproduction of the region's human capital. The article considers youth's educational migration plans in the case of one of the Arctic regions (Republic of Karelia). The empirical base includes data of sociological research we conducted in November 2022. A total of 3,053 students in grades 8–11 from all districts of Karelia participated in the survey. The main aim of the research is to identify migration intentions of young people, namely school leavers as a social group on the way to choose vocational education in the region or outside it, the reasons for migration moods and potential willingness to return to the area after receiving a profession in another region. We have established that migration moods differ by regions of Karelia: educational plans of the majority of schoolchildren in Petrozavodsk are oriented outside the region, and the northern (non-Arctic) region of Karelia, on the contrary, to Petrozavodsk. However, school leavers

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of Arctic and southern regions are also focused on studying outside the region, where the flows from the regions are usually directed to the center of their region and then to other regions. It is important to assess the potential return of graduates who leave the region: most of those who are not going to study in Karelia are also going to work there. A comparison of actual and potential outflows of eleventh-graders from the region proves that in fact every third graduate leaves. Most graduates, disposed to leave, romanticize their plans, and only one in four families financially prepare for their child's education in another region; the rest take no concrete action. The results obtained contribute to studying youth's migration activity in Russia's regions that are partially included in the Arctic zone of the Russian Federation, as detailed information is limited for such territories. In practical terms, the research results can form the analytical basis for the timely development of management mechanisms to strengthen and retain youth in the Arctic regions.

Key words: educational migration, migration plans, school leavers, Arctic zone of the Russian Federation, Republic of Karelia.

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Introduction

Combined with a decline in natural increase, migration outflow is one of the main threats to the development and national security of the geostrategic macro-region – the Arctic zone of the Russian Federation (AZ RF)¹. The migration balance has been stably negative for the previous ten years in the AZ RF. According to the 2021 data, the population inflow does not compensate the outflow, which contributes to the population decline in the Arctic territories. The migratory outflow also aggravates the current deficit of labor resources in the AZ RF for the current and prospective period, which imposes restrictions on the implementation of large-scale investment projects, under which it is planned to create 140 thousand new jobs by 2035 (Efimov et al., 2022).

The specifics of the Arctic territories, on the one hand, limiting their development (remoteness, harsh climate, limited infrastructure, low density

and negative population growth, asymmetric socio-economic development), on the other hand, favorably distinguishing them from other Russian regions (strategic importance, investment and human resource potential, the presence of the Northern Sea Route (Shaparov et al., 2022), high human development index), necessitate an in-depth analysis of migration processes in these territories.

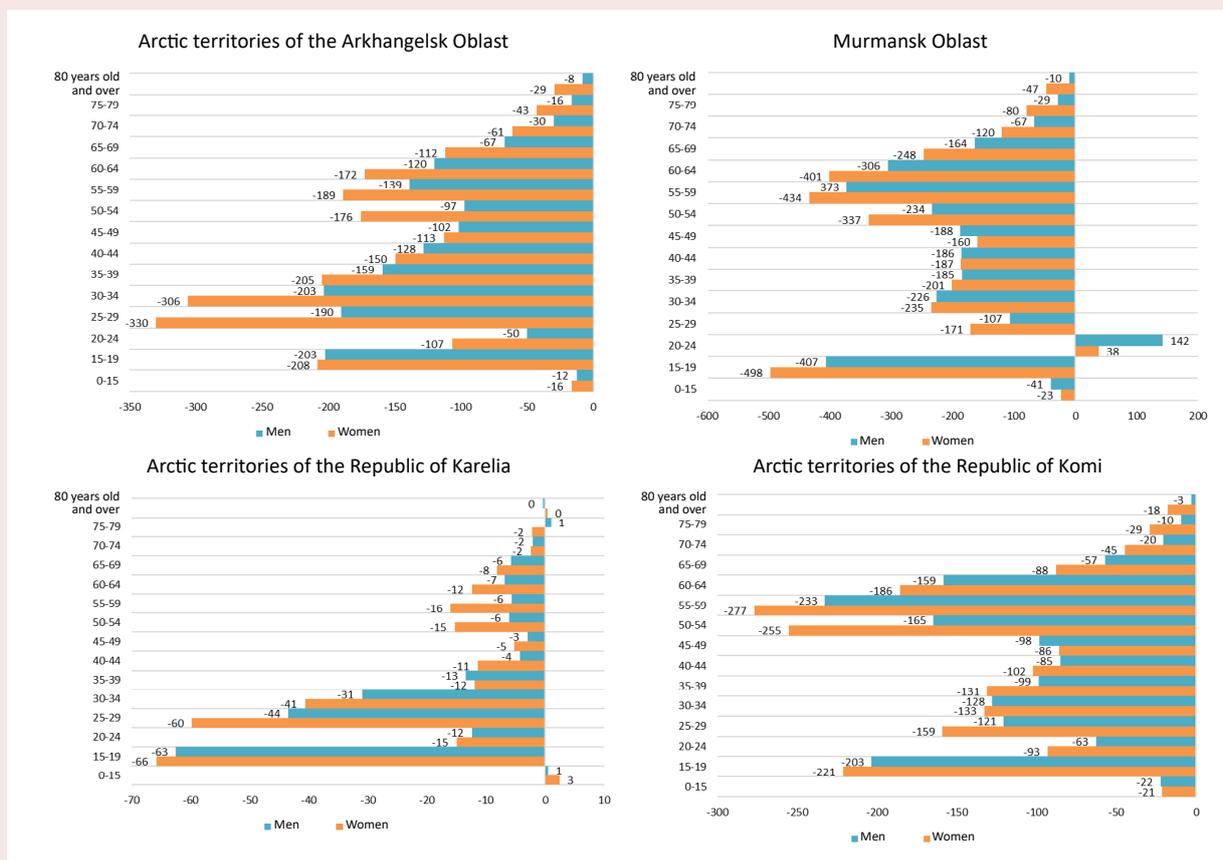
According to 2021 data, approximately every second person, arrived in the AZ RF, is a young person under the age of 35. There are fewer young people among those leaving the region – 38.6%, but the share of persons of retirement age leaving the AZ RF increased to 22.7% (the share of entering pensioners is 17%) (Khoteeva, Stepus, 2023). Migration movements are differentiated in the Arctic territories due to the different level of development of the territories, spatial location of the production, mining and infrastructure base that forms the foundation of the AZ RF economy (Heleniak, 1999). At the present stage, many factors causing migration movements in the AZ RF have been classified, among which generalized

¹ On the Strategy for the Development of the Arctic zone of the Russian Federation and National Security for the period through to 2035: Presidential Decree 645, dated October 26, 2020.

economic, social, demographic, ethnic, political-legal, natural-climatic, personal-psychological (Ukhanova et al., 2021), etc. The impact of these factors is differentiated by the subjects of the AZ RF and by individual territories. For example, for the regions of the European part of the Russian Arctic, the important ones are the age structure, the level of wages, as well as the combination of local conditions for the formation of migration sentiments, including the motivation of the population (Shelomentsev et al., 2018).

In the Arctic territories of the regions of the European part of the AZ RF on average for 10 years², there is a negative increase in the interregional type of migration. The Arctic territories of the Arkhangelsk Oblast and the Republic of Karelia are more often abandoned by young people under the age of 35, with women being the most active. The migration outflow of the adult population, especially of those of retirement age, is typical of the Murmansk Oblast and the Arctic territories of the Komi Republic (*Fig. 1*).

Figure 1. Average annual balance of interregional migration in the Arctic territories of the subjects of the European part of the AZ RF for 2012–2021, people*



* Data on age groups 0–15 and 15–19 are given with overlap due to the limited statistical information on gender and age structure of migration flows in the context of municipalities. According to: indicators of the Database of Municipal Formations of Rosstat.

² The assessment of the dynamics of migration gain/decline is given as an average for the years 2012–2021, rather than the latest data for 2021, as the COVID-19 pandemic has changed the migration situation between Russian regions, and using data only for the last year could distort the picture of the migration situation in the AZ RF.

At the same time, in the Murmansk Oblast, there is a migration increase in the population aged 20–24 years, especially among men, which may be associated with the return of young people to the region after training, at least fixed (Mkrtchyan, 2020), enrollment in higher education or employment.

Migration loss in the AZ RF is largely shaped by the youth's movement, which is due to the availability and remoteness of vocational training organizations and potential jobs, as well as youth's attitudes and plans to live and work in the Arctic territories (Uusiautti, Yeasmin, 2019).

Thus, the aim of the research is to identify the migration intentions of school leavers who are on their way to form an educational trajectory in the region or outside it, the reasons for their migration moods and their potential readiness to return back after receiving a profession. Scientific relevance is determined by the lack of knowledge about this phenomenon and the possibility of comparing youth's moods with the actual regional outflow of graduates in the context of municipalities. It is doubly relevant to study this problem in the territories of the regions partially included in the AZ RF, since the social infrastructure of such territories is mainly concentrated in the non-arctic part (except for the Arkhangelsk Oblast), and the vector of population migration plans is often formed along the direction "district – administrative center – other region", where large and capital cities are intermediate links of migration routes from the Arctic territories to federal and regional capital cities (Fauzer, Smirnov, 2020). This article aims to contribute to the study of these problems. The tasks of the research are to 1) identify the educational and professional plans of school leavers, 2) analyze the migration attitudes of school leavers regarding education in their native region, and 3) compare the volume of the planned (by students) and actual migration outflow of school leavers.

Literature review on the research issue

Getting an education is the starting point for an independent migration experience and plays an important role in shaping one's life strategy. The phenomenon of uncertainty – from "preliminary assessments" and "weighing arguments" to "concrete actions" – has a great impact on studying these aspects (Tabor, Milfont, 2011). School leavers as a specific segment of young people are under conditions of choice and risk (Chuprov et al., 2003), also many of them find it difficult to assess their chances of enrollment, to make choices, to assess family's material possibilities (Karachurina, Florinskaya, 2019). When shaping an educational trajectory, the possibility of error is high; those who take risks have increased responsibility and autonomy, inspired by success and tempered by failure, which is a key factor in the social development of an individual (Chuprov et al., 2003).

The problematic of school leavers' behavior at the beginning of their life path has been widely studied in Russian and foreign sociology, especially the issues of subjective and objective aspects of choice: "dependence of educational, professional plans and real behavior in education and labor on ascriptive factors – social origin, parents' education, families' financial situation, settlement status, gender, nationality, etc." (Cherednichenko, 2014, p. 5). These indicated interrelations have been the determinants of obtaining education and entering independent life.

It is worth noting that the direction and intensity of educational migration on the basis of statistical data began being studied since 2011, when, after the change in the order of statistical accounting, these data became available to researchers (Gabbrakhmanov et al., 2022). The most frequent focus is on the movement of school leavers between regions and the reasons for this movement (Gabbrakhmanov et al., 2019). Movements of graduates from villages to cities and from small

towns to large cities have been studied in detail (Abankina et al., 2012; Florinskaya, 2017). It is important to consider the migration movements of school leavers not only as an accomplished fact, but also as a potential opportunity (migration intentions), as the formed mood to leave the region can be realized after getting a profession or, on the contrary, develop into the mood to “stay”, competing with other events of the life path (Kartseva, 2021).

Young people often perceive studying in another region as an opportunity to establish themselves and a kind of social elevator, so losing local graduates at the stage of choosing education in another region, the probability of losing them forever is very high (Gabbrakhmanov, 2020).

There is often a paradox in the migration intentions of high school students – first the region/city of education is chosen, and then an educational organization, the reasons for the choice are the comfort of urban environment, employment potential and connections (Klyachko, Semionova, 2021). The quality of the region’s human capital reproduction largely depends on students’ choice of future profession and formation of educational trajectory. In this context, intensive and uncompensated educational migration is a threat to territories. This problem is especially acute in the regions of the Arctic zone of the RF, where the education system has insufficient capacity, as a result of which forced educational migration is observed (Simakova, Gurtov, 2020). A decisive role is played by the formed professional interests, which are largely inconsistent with the interests of the local labor market, as well as the social ties of young people formed on the basis of migration experience (Zamyatina, Yashunsky, 2017).

Thus, when considering the educational plans of school leavers, we pay special attention to their migration intentions. The fact that graduates have already migrated and migration intentions have not yet entered an active phase, together with

the lack of alignment between the interests of the labor market, employers and graduates, on the one hand, is a threat to the reproduction of human capital of the AZ RF, and on the other hand, is an objective process, as the mobility aspect itself is an inherent characteristic of young people as a social group. Similar studies (Simakova, 2019) partially reflect this problematic. However, the migration plans of graduates are often considered in the key of revealing the fact of migration intentions with the indication of general reasons contributing to it, but without taking into account the influence of the spatial context of the territory and without comparing it with the actual outflow of graduates. Another area of research on Arctic youth migration concerns the “stay or go” aspects. Russian and foreign authors come to similar conclusions – “to leave”, but under certain conditions of development of Arctic territories (educational system, infrastructure and leisure) – still “to stay” (Rozanova-Smith, 2021; Simakova et al., 2021; Sharova, Nedoseka, 2021).

The article reveals the problems in the key of spatial localization of professional education system in the Arctic territories and considers them in a deeper way. We believe that graduates’ migration educational plans differ by regions of Karelia: graduates from regions distant from the center (Arctic, northern, southern) aspire to get education in the regional capital, and graduates from Petrozavodsk, on the contrary, aspire to larger cities. In addition to this assumption, we test a number of explanatory hypotheses about graduates’ migration intentions. H1: graduates with a higher level of family’s financial status seek education outside the region. H2: graduates with higher educational attainment want to study outside of Karelia. H3: a higher level of parents’ education determines graduates’ plans to study outside the region. H4: migration moods are more pronounced among those who have had experience of living outside the region.

Theoretical and methodological basis of the research

In the research, the notion of educational migration is narrowed to educational migration, which is carried out for the purpose of obtaining vocational education by school leavers (Korepina, 2018). We consider educational migration in the complex, as a set of actions on the choice of education after school and decisions made to master

the desired profession for further consolidation in the system of social division of labor and acquiring social status in the region or outside of it.

Theoretically, the research is based on the riskological concept proposed by V.I. Chuprov and Yu.A. Zubok in which risk is considered when it is necessary to make “a choice from a number of options and assess the development of the situation that differ not only in the probability of realization,

Figure 2. Spatial localization of the research area*



- 1. Arctic districts of Karelia**
 - Kostomuksha municipal district
 - Segezha district
 - Kemsky district
 - Kalevsky district
 - Louhsky district
 - Belomorsky district
- 2. Non-Arctic north of Karelia**
 - Medvezhjegorsky district
 - Muezersky district
 - Pudozhsky district
- 3. Petrozavodsk**
- 4. Districts close to the administrative center**
 - Kondopozhsky district
 - Prionezhsky district
 - Pryazhinsky district
- 5. Southern districts of Karelia**
 - Sortavalsky district
 - Suoyarsky district
 - Pitkyarantsky district
 - Olonetsky district
 - Lyakhdenpозhsky district

* We present our spatial distribution of districts. According to Federal Law 193-FZ, dated July 13, 2020, the Arctic territories of Karelia include the territories of Louhsky, Kalevsky, Kemsky, Belomorsky, Segezhsky districts and Kostomuksha urban district. Northern (nonarctic) districts are the territories of Muezersky, Medvezhjegorsky and Pudozhsky districts. Areas close to the center are the territories of Kondopozhsky, Pryazhinsky and Prionezhsky districts. Southern districts of Karelia are Sortavala, Pitkyaranta, Olonets, Lahdenpohsky, and Suoyarvsky.

Source: own compilation.

but also in the possible (individual and social) consequences” (Chuprov et al., 2003): in terms of choosing a profession and an educational trajectory.

The subjective (personal) reasons for the formation of the migration mood of school leavers, as well as objective reasons, which become a consequence of the contradictions between individual needs and the opportunities to meet them at the place of residence, are identified based on the ideas of T.I. Zaslavskaya and L.L. Rybakovskii (Rybakovskii, 2016).

The geography of the study is limited to the territories of the Republic of Karelia (Fig. 2) as a subject of the European part of the AZ RF (the Arctic territories occupy 38% of the region’s area and 18% of the permanent population) for several reasons: asymmetry of districts in the spatial organization of the professional education system; geographical position, development of social and transport infrastructure, proximity to Saint Petersburg and the European Union.

The research object is students in 8th–11th grades in the Republic of Karelia. The information basis of the study is Rosstat data, departmental statistics and the sociological survey, we conducted

in November 2022. At 97% confidence probability and $\pm 3\%$ error the sample size is 3,053 people³. Of them 38% live in the capital of Karelia – Petrozavodsk⁴, every fourth (25%) – in Arctic regions, 17% – in the south of Karelia, 11% – in regions close to the center, and 9% – in northern (non-Arctic) regions (Tab. 1). More than half of the respondents (67%) live in cities, 33% – in rural areas. The selection of respondents is random, proportional to the number of students by district and grade level.

Spatial conditions of formation of migration attitudes of school leavers of the Republic of Karelia

In the period from 2012 to 2021, the population of the Republic of Karelia decreased by 4.8%. Positive dynamics of permanent population growth is observed only in three of the 18 municipalities of Karelia: Petrozavodsk and Kostomuksha urban districts, Prionezhsky district. At the same time, we observe decrease of youth in all regions of Karelia: for the reported period the number of Republic’s youth aged 14–34 decreased by 20.6%. Arctic and northern regions of Karelia lose the youth more actively, their number decreased by 30.3% and 28.8% accordingly. In other districts the volume of

Table 1. Quantitative characteristics of the sample population*

Group of districts	Number of students in 8th–11th grades, people	Structure of students in 8th–11th grades, %	Number of respondents	Sample structure, %	Deviation of the sample from the general population, %	Proportion of graduates surveyed in the general population, %
Arctic	3,559	19.0	761	24.9	6.0	21.4
Northern (non-Arctic)	1,659	8.8	286	9.4	0.5	17.2
Center (Petrozavodsk)	8,609	45.9	1,172	38.4	7.5	13.6
Closed to the center	2,130	11.3	329	10.8	0.6	15.4
Southern	2,818	15.0	505	16.5	1.5	17.9
Total	18,775	100	3,053	100	3.2	16.3

* Note: percentages are from the population of respondents.

According to: actual data on the number of students, given by the Ministry of Education and Sports of the Republic of Karelia. The rest of the data are the results of the survey we conducted.

³ Distribution of respondents by grade is as follows: 999 in 8th grade, 1,044 in 9th grade, 535 in 10th grade, and 464 in 11th grade.

⁴ Students in 8th–11th grades at the Petrozavodsk Presidential Cadet School were excluded from the study, as this institution is subordinate to the Russian Ministry of Defense and, in addition to general educational activities, has a focus on the military-professional career of students, including those from other Russia’s regions, which could distort the research results.

youth reduction is smaller, but not less: in southern districts – 23.6%, in regions close to the center – 22.8%, in Petrozavodsk – 17.7%.

Interregional migration growth of young people was positive in 2021, except for the northern (non-Arctic) districts of Karelia (Tab. 2). On the contrary, the positive balance of intraregional type of migration is observed only in Petrozavodsk, where young people from the districts rush including for education.

The main educational opportunities of Karelia are concentrated in Petrozavodsk, where there are four universities (including branches) and 13 educational organizations, which provide training in intermediate vocational education programs. There are no educational organizations of vocational

education in the regions, which we designated as the “non-Arctic north of Karelia”, in the districts closed to the center there is only one such organization, in the arctic districts – three, in the southern districts – two. At the same time, the admission rate in relation to the total volume of graduates is a little more than 10%. Thus, the complex socio-economic conditions in the districts force school leavers to consider options for education outside their home municipality and even outside the region. How is the situation in reality? Every year about a third of graduates leave Karelia. In 2020 from total number of school leavers of the 11th grade form 30% entered colleges and technical schools of Petrozavodsk, another 31.2% – universities of Petrozavodsk, and 27.4% left to study in other Russian regions⁵.

Table 2. Quantitative characteristics of increase/decline of young people aged 15–34 in 2021 and indicators of education system of the Karelia Republic

Indicator	Arctic districts	Northern (non-Arctic) districts	Petrozavodsk	Districts, close to the center	Southern districts
1. Decline in number of young people aged 14–34 in 2021 compared to 2012, people ¹⁾	-9 259	-3 838	-15 906	-4 416	-5 901
2. Balance of interregional migration of young people aged 14–34 in 2021, people ¹⁾	16	-8	187	35	17
3. Balance of intraregional migration of young people aged 14–34 in 2021, people ¹⁾	-129	-170	355	-39	-17
4. Number of school leavers of 8th–11th grades in 2021, people ²⁾	3 559	1 659	8 609	2 130	2 818
5. Admission to full-time universities for budgetary places in 2021, people ³⁾	0	0	1 630	0	0
6. Admission to colleges and technical colleges on a full-time basis for budgetary places in 2021, people ⁴⁾	333	0	2 141	50	273
7. Professional training needs for 2023 ⁵⁾	1 324	394	3 598	1 293	707

¹⁾ According to: Database of indicators of municipalities. Federal State Statistics Service. Available at: <https://www.gks.ru/dbscripts/munst/> (accessed: March 1, 2023).

²⁾ Data provided by the Ministry of Education and Sports of the Republic of Karelia at our request.

³⁾ Information about the organization carrying out educational activities under the educational programs of higher education – bachelor’s degree programs, specialist’s degree programs, master’s degree programs. Form of statistical observation VPO-1. Moscow: GITs Rosstat, 2021.

⁴⁾ Information about the educational organization that carries out educational activities according to educational programs of secondary vocational education: State Statistical Reporting Form No. SPO-1. Moscow: GITs Rosstat, 2021.

⁵⁾ Forecast of training needs for 2023–2027 in the context of municipalities in the areas of training. Department of Labor and Employment of the Republic of Karelia. Available at: https://mintrud.karelia.ru/content/прогноз_потребности_в_подготовке_кадров

⁵ According to the reports of educational organizations for 2020, provided by the Ministry of Education and Sports of the Republic of Karelia.

The current volume of training in the vocational education system is less than the demanded by the labor market. According to the forecast of the Department of Labor and Employment, the need for personnel in the region will increase, but taking into account the graduates' outflow and the limited training in the vocational education system in the field, this need will be insufficiently provided with young qualified specialists.

Professional certainty and educational plans of school leavers

In the issue of graduates' certainty with their future profession the difference by the territories of Karelia is insignificant, so let us outline the general picture for the region as a whole. Half of the students in 8th–11th grades (53.7%) have chosen their future profession, and of those who are still undecided, every second cannot choose between several options, are afraid of making a mistake and do not know what exactly they like. Only every fifth high school student (22.5% of the total number of respondents) is sure about their choice, and every third (31.3%) has decided on their profession, but considers other options, another 23% made their choice conditionally, as they will act on the circumstances of the admission campaign of universities or colleges.

Among the motives of graduates' choice of future profession personal motives of development

and building a successful career prevail to a greater extent: potential salary (57.2%), opportunity to develop their abilities (51.7%), career prospects (47.2%) and opportunity to be useful to people (46.5%). It is interesting to note that the motive "to be mobile" was chosen by 13.8% of all respondents, while it is more important for Petrozavodsk residents than for those living in other regions of Karelia (16.4% of respondents from Petrozavodsk, 12.5% for students from Arctic districts and 9.2% for students from northern (non-Arctic) districts).

The educational plans of school graduates in the Arctic districts of Karelia differ from the plans of graduates from other regions. So, every third arctic schoolchildren is determined to get higher education (31.2%), in the region's capital there are more of them – 38.4%. Almost one third of the Arctic schoolchildren (28.2%) and schoolchildren from other districts of Karelia consider college and technical school education to be sufficient for themselves, but only 18.9% of those from the capital. When paying attention to specific plans after school, a larger number of graduates are already focused on entering universities: 44.7% of Petrozavodsk residents, 32.5% of schoolchildren from arctic districts, 35.9% – from districts close to the center (*Tab. 3*). The tendency of choosing IVE educational institutions also remained, but more Arctic schoolchildren chose this option

Table 3. Plans of schoolchildren in the districts of Karelia for the first year immediately after graduation, % of those who answered the question by district*

Plans for the first year after graduation	Arctic districts	Northern (non-Arctic) districts	Petrozavodsk	Districts, closed to the center	Southern districts
Go to university	32.5	25.2	44.7	35.9	32.5
Go to college, technical school	39.5	40.6	26.2	42.1	44.9
Find a job	1.9	4.2	3.7	2.7	3.1
Take a little rest and then continue training	4.3	5.2	4	3	3.5
Join the army	3.9	4.9	2.2	2.7	2
If I do not score enough points, I will retake the exams to go to university	3.1	5.2	3.8	2.7	1.6
I do not know yet	14.2	13.6	13.8	9.5	11.6

* Pearson Chi-square: asymptotic significance (two-sided) = 0.000.
According to: own research results.

for themselves – 39.5%. Almost half of the graduates (except for those who study in schools of Petrozavodsk) prioritized the choice of colleges or technical colleges. This may be due to the spatial location of educational organizations and the location of large industrial enterprises, mainly concentrated in the regions of Karelia, where there is a demand for workers. At the same time, every third pupil (28.2% of the total number of respondents) decided in which educational organization they will enter.

The majority of graduates prepare for admission in one way or another, and the ways of preparation of students in the region's capital and distant regions differ. In Petrozavodsk, every third graduate uses the services of a tutor (30.9%), while in the Arctic and other districts more distant from the center only 16% prepare in this way, which is connected with a wider range of opportunities available in Petrozavodsk. For every fourth to fifth graduate (all types of districts) an important element of preparation is communication with acquaintances who entered the desired university or college (26.5% of graduates from Arctic districts, 20.5% from Petrozavodsk and 23.6% from southern districts), thus forming the image of educational organization by “word of mouth” based on feedback, which is generally typical for Russian province (Boldina, 2022).

Migration moods and graduates' plans

The active migration attitudes of graduates testify to the high level of youth mobility in Karelia. Among the surveyed graduates every third (36.5%) is focused on getting education outside the region. Among eleventh-graders this share is higher – 40.4%. Graduates of Petrozavodsk schools are more focused on education in the capital universities of the country (28.5% of the total number of respondents), and among eleventh-graders – it is every third graduate (30.6%). Students from southern districts (28.9%), whose interests are most likely due to their relative proximity to Saint Petersburg, are also more oriented toward universities in the capital (39.7% among eleventh-graders). In contrast, students living in other districts tend to go to the capital of Karelia, where most vocational education institutions are located: 37.8% of graduates from Arctic districts, and 46.3% from districts closer to the center (*Tab. 4*). It is likely that the geographical factor is important in determining the vector of educational migration of Karelian graduates. At the same time, graduates of the 11th grade in the northern districts to a greater extent aspire to Petrozavodsk (66.7% of the number of surveyed eleventh-graders in these districts), and none of them expressed interest in studying in megacities and abroad.

Table 4. Graduates' plans for education in relation to the Republic of Karelia, % of those who answered the question by district*

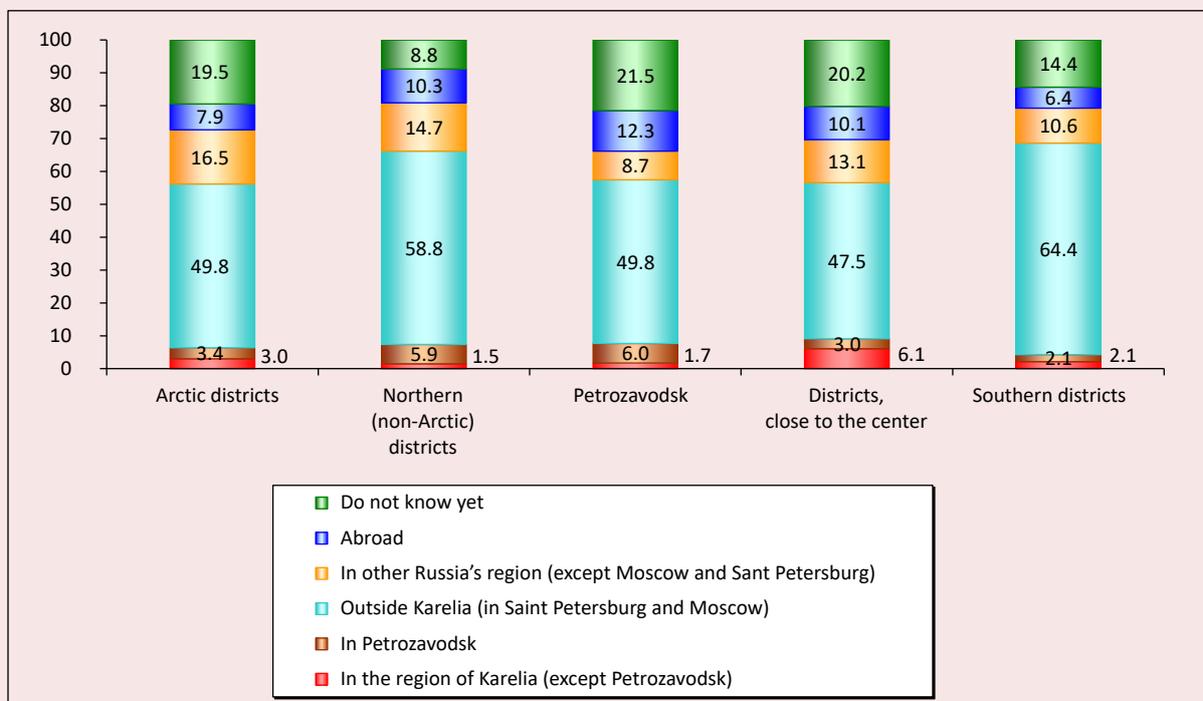
Plans for training	Arctic districts	Northern (non-Arctic) districts	Petrozavodsk	Districts, closed to the center	Southern districts
In the region of Karelia (except Petrozavodsk)	8	10.2	4.4	7.1	9.1
In Petrozavodsk	37.8	45.6	30.6	46.3	38.9
At universities/colleges in central regions (Moscow, Saint Petersburg)	23.9	14.4	28.5	18.4	28.9
In other cities outside of Karelia	9.7	7.7	9.8	8.6	7.7
Abroad	2	1.8	3.8	2.4	0.8
I do not know yet	18.6	20.4	22.9	17.2	14.6
* According to the distribution for both questions Pearson chi-square: asymptotic significance (two-sided) = 0.000. According to: own research results.					

Graduates' plans regarding educational migration are interesting to consider in perspective regarding employment in Karelia, i.e. in terms of whether the potential departure of graduates from the region is compensated in the future. Do those who are going to study outside Karelia plan to return after their education? Survey data indicate that they do not have such intentions. Among the graduates from Arctic districts who plan to study outside Karelia, only 6.4% intend to find a job in Karelia after graduation, every second graduate (49.8%) is focused on Moscow and Saint Petersburg, another 16.5% want to find a job in other regions (Fig. 3). Among graduates of northern (non-Arctic) territories only 7.4% plan to return to Karelia, 58.8% are oriented to work in megacities and 14.7% – in other Russian regions; 7.7% of graduates who plan to study outside Karelia intend to return back

to Petrozavodsk, 49.8% are focused on Russian capitals, and, interestingly, 12.3% expressed interest in working abroad.

Given the active migration sentiments of graduates to study and work outside the region, we can make the assumption that educational migration is not the root cause, but acts as a kind of stepping stone to migration from the region as a whole, especially in the capital and Arctic districts of Karelia. Another question is to what extent these plans will translate into real actions. The implementation of migration plans largely depends on the existing experience of mobility, even in the form of short-term trips that allow comparing places of residence and choosing living conditions. People with migration experience tend to “more easily decide to move and use it as a means to solve their life problems” (Zayonchkovskaya, Nozdrina, 2008).

Figure 3. Plans of graduates who intend to study outside Karelia to work after education, % of those who answered the question for the district*



* Pearson Chi-square: asymptotic significance (two-sided) = 0.002. According to: own research results.

Most graduates of Karelia have migration experience, only every fourth graduate (25% of the total number of respondents) had no experience of staying outside the region for more than a week, every third (27.2%) leaves several times a year, another 20% leave steadily once a year.

The reasons for the formation of migration attitudes to study and work outside the region can be called common and related to the expectations of a “better life”, they do not show any regional specifics: “I will find a high-paying job there” (57.6% of the respondents who expressed a desire to study outside the region), “there are more opportunities for personal development” (55.1%) and “professional development” (50.5%). An important condition is the “Arctic” orientation of the chosen specialty, its demand at the regional level. The research of migration plans of the students of Northern (Arctic) Federal University named after M.V. Lomonosov showed that those, who are studying in such specialties are less likely to express migration sentiments (Zaikov et al., 2018).

During the study of migration intentions, it is important to determine to what extent these intentions are supported by certain actions, in this case what graduates do to get education in other regions. Of those who want to study outside of Karelia, 25.8% do nothing, i.e. their sentiments are purely hypothetical, another one in two (51%) studies the website of the educational institution, being at the initial stage of choice – analysis

of information about the potential place and conditions of migration. One aspect of migration is the reliance on experience or existing connections in the region of potential movement: 25% of respondents keep in touch with friends and relatives living in the regions where the graduate would like to move/studying in the desired educational institutions. Lack of housing in another region is a significant limiting factor for the implementation of migration plans, so even now every fifth graduate is concerned about housing in another region – 22.3% are interested in a dormitory for nonresident students and solve this issue. A more conscious type of implementation of educational migration plans includes financial readiness of the future applicant and family: every fourth (25.7%) graduate, wishing to study outside Karelia, noted that the family is saving money for this purpose. Families from Arctic districts (27%) and Petrozavodsk (25.1%) are more active in saving money for their child’s education outside of Karelia, while in other regions it is every fifth family. Only a few (5.8%) respondents have already got acquainted with the future educational institution by visiting it in person.

Thus, we partially confirmed the hypotheses stated in the research. We tested all the at the significance level of 0.05 according to the chi-square test. Indeed, the migration sentiments of graduates by districts of Karelia differ, but the direction of the flows does not coincide with the assumed one. The graduates of the arctic districts to a greater

Table 5. Results of additional hypothesis testing by districts of Karelia

Hypothesis	Arctic districts	Northern (non-Arctic) districts	Petrozavodsk	Districts, closed to the center	Southern districts
H1	The hypothesis is rejected	The hypothesis is rejected	The hypothesis is rejected	The hypothesis is rejected	The hypothesis is rejected
H2	The hypothesis is accepted	The hypothesis is accepted	The hypothesis is rejected	The hypothesis is rejected	The hypothesis is accepted
H3	The hypothesis is rejected	The hypothesis is rejected	The hypothesis is accepted	The hypothesis is accepted	The hypothesis is rejected
H4	The hypothesis is accepted	The hypothesis is rejected	The hypothesis is accepted	The hypothesis is accepted	The hypothesis is accepted

According to: own research results.

extent tend to study outside Karelia, as well as the graduates of the southern districts and Petrozavodsk. The hypothesis that graduates' migration plans are conditioned by a good financial situation of their families was not confirmed (Tab. 5). It is the insufficiency of training places and high educational aspirations that force graduates to consider training options outside the region. The experience of living in other regions is associated with the formation of migration plans for all regions, except for the northern (non-Arctic). Academic success does correlate with educational plans, and mostly "excellent" and "good" students tend to leave the region, but it is not typical for graduates of districts close to Petrozavodsk. Higher parental education is associated with the formation of graduates' intentions to study outside the region, but this is true only for high-school students of Petrozavodsk and districts close to it.

Having compared the educational and professional intentions of high school students, we can conclude that the graduates, intended to leave Karelia to a greater extent, consider getting education outside the region as an opportunity to leave the region forever, i.e. they form an educational strategy for the sake of migration. However, the phenomenon of migration, i.e. moving to another region/district after finishing

school, is often "romanticized" by young people due to the age specifics of personality formation, and therefore in reality some students' migration moods remain at the level of dreams (hypothetical). This is confirmed by the fact that not all of those who expressed migration sentiments started to take active steps to implement their plans.

Actual outflow of 11th graders from the Republic of Karelia

In spite of the fact that every third high school student (36.5%) and 40.4% of 11th graders have migration intentions to study outside of Karelia, not all plans can come true due to various circumstances. In objective reality, the outflow of graduates may be more or less, depending on the admission campaign and the results of final examinations. According to the reports of educational organizations, provided to the Ministry of Education and Sports of the Republic of Karelia on the graduates of the 11th grade, on average, in 3 years 28.2% of 11th graders leave the region to get education. The situation varies by districts due to the spatial location of the network of vocational education organizations, which, in turn, determines the formation of migration flows of graduates within the region as well. The main flow of 11th graders from the regions of Karelia goes to Petrozavodsk. At the same time, 61.8% of graduates from Petrozavodsk stay in the

Table 6. Actual average annual distribution of 11th grade graduates in the Republic of Karelia by educational paths, % of those who answered the question by district

Districts	Entered educational institutions of secondary vocational education			Entered educational institutions of higher education		Started work or enlisted in the army
	in Petrozavodsk	in other regions of Karelia	outside of Karelia	in Petrozavodsk	outside of Karelia	
Arctic districts	34.2	1.6	11	22.4	21.7	9.1
Northern (non-Arctic) districts	45.3	0.9	3.3	32.6	14.2	3.6
Petrozavodsk	23.2	0.6	3	38.6	24.9	9.7
Districts, close to the center	46.3	0.6	5.5	30.1	15.1	2.4
Southern districts	27.3	2.9	7.6	25.9	28.8	7.4
Total	30.4	1.1	5.5	32.2	22.7	8

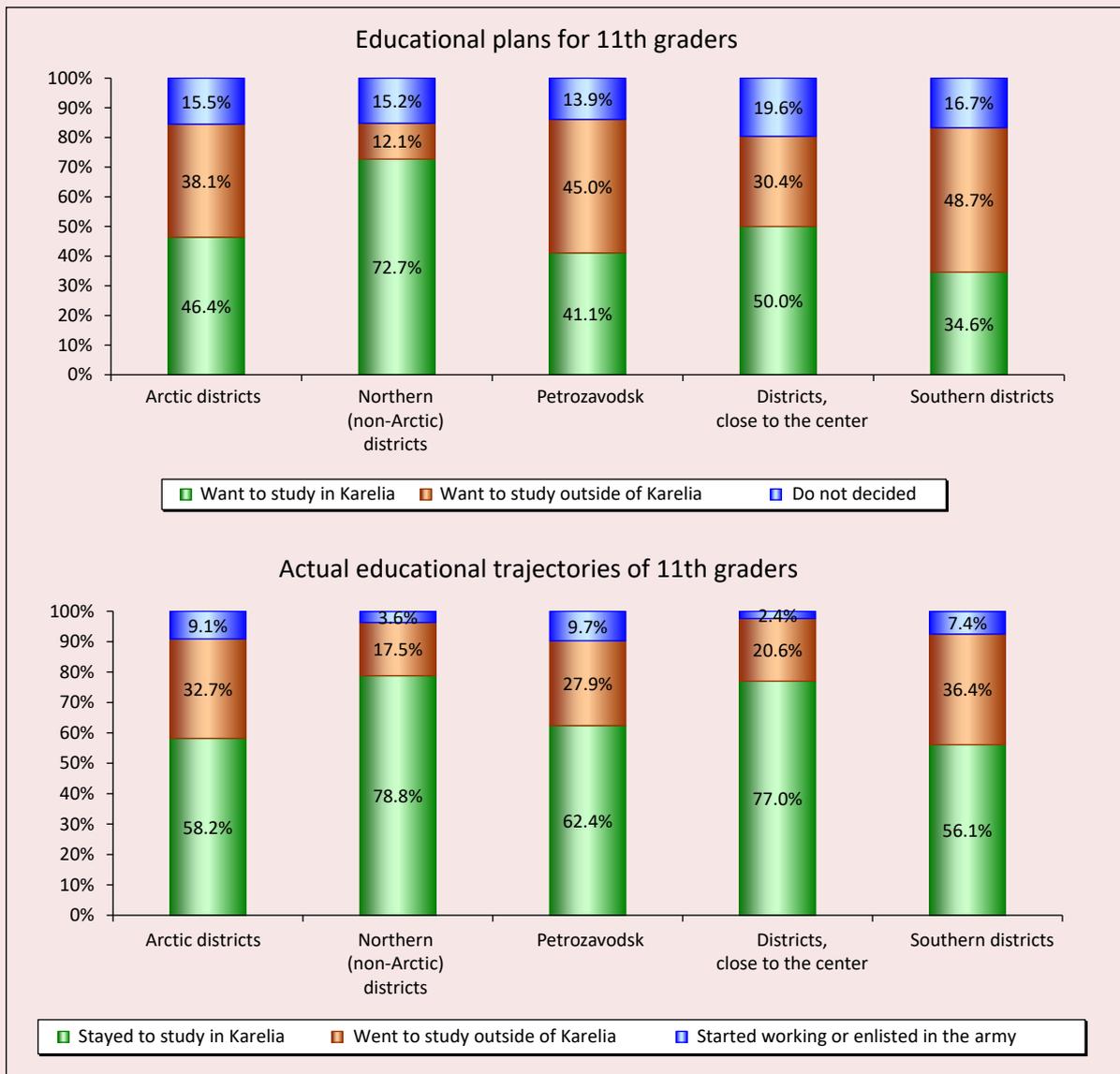
According to: data from the Ministry of Education and Sports of the Republic of Karelia for the academic years 2019/2020, 2020/2021 and 2021/2022.

regional capital (Tab. 6). Other districts of Karelia due to the limited volume of admission to colleges and technical schools are not in active demand among 11th graders, and training at universities is available only in Petrozavodsk. Graduates of southern (36.5%) and Arctic (32.8%) districts of Karelia choose universities and colleges outside the region more actively, among Petrozavodsk residents

less (27.9%), graduates of northern (non-Arctic) districts are less oriented toward other regions (17.6%).

Comparison of the actual outflow of 11th graders with their assumed plans to study in another region conditionally reflects the real and potential volumes of migration, which can turn into real ones at the next stages of building a life trajectory. The

Figure 4. Actual outflow by reason of study and potential educational plans of 11th graders in the Republic of Karelia, % for the district



According to: research results and data from the Ministry of Education and Sports of the Republic of Karelia.

limitation of the comparison is the comparison of different types of data: educational trajectories of graduates according to the results of the survey and monitoring of admission to universities and colleges for different time interval, but since the social group under study is homogeneous, such a comparison is acceptable. In all districts of Karelia, the actual graduates' outflow due to education is less than expected (*Fig. 4*).

According to the survey results, graduates of Petrozavodsk, Arctic and southern districts expressed the most active migration sentiments, which is also confirmed by the actual data, but in a smaller volume. About a half of 11th graders in Petrozavodsk planned to leave Karelia, but only every third graduate left in fact. The actual graduates' outflow from the Arctic territories practically corresponds to the migration intentions of students: the share of those who left the region is slightly higher than the share of those who expressed their desire to leave – by 5.4%. The majority of 11th graders from the northern (non-Arctic) districts and districts close to the administrative center stay to study in Karelia.

Conclusion

The migration outflow of young people remains an urgent problem in the Arctic territories, which is intensified by the educational migration of school leavers. Educational migration is only partly returned or compensated by the influx of graduates from other regions, so it is necessary to identify graduates' mood for education outside the region to understand the potential volumes and migration vectors.

Migration intentions and plans of Karelia's graduates differ in the context of municipal districts, allocated into groups according to the principle of their spatial localization. Migration intentions of schoolchildren in Petrozavodsk are indeed oriented outside the region, and those of northern (non-Arctic) districts of Karelia, on the contrary, to Petrozavodsk. However, the migration intentions

of graduates from Arctic and southern districts are also oriented outside the region, which is atypical for the arctic territories, where traditionally the flows from the districts are usually directed to the center of the region, and from it further to other regions (Fauzer, Smirnov, 2020). The assumption made at the beginning of the study about the plans of graduates' movements to obtain education was confirmed partially. Most likely, such a picture is formed in Karelia because of the geographical position of the region and the development of transport infrastructure. The plans for intra- and interregional educational migration of graduates are largely due to the concentration of educational organizations in Petrozavodsk, the limited number of budgetary places and specialties in colleges and technical schools in the districts.

Only half of the graduates expectedly decided on their future profession and plan to build their trajectory in accordance with the exam results and "according to circumstances". This conclusion is confirmed by the results of similar studies (Merenkov et al., 2015).

Alarming are the conclusions obtained regarding the sentiments of nonreturning graduates who wish to study outside of Karelia. For example, the majority of graduates from the arctic territories who are in the mood to study in other regions plan to find a job there as well. Every second graduate who wants to study outside the region plans to work in Saint Petersburg or Moscow. The formation of such sentiments indicates that although getting an education is the first step of youth migration, it is not the main reason for it. Studying outside the region is seen as a way of getting a foothold in a new place, separating from parents and "starting a new life". At the same time, the financial situation of the family does not play a role in the formation of graduates' migration attitudes of the districts under consideration. The most successful schoolchildren, except for Petrozavodsk and the territories closest to it, tend to leave the districts. The high level of

parental education is associated with the formation of migration attitudes of graduates of Petrozavodsk and districts close to the center. Migration experience turned out to be significant in building educational plans for graduates of all districts (except for northern (nonarctic) districts).

The research focuses on migration and educational plans that have not yet materialized. Due to the age features of personality formation migration is often romanticized by young people, in reality graduates, outflow from the region is less – every third eleventh grader (28.2%) leaves to study. More than a third of 11th graders in the Arctic and southern districts of Karelia choose to study outside Karelia, and about every third 11th grader from Petrozavodsk also leaves. The lowest volumes of educational migration outside the region are characteristic of the northern (non-Arctic) territories, where a smaller share of graduates expressed such intentions. In the Arctic districts, despite their territorial proximity to the North, the intentions of graduates who are successful in their studies and have experience of leaving Karelia are opposite – to go to study in other regions and stay there after their studies.

The problem of graduates' outflow from the region remains relevant in the context of nonreturn of educational migration, which requires the

application of measures and the development of mechanisms to maintain and retain local youth. The development of digital technologies, in particular distance learning (Ljovkin et al., 2020), which would allow obtaining in-demand professions locally, has great potential in solving the problems of youth outflow. It is also necessary to pay attention to the development of mechanisms to attract graduates who have already left the region for employment, for this purpose it is necessary to inform them about the real prospects of professional and career development in Karelia. The latter aspect requires elaboration within the framework of creating a unified system for monitoring educational and post-educational migration of young people, tracking the territorial movements of an individual along the vector “school – educational organization – employment region” (region and municipality level).

The results obtained at this research stage contribute to the study of youth's migration activity in Russia's regions, which are partially included in the AZ RF, as detailed information on such territories is limited. In practical terms, the presented results allow forming an analytical basis for the timely development of managerial mechanisms for the consolidation and retention of young people in the Arctic districts.

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Assessing the Influence of Medical, Demographic and Economic Factors on the Dynamics of Infant Mortality in Russia's Regions



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Abstract. The issues of identifying and assessing the degree of influence of various factors on child mortality become particularly relevant in the light of the reduction in the proportion of children in the population and the decline in the birth rate. The quantitative assessment of the contribution of specific factors to the risk of child mortality is a key prerequisite for the substantiation of management measures aimed at minimizing it. Despite ample evidence of the influence of economic, medical and demographic factors on people's health, there is a shortage of works devoted to the identification of quantitative correlations of these parameters with infant mortality in the context of Russian regions and the substantiation of approaches to the application of these tools in the practice of improving the child health care system. This study presents the results of assessing the relationship between a number of economic, demographic parameters and indicators of the provision with health care resources and infant mortality. Russia's regions have been grouped according to the level of health care resources provision (bed fund, doctors, outpatient facilities), the characteristics of the leading regions have been analyzed. The correlation analysis revealed that the greatest correlation with the indicator of infant mortality of the regional population is demonstrated by age-specific birth rates in the youngest reproductive ages (15–19 years and 20–24 years), indicators of the provision of beds for pregnant women and children. Regression analysis of panel data for Russian regions revealed quantitative relationships between the infant mortality rate, age-specific birth rates, the value of

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gross regional product and the health care resources provision. The results of the study may be of interest to specialists in the field of regional child health care.

Key words: child health, infant mortality, child health care development, provision of medical personnel, regional differentiation.

Introduction

Due to the worsening problems of population reproduction in the context of declining birth rates, the preservation of children's health is of particular importance. However, data from representative sociological studies show that Russians are often dissatisfied with the quality and accessibility of medical care and the work of medical organizations (Voskolovich, 2021). These circumstances indicate the need for further improvement of the health care system, including children's health care.

Studies of Russian authors confirm, that the provision of the health care system with resources directly affects the indicators of public health. Accessibility of medical care is one of the primary conditions for population reproduction, reduction of morbidity, disability and mortality rates. It has been found that an increase in the provision of physicians and outpatient facilities is accompanied by a decrease in morbidity and disability among children (Timofeev et al., 2021). At the same time, there are multidirectional trends indicating a decrease in the provision of the health care system with individual resources: in the period 2015–2019 there was a decrease in the number of hospital organizations with a simultaneous increase in the capacity of organizations, a reduction in the number of hospital beds and a decrease in their availability for the population, an increase in the provision of doctors and a parallel decrease in the provision of nursing staff, including midwives (Dolgikh, Ignatov, 2021). The trend of increase in the number of children with disabilities by 6.6 thousand people in the same period looks alarming against this background (Kondakova, Natsun, 2019).

To address the issues of human resources and material and technical provision of health care at the federal level, a range of measures have been taken, including in the course of implementing the national project “Health care”, which makes it possible to expect a reversal of negative trends and the formation of favorable conditions for the preservation and strengthening of children's health. In the national project, issues of improving children's health care are regulated within the framework of the federal project “Development of children's health care”. The key indicator of this project is “infant mortality rate” (the number of deaths per 1,000 newborns). In addition to reducing infant mortality, the project prioritizes the provision of accessible and quality medical care for children, and also for pregnant women¹. According to the 2021 report, during the implementation of the national project “Health care”, infant mortality rate decreased from 5.1 (in 2018) to 4.6 cases per 1,000 newborns (in 2021)². Undoubtedly, this reflects progress in the development of children's health care, in particular the improvement of the medical care system for pregnant women, women in labor and newborns. At the same time the largest share of deaths in children in the first year of life falls in the

¹ Development of children's health care, including the creation of modern infrastructure of medical care for children. Available at: https://xn--80aapampemchfmo7a3c9ehj.xn--plai/projects/zdravookhranenie/zdorove_detey

² On the results of the 2021 national project “Health care” and the federal projects, included in it. Available at: https://static-0.minzdrav.gov.ru/system/attachments/attach/000/060/073/original/Буклет_итоги_2021_года.pdf?1655456575

perinatal period. The contribution of preventable causes to perinatal mortality remains predominant³.

According to a methodology developed by the Eurostat expert commission and the OECD⁴, the preventable causes of infant mortality include deaths from neonatal tetanus, obstetric tetanus and spina bifida. Treatable causes include neonatal tetanus, obstetric tetanus, and certain conditions, occurring in the perinatal period⁵. Russian statistics do not allow us to trace the dynamics of mortality in the context of the listed causes, with the exception of mortality due to “certain conditions arising in the perinatal period”.

At the same time, we can assume that, to a large extent, the causes of infant mortality due to infectious diseases can be classified as preventable. This is indicated by the findings of foreign research works. For example, in a study of potentially preventable causes of death, based on a retrospective analysis of 1,779 pathology reports of deaths in children aged from 7 days to 14 years, it was found that about 8% of them were preventable and occurred in children under 2 years. The most common causes of these deaths were sepsis, pneumonia and meningitis (82% of preventable cases). The authors of the study point

out that in most cases the doctors were informed in advance about the symptoms of the disease (1–7 days before the child’s death), with approximately 30% of patients seeking medical care repeatedly (Bamber et al., 2015). A study of infant mortality in rural China, using data from 1996–2015, found that infectious diseases accounted for about 20% of infant deaths in the first year of life. Among them, in turn, the leading positions belonged to acute respiratory infections (pneumonia), diarrhea, septicemia, meningitis. At the same time, a territorial differentiation of infant mortality rates due to infectious diseases was observed; the authors linked it to the differences in the level of economic development, the coverage of the rural population with public health infrastructure and services and hygiene education (Wang et al., 2020).

The impact of the quality and accessibility of health care on children’s health goes hand in hand with the influence of socio-demographic factors. The problem of providing the population with quality health care services is itself addressed by social and economic policy instruments and is relevant to the tasks of reducing non-monetary inequalities. At the same time, according to expert estimates, the health care system’s influence on health is limited to only 10% contribution against 50% contribution of conditions and lifestyle factors (Karpov, Mahnev, 2017). At the same time, countries with higher incomes per capita have an advantage in health financing opportunities and in achieving better health indicators for children. At the same time, a significant share of the poor and a lack of health care financing are associated with high rates of infant and neonatal mortality and slow progress in reducing them.

The problem of neonatal mortality deserves special attention due to the fact that it is this age period, that remains the most difficult in terms of selecting effective health care strategies, even in developed countries. Observations on groups of

³ Meeting with top officials of the constituent entities of the Russian Federation of the Volga Federal District on the implementation of the national project “Health care” and the federal projects, included in it. Available at: <https://www.mrckb.ru/files/proekta-zdravooxranenie.pdf> (Slide 9).

⁴ Avoidable mortality: OECD/Eurostat lists of preventable and treatable causes of death (January 2022 version). Available at: <https://www.oecd.org/health/health-systems/Avoidable-mortality-2019-Joint-OECD-Eurostat-List-preventable-treatable-causes-of-death.pdf>

⁵ Preventable mortality: Causes of death that can be mainly avoided through effective public health and primary prevention interventions (i.e. before the onset of diseases/injuries, to reduce incidence Treatable (or amenable) mortality: Causes of death that can be mainly avoided through timely and effective health care interventions, including secondary prevention and treatment (i.e. after the onset of diseases, to reduce case-fatality). Available at: <https://www.oecd.org/health/health-systems/Avoidable-mortality-2019-Joint-OECD-Eurostat-List-preventable-treatable-causes-of-death.pdf>.

countries with different levels of income show, that the higher the GDP per capita, the lower the burden of child mortality losses, but the higher the share of neonatal mortality in its structure. Consequently, with the growth of people's incomes and the financing of health care, a noticeable reduction in child mortality can be achieved primarily by overcoming infectious diseases in older age groups of children (prevention, immunization) and an overall improvement in their living conditions (sanitary and hygienic conditions, quality of nutrition). A significant reduction in neonatal mortality requires improvements in obstetric and gynecological services, better access to emergency obstetric care and intensive care for newborns (Li et al., 2021). At the same time, there is evidence that the risk of neonatal mortality is higher for children born to poor mothers with low education level and in rural areas (Yaya et al., 2020). This demonstrates the need to reduce intracountry disparities in the population's access to quality health services, and also the importance of educating the population about the prevention of health problems and early childhood development.

Finding the most effective approaches to the reduction of infant and neonatal mortality remains relevant for the Russian Federation as well. In the post-Soviet period, it was possible to achieve a significant reduction in these losses. However, in contrast to the EU countries, a long-term trend (from 1990 to 2012) in Russia was a decrease in the neonatal mortality rate, while the post-neonatal mortality rate increased, which experts attributed to the under-reporting of early neonatal deaths (Baranov et al., 2015). In 2012, new criteria for registering live births came into force, which should help to solve this problem⁶. In general, when

⁶ On medical criteria for birth, the form of the birth certificate and the procedure for its issuance: Order 1687n of the RF Ministry of Health and Social Development, dated December 27, 2011. Available at: <https://base.garant.ru/70113066/>

solving the tasks of reducing infant and neonatal mortality, it is necessary to take into account the interregional differentiation of factors that influence these parameters, and also possible imperfections in the statistical accounting of mortality cases (Baranov et al., 2020). The regions, in particular, are characterized by significant differences in the provision of health resources (financial, human and material) (Kalashnikov, 2015). The construction of regression models can increase the reliability of the risk factor analysis that affects the health (Gurvich et al., 2008).

Materials and methods of research

The information base of the study was the statistical data characterizing the provision of health care resources in the regions of the Russian Federation for the period from 2010 to 2020. Data for 2021–2022 are not available in the analysis, because at the time of preparing the article, they were only available in the public domain for selected indicators. Infant mortality rate, early neonatal mortality and mortality rate of the child population aged 0–17 years (per 100,000 people of the corresponding age) were chosen as key indicators of the health of the child population.

The aim of the study was to assess the impact of demographic and economic parameters, and also indicators of provision with health care resources on the mortality of the child population in Russia's regions.

Objectives of the study:

- 1) to compare the dynamics of infant mortality with the dynamics of indicators characterizing the provision of health care resources for the period 2010–2021 in Russia as a whole;
- 2) to group the regions according to the level of indicators of provision of health care resources to the population;
- 3) to conduct a correlation and regression analysis of the influence of economic, medical, and demographic factors on infant mortality;

4) to formulate proposals, aimed at minimizing the risks of infant mortality due to the considered factors.

The methods of mathematical data processing include hierarchical cluster analysis to identify and characterize quantitative and qualitative assessments of regional differentiation of the provision of health care resources, correlation and regression analysis to identify economic, medical and demographic factors that have the most pronounced correlation with the mortality rate of the child population. Among the methods of regression analysis, we chose the method of multiple linear regression on panel data, which provides an opportunity to quantitatively assess the relationship between infant mortality and indicators of economic and demographic development of regions and the provision of health care resources. At the first stage of the analysis we calculated pairwise correlation coefficients for the formed set of variables. At the second stage, multiple linear regression models with random and fixed effects were built for those variables that had maximum correlation coefficients with the dependent variables using Stata software.

Results of the study

Providing the child population with high-quality and accessible medical care is one of the priorities in the implementation of long-term programs

and projects in the field of health care. The implementation of measures of the federal project “Development of children’s health care” within the framework of the national project “Health care” for 2019–2021 was financed from the budget in the amount of 60.21 billion rubles. Measures have been taken to strengthen the human resources potential of children’s health care: more than 31,000 specialists have improved their qualifications in perinatology, neonatology and pediatrics⁷.

The indicators of child mortality in the period under consideration showed different dynamics. If with regard to infant mortality and mortality in children aged 0–17 years the positive trends of its reduction were stable, the values of early neonatal mortality fluctuated. At the same time at the end of the period the value decreased by 42% (Tab. 1).

Despite the fact that considerable attention is paid to the development of health care, the results of the period 2010–2020 show a decrease in the provision of doctors specializing in working with pregnant women and children: pediatricians (by 86%), neonatologists (by 85%) and obstetricians-gynecologists (by 47%). The number of beds for children, pregnant women, women in labor and new mothers, gynecological beds for the same period decreased by 88%, 84% and 72% respectively. At the same time the provision of outpatient and

Table 1. Mortality rates of the child population of the Russian Federation in 2010–2020

Indicator	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Increase / decrease, %
Infant mortality, per 1,000 of newborns	7.51	7.30	8.60	8.19	7.40	6.50	6	5.60	5.09	4.90	4.50	-40
Early neonatal mortality, per 1,000 live births	2.75	2.67	3.64	3.25	2.81	2.43	2.18	1.94	1.72	1.67	1.59	-42
Mortality of children aged 0–17 years, per 100,000 people of the same age	92.2	88.7	98.7	91.7	86.0	75.2	68.4	59.8	54.1	48.6	44.6	-52

Source: Statistical data showcase. Federal State Statistics Service. Available at: showdata.gks.ru

⁷ Passports of the regions of the Russian Federation: Indicators, results. Results of 2021. On the results of the national project “Health care” and the federal projects that are a part of it by the results of 2021. Department of Project Activities of the Ministry of Health Care of the Russian Federation. 2021. P. 9.

Table 2. Provision of health care resources for the population of the Russian Federation, per 10,000 people, at the end of the year

Provision of	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	Increase / decrease %
Outpatient and polyclinic institutions	257.90	260.60	263.70	264.50	263.80	263.50	266.60	270.09	272.39	277.50	283.70	10
Doctors of all specialties	50.10	51.20	49.10	48.90	48.50	45.90	46.40	47.50	47.90	48.70	50.40	1
Therapists	no data	6.10	6	5.80	5.40	5.20	5.20	5.20	5.20	5.30	5.60	-8
Neonatologists	no data	2.70	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	0.40	-85
Obstetricians and gynecologists	5.70	5.80	3.10	5.70	5.50	5.40	5.50	5.60	3	3	3	-47
Pediatricians	31.60	31.10	4.80	24.80	23.10	22.50	19.70	20	4.09	4.20	4.30	-86
Gynecological beds	9	8.69	8.40	7.90	6.80	3.60	6.50	6.20	3.30	3.20	2.50	-72
Beds for Children	82.20	80.40	66.09	63.50	56.30	11.20	53.60	52.80	10.70	10.60	9.50	-88
Beds for pregnant women, women in labor and new mothers per 1,000 women of childbearing age	21.60	21.70	21.50	21	19.60	4.70	19.10	18.39	4.20	4	3.50	-84

Source: Statistical data showcase. Federal State Statistics Service. Available at: showdata.gks.ru

polyclinic institutions increased by 10%, doctors of all specialties – by 1%, but the number of therapists decreased by 8%. This indicates that the negative trends affected children’s health care (*Tab. 2*).

At the same time, as of 2020, there was a noticeable differentiation of the country’s regions by the provision of the listed health resources.

This is illustrated by the results of the conducted hierarchical cluster analysis. We identified the regions with low indicators of the provision of health care in 2020 with outpatient clinics, personnel and beds, and the regions that were leaders by these criteria (*Tab. 3*). Most regions (77 out of 82 considered) were included in the

Table 3. Values of the health care resources provision in the regions of the selected clusters, at the end of 2020, per 10,000 people

Provision indicator of	Cluster 1			Cluster 2			Cluster 3
	Average	Min	Max	Average	Min	Max	Value
Outpatient and polyclinic institutions	280.0	181.2	361.6	411.5	396.3	440.8	487.6
Physicians: Obstetricians-gynecologists	2.9	1.7	4.7	3.0	1.9	4.2	4.4
Pediatricians	4.1	2.4	6.5	4.3	3.1	5.09	5.7
Neonatologists	0.4	0.2	0.7	0.5	0.3	0.6	1
All physicians	47.8	28.9	89.3	52.7	42.5	62.4	73.7
Hospital beds: For pregnant women, women in labor and new mothers	3.7	2	7.8	3.6	1.9	5.09	8.1
For children	9.9	6.1	24.6	11.6	8	14.9	22
Gynecological	2.5	0.9	5	2.6	2.4	3.2	5.9
<i>Number of regions in the cluster</i>	77			4			1

Source: own calculations in the SPSS Statistics program based on statistical data.

first cluster. The second cluster recorded higher average rates of provision by all selected indicators, except for beds for pregnant women, women in labor and new mothers, compared to the regions of the first cluster. The second cluster was formed by the Komi Republic, the Arkhangelsk Oblast, the Novgorod Oblast and the Magadan Oblast. An independent cluster (no. 3) was formed by Chukotka Autonomous Okrug, where all indicators of the provision with health care resources were significantly higher than the average for the first and second clusters.

The average value of infant mortality in the first cluster of regions was 4.7 per 1,000 live births in 2020, in the second cluster – 3.2 per 1,000 live births, and in Chukotka Autonomous Okrug – 14.7 per 1,000 live births. In this region, the early neonatal mortality rate (12.82 per 1,000 live births) was also significantly higher than the average values in the first and second clusters (1.64 and 0.89 per 1,000 live births, respectively)⁸.

As for the regions of the second cluster, except for the Novgorod Oblast, we can say that these are territories with low population density⁹, and

for all of them the funding level of territorial programs of state guarantees per inhabitant is higher than the average value for the first cluster. The Magadan Oblast is close to Chukotka Autonomous Okrug both in terms of the funding level for these programs and in terms of the share of the population with incomes below the subsistence level, which indicates the similarity of economic and demographic conditions in these regions (Tab. 4). The difference between the Novgorod Oblast and other regions of the second cluster in terms of economic and demographic parameters indicates, that high rates of health care resources are achieved here due to other factors. For example, according to the report on the implementation of the national project objectives “Health care” in 2021, the Novgorod Oblast shows higher rates of staffing of outpatient clinics (82%) than Chukotka Autonomous Okrug (70.2%)¹⁰.

The data demonstrate that higher health care expenditures and a good supply of material resources and personnel in general accompany lower registered infant and early neonatal mortality in the regions. An exception to this rule is Chukotka

Table 4. Selected economic parameters of regions by health care resource provision

Indicator	Cluster 1	Komi Republic	Arkhangelsk Oblast	Novgorod Oblast	Magadan Oblast	Chukotka AO
	Average					
Expenses for territorial programs of state guarantees, rubles per inhabitant/insured	20088.3	30429.15	26977.03	15908.51	59271.77	77698.46
Share of population with monetary income below the subsistence level, %	14.27	15.3	12.8	13.7	8.7	8.0
Sources: Social situation and living standards in Russia 2021. Federal State Statistics Service. Available at: https://rosstat.gov.ru/folder/210/document/13212 ; Health care in Russia 2021. Federal State Statistics Service. Available at: https://rosstat.gov.ru/folder/210/document/13218						

⁸ Number of children deaths in the first year of life per 1,000 births per year. Statistical data showcase. Federal State Statistics Service. Available at: <https://showdata.gks.ru/report/297720/>

⁹ According to the data for 2023, population density was 0.07 people/km² in Chukotka AO, 1.74 people/km² in the Komi Republic, 1.7 people/km² in the Arkhangelsk Oblast, in the Magadan Oblast – 0.29 people/km², in the Novgorod Oblast – 10.57 people/km².

¹⁰ Passports of the regions of the Russian Federation: Indicators, results. Results of 2021. On the results of the national project “Health care” and the federal projects that are a part of it by the results of 2021. Department of Project Activities of the Ministry of Health of the Russian Federation. 2021. Pp. 128, 220.

Autonomous Okrug, where, with favorable economic parameters, there are high levels of infant and neonatal mortality. This discrepancy in the general pattern is probably due to the suboptimal layout of medical organizations in the region under conditions of low population density and insufficient transport connectivity of the territory (Polikarpov et al., 2022) and the associated problems of ensuring the provision of quality medical care to the population.

Assessing the impact of demographic and health factors on child mortality: construction of a spatial regression model using one-year data

To build a spatial regression model, only the infant mortality rate was left as a dependent variable,

because the values of the early neonatal mortality rate and the mortality rate of children aged 0–17 years old show a strong positive correlation with its values (Spearman's ρ values 0.657 and 0.837 respectively at $p = 0.01$). In addition, it is the infant mortality rate that is the most frequently used target indicator in the practice of implementing state health care programs. We assessed the impact of demographic indicators and indicators of the health care resources provision¹¹ on the mortality rate of the child population in two stages. At the first stage, a pairwise correlation analysis (Spearman's ρ criterion was calculated) between infant mortality and all selected indicators¹² was carried out using data for 82 regions of Russia¹³ (Tab. 5).

Table 5. Infant mortality rate correlation coefficients with indicators characterizing birth and provision of regional health care resources

Variable	Spearman's ρ	Significance level of p
Age-specific birth rates, 15–19 years old, per 10,000 women of that age, 2020	0.418	0.01
Age-specific birth rates, 20–24 years old, per 10,000 women of that age, 2020	0.416	0.01
Provision of hospital beds per 10,000 people (at the end of 2019), beds for pregnant women, women in labor and new mothers	0.321	0.01
Provision of hospital beds per 10,000 people (by the end of 2019), beds for children	0.269	0.05
Provision of doctors per 10,000 people (by the end of 2019), neonatologists	0.216	Parameters were not calculated because correlations are not significant
Age-specific birth rates, 25–29 years old, per 10,000 women of that age, 2020	0.163	
Age-specific birth rates, 30–34 years, per 10,000 women of that age, 2020	0.157	
Age-specific birth rates, 45–49 years old, per 10,000 women of that age, 2020	0.083	
Provision of hospital beds per 10,000 people (by the end of 2019), gynecological beds	0.077	
Age-specific birth rates, 35–39 years old, per 10,000 women of that age, 2020	0.076	
Age-specific birth rates, 40–44 years, per 10,000 women of that age, 2020	0.06	
Provision of doctors per 10,000 people (at the end of 2019), pediatricians	0.003	
Provision of outpatient and polyclinic facilities per 10,000 population (end of 2019)	-0.123	
Provision of doctors per 10,000 people (at the end of 2019), obstetricians and gynecologists	-0.125	
Provision of doctors per 10,000 people (at the end of 2019), all doctors	-0.179	
Source: own calculations in SPSS Statistics.		

¹¹ Indicators of health care resources provision are taken for the previous year because they reflect the situation at the end of 2019 and the beginning of 2020, and infant mortality is given for the whole year.

¹² When conducting correlation and regression analysis on one-year data, we did not take into account the values of the indicators for Chukotka Autonomous Okrug, since the parameters of the provision of this region with health resources, and demographic parameters differ sharply from those of other regions.

¹³ The number of regions in the analysis is 82, because we considered the autonomous okrugs (Nenets, Khanty-Mansi and Yamalo-Nenets) as part of the oblasts within which they are located (the Arkhangelsk and Tyumen oblasts, respectively).

The strongest positive correlation with the infant mortality rate was demonstrated by age-specific birth rates at the youngest reproductive ages (15–19 years and 20–24 years), provision of beds for pregnant women and beds for children. A weak positive correlation was found between infant mortality and the provision of neonatology physicians, and also between age-specific birth rates in the middle reproductive ages (25–29 years and 30–34 years). Weak negative correlations were established between infant mortality and the provision of obstetrician-gynecologists, all physicians and outpatient and polyclinic institutions.

For those indicators that showed the highest correlation with infant mortality, a pairwise correlation test was performed (*Tab. 6*). Since this test

revealed significantly correlated indicators, the number of variables selected for the next stage of the analysis was reduced.

At the second stage, quantitative parameters of the relationship between infant mortality and the following variables were estimated by using the method of multiple linear regression: age-specific birth rate per 10,000 women aged 15–19, provision of outpatient and polyclinic institutions per 10,000 people, provision of obstetricians-gynecologists per 10,000 people, age-specific birth rate per 10,000 women aged 45–49.

The step-by-step method was used to build the regression model. The value of the parameters of the model by the value of the coefficient of determination, the error, and its semantic interpretation allows us to conclude about its average quality.

Table 6. Correlation coefficients of health care resource provision indicators and demographic indicators

Indicator	Age-specific birth rates, per 10,000 women of a given age, 2020				Provision of outpatient and polyclinic facilities per 10,000 population	Provision of obstetricians and gynecologists per 10,000 population	Provision of gynecological beds per 10,000 population
	20–24	25–29	30–34	45–49			
Age-specific birth rates, 15–19 years old, per 10,000 women of that age, 2020	0.770**	0.331**	0.235*	-0.031	0.044	0.037	0.263*
Availability of hospital beds per 10,000 people (at the end of 2019), beds for pregnant women, women in labor and new mothers	0.405**	0.312**	0.337**	0.178	0.025	0.219*	0.528**
Provision of hospital beds per 10,000 people (at the end of 2019), beds for children	0.449**	0.316**	0.369**	0.006	0.247*	0.102	0.382**
Provision of doctors per 10,000 people (at the end of 2019), neonatologists	0.252*	0.380**	0.399**	0.254*	0.063	0.403**	0.313**
Provision of doctors per 10,000 people (at the end of 2019), all doctors	-0.044	0.155	0.177	0.212	0.186	0.720**	0.299**

Note: * Correlation is significant at the p = 0.05 level (bilateral); ** Correlation is significant at the p = 0.01 level (bilateral).
Source: own calculations in SPSS Statistics.

Table 7. Quality criteria of the obtained regression model

Number of variables	R ² (determination coefficient)	S (standard estimation error)	Durbin – Watson criterion
4	0.361	0.925	2.155
Source: own calculations in SPSS Statistics.			

The following predictors were included in the final regression model: age-specific birth rates per 10,000 women aged 15–19 and 45–49, and the provision of outpatient polyclinic facilities per 10,000 people and the provision of obstetricians-gynecologists per 10,000 people (Tab. 7).

General view of the regression equation¹⁴:

$$y = 6.254 + 0.009x_1 - 0.006x_2 - 0.591x_3 + 0.085x_4,$$

where y – infant mortality per 1,000 births,

x_1 – age-specific birth rate per 10,000 women aged 15–19,

x_2 – number of outpatient clinics per 10,000 people,

x_3 – number of obstetricians-gynecologists per 10,000 people,

x_4 – age-specific birth rate per 10,000 women aged 45–49.

The results of regression analysis indicate that a single increase in the provision of outpatient clinics and obstetricians-gynecologists in the regions contributes to a slight decrease in infant mortality (by 0.006 and 0.591, respectively), while the increase in the age-specific birth rate in women 15–19 years old contributes to its weak increase. However, the presented regression model does not take into account temporal effects and regional peculiarities, which may make significant adjustments in the estimates of the significance of the contribution of the factors under consideration to the reduction of infant mortality. Identifying such effects and assessing them requires constructing regression models using panel data.

¹⁴ All coefficients for independent variables are significant at the $p < 0.05$ level.

Constructing multiple linear regression models based on panel data

It was noted above that there is a strong positive correlation between the infant mortality rate and the provision of beds for pregnant women, women in labor and new mothers, and beds for children. It has not been possible to explain this relationship by constructing a multiple linear regression on one-year data. It can be assumed that it reflects the response of the health care system to the level of infant mortality, which was recorded in the past period. At the same time, in the works of Russian authors there are indications of possible contradictory results of modeling the relationship between the mortality rate and the resource provision of health care (Boitsov, Samorodskaya, 2016; Lakman et al. 2021). Therefore, the contradictions identified in our study deserve a more detailed consideration.

To establish more reliable relationships between the variables describing health care resource provision and infant mortality, a regression model should be built based on panel data. The key advantages of using panel data are the ability to reduce standard estimation errors, and to prevent specification errors due to non-inclusion of significant variables in the model (Rossoshanskii, 2018). Choosing the most appropriate regression model to describe the effects of different factors on the explanatory variable is based on standard procedures for assessing their reliability and comparing the three main types of models: pooled (end-to-end) regression, regression with fixed and random effects. As the results of Russian studies show, for the description of panel data, where the units of observation are the regions of the country, the most suitable are models with fixed effects (Molchanova, Kruchek, 2013; Korolenko, 2019).

The mentioned arguments, and also the analysis of the special literature indicate the expediency of the construction and evaluation of three regression models: the regression “between”, the model with fixed effects and the model with random effects.

At the preliminary stage of the analysis, statistics were collected for 82 regions¹⁵, characterizing infant and neonatal mortality, child morbidity from congenital anomalies and malformations, birth rate (by age group of women), provision of health care resources (outpatient clinics, doctors, beds of certain types), financing of territorial state guarantee

programs, GRP per capita, living standards (share of population with income below the subsistence wage, GRP per capita). The data were collected for the period from 2014 to 2020. The absence of data for earlier years in the analysis is due to the limitations of the information base (there are no statistical data for certain indicators).

The correlation matrix for the selected statistics was created: the values of Pearson coefficients were calculated. The direction of the relationship between the infant mortality rate and the provision of the population with doctors of certain specialties and hospital beds remained positive (*Tab. 8*).

Table 8. Mutual correlation coefficients of explanatory variables

Indicator designation	InfM	Neon	PrWoB	ArBr15	ArBr45	Malf	ShPoor	ExH	GRPpc	Outp	Doct	Ther	OBGYN	Pedt	GynB	PedB
Neon	.213**	--														
PrWoB	.401**	.108**	--													
ArBr15	.657**	.178**	.465**	--												
ArBr45	.182**	.281**	-.009	-.007	--											
Malf	.152**	.146**	.118**	.158**	-.086*	--										
ShPoor	.304**	.198**	.143**	.363**	.162**	.100*	--									
ExH	-.136**	-.020	-.104*	-.202**	.259**	-.106*	-.306**	--								
GRPpc	-.104*	.325**	-.111**	-.095*	.135**	-.031	-.383**	.410**	--							
Outp	.019	.125**	-.015	.032	-.052	.180**	-.127**	.034	.404**	--						
Doct	-.052	.467**	.019	-.057	.216**	.228**	-.151**	.255**	.491**	.381**	--					
Ther	.119**	.418**	.067	.067	.217**	.141**	.100*	.003	.330**	.263**	.689**	--				
OBGYN	.401**	.301**	.653**	.404**	.068	.146**	.040	.034	.036	-.024	.343**	.282**	--			
Pedt	.291**	.154**	.614**	.362**	-.144**	.156**	-.029	.054	-.090*	-.009	.181**	.077	.835**	--		
GynB	.471**	.188**	.830**	.495**	-.025	.101*	.047	-.130**	.078	.115**	.128**	.156**	.663**	.584**	--	
PedB	.307**	.074	.921**	.379**	-.101*	.127**	.050	-.066	-.073	.072	.084*	.044	.633**	.667**	.814**	--

Note: The most significant correlations are highlighted in color.

** – correlation is significant at the p=0.01 level, * – correlation is significant at the p=0.05 level.

Variable designations: InfM – infant mortality per 1,000 births per year, Neon – provision of neonatologists per 10,000 people, PrWoB – provision of beds for pregnant women, women in labor and new mothers, per 10,000 people, ArBr15 – age-specific birth rate per 10,000 women aged 15–19 years, ArBr45 – age-specific birth rate per 10,000 women aged 45–49 years, Malf – incidence of congenital anomalies (malformations), deformities and chromosomal abnormalities per 1,000 people, ShPoor – share of population with money incomes below the subsistence level (%), ExH – expenses for territorial programs of state guarantees per 1 inhabitant/insured (rubles), GRPpc – Gross Regional Product per capita (rubles), Outp – provision of outpatient clinics per 10,000 people, Doct – provision of doctors of all specialties, Ther – provision of therapists, OBGYN – provision of obstetricians-gynecologists, Pedt – provision of pediatricians, GynB – provision of gynecological beds, PedB – provision of beds for children.

Source: own calculations in SPSS Statistics.

¹⁵ The number of regions in the analysis is 82, because we considered the autonomous okrugs (Nenets, Khanty-Mansi and Yamalo-Nenets) as part of the regions within which they are located (the Arkhangelsk and Tyumen oblasts, respectively).

Significant correlations with the infant mortality coefficient were shown by age-specific birth rates among women aged 15–19 years, the share of the population with incomes below the subsistence level, the provision of beds for pregnant women, women in labor and new mothers, gynecological and pediatric beds, the provision of the population with obstetrician-gynecologists. The connection is less pronounced regarding the provision of pediatricians, neonatologists, the age coefficient of birth rate among women aged 45–49 years, expenditures on territorial programs of state guarantees, the incidence of congenital anomalies, the provision of therapists, doctors of all specialties, outpatient clinics, the value of GRP per capita¹⁶.

To build the regression model, the variables with the highest correlation coefficients with the explained variable and the least correlated with each other were selected. Age-specific birth coefficients in the groups of 15–19 and 45–49-year-old women are virtually not correlated with each other and have a significant relationship with the explained variable, so both indicators were included in the regression model. Among the indicators characterizing health care resources, the availability of gynecological beds was included in the regression model. It demonstrated a significant positive correlation with the provision of beds for pregnant women, children's beds, pediatricians and obstetricians-gynecologists. Despite the fact that this indicator also correlated with the birth rate in women aged 15–19 years, it was included in the model to test the initial assumption about the effect of the availability of health care resources on infant mortality. Among the indicators reflecting

socio-economic conditions in the regions, the level of per capita GRP was included in the regression. In addition to the fact that expenses on territorial programs of state guarantees correlated more significantly with infant mortality, the correlation with age-specific birth rates was also significant for them. The share of the population with incomes below the subsistence level was also more significantly correlated with the infant mortality rate, but was also related to the age-specific birth rate in women aged 15–19.

At the next stage of the analysis, the values of the selected variables were converted to decimal logarithms. Then, based on the obtained modified variables, three regression models were built: regression “between”, regression with fixed (“within”) and random effects.

The estimate of the “between” regression suggests that the model has average quality, as the R^2 value = 0.4483. The coefficients on the variables, with the exception of the provision of gynecologic beds, are significant (*Fig. 1*).

The “within” regression (model with fixed effects) gives somewhat more reliable results. The coefficient of determination in it is 0.5044. However, in this way of regression construction the coefficients at demographic indicators (age coefficients of birth rate among women of 15–19 and 45–49 years old) lose significance. The main explanatory variable in this model is GRP per capita, which negatively correlates with the infant mortality rate. The coefficient value for the variable “provision of gynecological beds” is somewhat lower than in the “between” model, but its significance is maintained ($p < 0.05$). The reliability of the model estimates is evidenced by the correlation value of the explanatory variables and individual effects $\text{corr}(u_i, Xb) = -0.6463$ (*Fig. 2*). Since the coefficient of determination of this model is higher than the “between”

¹⁶ Gross regional product by constituent entities of the Russian Federation (gross value added in current basic prices) per capita. Source of data: Appendix of the compilation “Regions of Russia. Socio-economic Indicators”, for 2022. Available at: <https://rosstat.gov.ru/folder/210/document/13204>

Figure 1. Estimation of the “between” regression

```

Between regression (regression on group means)   Number of obs   =   566
Group variable: Region                          Number of groups =   82

R-sq:  within = 0.3497                          Obs per group: min =   4
        between = 0.4483                          avg =   6.9
        overall = 0.3926                          max =   7

                                                F(4, 77)       =   15.64
sd(u_i + avg(e_i.)) = .1846477                  Prob > F       =   0.0000
    
```

lInfM	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lGynB	.2033547	.1033407	1.97	0.053	-.002423	.4091324
lArBr15	.2894735	.0655253	4.42	0.000	.158996	.4199511
lArBr45	.1970133	.0504054	3.91	0.000	.0966433	.2973834
lGRPpc	-.1098465	.0403063	-2.73	0.008	-.1901067	-.0295863
_cons	2.188044	.5326122	4.11	0.000	1.127478	3.24861

Source: own calculations in Stata (ver 13).

Figure 2. Estimation of the “within” regression

```

Fixed-effects (within) regression               Number of obs   =   566
Group variable: Region                          Number of groups =   82

R-sq:  within = 0.5044                          Obs per group: min =   4
        between = 0.0795                          avg =   6.9
        overall = 0.1846                          max =   7

                                                F(4, 480)     =  122.13
corr(u_i, Xb) = -0.6463                          Prob > F      =   0.0000
    
```

lInfM	Coef.	Std. Err.	t	P> t	[95% Conf. Interval]	
lGynB	.0691854	.0243963	2.84	0.005	.0212486	.1171221
lArBr15	.1517188	.0608841	2.49	0.013	.0320865	.2713511
lArBr45	.0035768	.0219967	0.16	0.871	-.0396449	.0467985
lGRPpc	-.582076	.0798921	-7.29	0.000	-.7390574	-.4250946
_cons	8.663649	1.174559	7.38	0.000	6.355736	10.97156
sigma_u	.33822752					
sigma_e	.17414421					
rho	.79045497	(fraction of variance due to u_i)				

F test that all u_i=0: F(81, 480) = 8.27 Prob > F = 0.0000

Source: own calculations in Stata (ver 13).

model, we can assume that if individual effects (caused by regional characteristics) are fixed, economic factors come to the fore. This allows us to conclude that regardless of regional specifics, successful economic development of territories and improvement of living standards are of paramount importance for the reduction of infant mortality.

The model with random effects also has a fairly high significance, as evidenced by the value of the Wald statistic (Wald chi2=465.34). The regressors are not correlated with the random residuals of the model. This model restores the significance of the age-specific birth rate for women aged 15–19 years, but loses the significance of the same indicator for women aged 45–49 years (Fig. 3). There remains a positive correlation between the infant mortality and the provision of gynecological beds in the

population. This indicates that the regressor in this case can itself change under the influence of the explained variable, which means that the provision of beds increases with a high level of infant mortality, which is generally consistent with the logic of health resource management. Similarly, we can interpret the positive correlations between infant mortality and the provision of other health resources (beds for pregnant women, neonatologists, obstetricians and gynecologists). The positive correlation coefficients of infant mortality and birth rates in the groups of women 15–19 and 45–49 years old are probably due to the fact that pregnancy and childbirth complications are more frequent in these groups of women in labor (Erbaktanova et al., 2014; Kulavskii et al., 2014; Kuleshova et al., 2016; Yavorskaya, Nikolaeva, 2016; Serova et al., 2020).

Figure 3. Estimation of regression with random effects

```

Random-effects GLS regression              Number of obs   =       566
Group variable: Region                    Number of groups =       82

R-sq:  within = 0.4776                    Obs per group:  min =        4
        between = 0.3116                    avg =       6.9
        overall = 0.3837                    max =        7

corr(u_i, X) = 0 (assumed)                Wald chi2(4)    =     465.34
                                           Prob > chi2     =     0.0000
    
```

lInfM	Coef.	Std. Err.	z	P> z	[95% Conf. Interval]	
lGynB	.1094253	.0234824	4.66	0.000	.0634007	.15545
lArBr15	.3521556	.0378681	9.30	0.000	.2779356	.4263757
lArBr45	.0234711	.0207209	1.13	0.257	-.0171412	.0640833
lGRPpc	-.1975338	.0341469	-5.78	0.000	-.2644605	-.1306071
_cons	3.099838	.4956586	6.25	0.000	2.128365	4.071311
sigma_u	.17225491					
sigma_e	.17414421					
rho	.49454604	(fraction of variance due to u_i)				

Source: own calculations in Stata (ver 13).

The Hausman test indicates the preferred use of a model with fixed rather than random effects (Fig. 4). This corresponds to the logic of the indicators used, since data on Russian regions, which are known to have specific features of socio-economic and demographic development, were used in the construction of regression models.

The results of regression analysis indicate that when regional differences are fixed, the successful economic development of the regions and the accompanying increase in the standard of living contribute most to the reduction of infant mortality. The second most important factor is improving the provision of health care resources (in the model built – the provision of gynecological beds), and the third factor is the reduction of birth rates among juveniles, who are taken into account in the category of those aged 15–19.

The analysis conducted allows us to formulate proposals aimed at reducing the level of infant

mortality. It has been shown that one of the main factors influencing infant mortality is the level of GRP per capita. Its value, in turn, correlates positively with expenditures on territorial programs of state guarantees and negatively with the share of the population with incomes below the subsistence level. Thus, the basic condition for a successful policy to reduce infant mortality is the implementation of measures aimed at improving the social and economic well-being of the Russian regions. This once again confirms the need for a comprehensive approach when setting and implementing economic, social and demographic policy objectives, including at the regional level.

Since the provision of health care resources in the regions has a significant impact on infant mortality, it is necessary to further strengthen the material base of health care institutions, provide timely medical care to pregnant and women in labor, including those living in inaccessible areas

Figure 4. Results of the Hausman test (comparison of models with fixed and random effects)

	Coefficients			
	(b) fixed	(B) .	(b-B) Difference	sqrt(diag(V_b-V_B)) S.E.
lGynB	.0691854	.1094253	-.04024	.0094959
lArBr15	.1517188	.3521556	-.2004368	.0506158
lArBr45	.0035768	.0234711	-.0198943	.0096037
lGRPpc	-.582076	-.1975338	-.3845421	.0755942

b = consistent under Ho and Ha; obtained from xtreg
 B = inconsistent under Ha, efficient under Ho; obtained from xtreg

Test: Ho: difference in coefficients not systematic

$$\begin{aligned} \text{chi2}(4) &= (b-B)' [(V_b-V_B)^{-1}] (b-B) \\ &= 44.93 \\ \text{Prob}>\text{chi2} &= 0.0000 \end{aligned}$$

Source: own calculations in Stata (ver 13).

(Burtseva et al., 2020), improve routing algorithms and increase the quality of patient treatment with high risk of pregnancy and childbirth complications (Shuvalova et al., 2017).

A long-term trend in Russia is the decrease in the average age of sexual debut. A related phenomenon is teenage pregnancies, which most often end in medical abortions and much less often in childbirth (Laryusheva et al., 2014). Against this background, the correlation-regression analysis confirmed the relationship between infant mortality and birth rate in women aged 15–19 years necessitates the prevention of unwanted pregnancies among teens, early detection and registration of pregnant juveniles, improving early diagnosis of the risks of pregnancy complications and childbirth in this age group, and also improving the quality of medical support for young mothers. Teenage pregnancy is a phenomenon indicative of social disadvantage. Its prevention is a priority both in terms of the country's demographic security and preservation of the reproductive potential of the younger generation and in terms of minimizing the burden of social and economic losses associated with the risks of maternal and perinatal mortality (Guseva et al., 2008). Today, a number of regions have accumulated positive experience in the functioning of reproductive health care systems for children and juveniles, which can be replicated in order to effectively address these problems (Simakhodskii, Ippolitova, 2016).

Conclusion

The regression analysis performed allowed us to confirm the importance of economic, social and demographic factors in solving the problem of reducing infant mortality in Russian regions. Among the three regression models built, the best quality is the model with fixed effects, in which the greatest influence on reducing infant mortality has an increase in the key indicator of regional economic development – GRP. The model could be improved by including regional data on the number of births with complications, maternal illnesses during pregnancy and the share of babies born prematurely and with low birth weight. More reliable estimates are also possible when taking into account the level of medical organizations where cases of infant mortality are registered.

The favorable economic conditions of regional development and the related economic well-being are a basic condition for reducing infant mortality. Of high importance are also factors such as regional provision of health care resources, the availability of an effective system of three-level organization of medical care for women during pregnancy, labor and delivery and the postpartum period. To prevent infant mortality at the regional level, measures aimed at reducing social disadvantage, including the prevention of teenage pregnancies, are highly important.

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Evolution of the National Innovation Systems of the United States, the United Kingdom, China and Iran



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Abstract. The concept of national innovation systems (NIS) involves consideration of the economic arrangements of individual countries. It is necessary to identify the features of institutions' evolution that contribute to the processes of creating and transforming knowledge into new technologies and products. The article examines the experience of developing the NIS of the USA, the United Kingdom, China and Iran. The US and the UK have stable and developed NIS with a long history. Thus, Iran and China can be classified as countries with developing innovation systems but demonstrating considerable success. The significant difference between the considered innovation systems is how countries achieve political and economic sustainability. All of them are trying to stimulate market mechanisms for creating innovations. The Chinese innovation model combines the promotion of grassroots innovation and government support for technology enterprises. In the US and the UK, the leading role of business is associated with the perception that it is better at distributing investment in R&D than the Government. Iran is also trying to stimulate private innovation, but the Government still plays the key role because of the limited domestic market and sanctions restrictions. One of the prerequisites for the development of the NIS of Iran and China is a long-term policy in higher education, which, combined with population growth, has led to a significant expansion of access to higher education. The article is of interest to the Russian scientific community since the authors, on the one hand, explore the NIS of the leading countries in the field of innovation located on different continents (the UK, the US and China) and, on the other hand, a country that has been under sanctions pressure (Iran), which is especially important in the current economic and political realities. The authors suggest thinking about possible ways of developing the Russian innovation system by analyzing the foreign experience of the NIS. Scientists who are involved in researching NIS and national innovation policymakers can use the results of this scientific work.

Key words: national innovation system, evolution, institutions, United States, United Kingdom, China, Iran.

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Introduction

The National innovation systems (NIS) came into the focus of scientific research at the end of the 20th century. At that time, within the framework of evolutionary economics, several scientific schools were formed, the efforts of which created the theoretical prerequisites for studying the NIS. The main element of the novelty in creating the NIS concept was to address the problem of national characteristics of the evolution of institutions that contribute to the processes of knowledge creation and their transformation into technology and new products¹.

¹ This approach to the definition of the NIS is reflected in S. Metcalfe: "[NIS] is a set of individual institutions which jointly and individually contribute to the development and dissemination of new technologies and provide the basis for the formation and implementation of public policies affecting the innovation process. In essence, it is a system of interrelated institutions for the creation, storage and transfer of knowledge, skills and artifacts that define new technologies" (Metcalfe, 1995, p. 38).

In the 1990s, in parallel with the NIS concept, the triple helix theory began forming, which emphasized the creation of an environment conducive to enhancing innovation processes in the interaction of three main actors: academia (universities), government and business (Etzkowitz, 1996; Etzkowitz, 2011). The development and complication of the triple helix concept in modern studies of innovation activity led to its transformation into the quadruple helix model, which adds a new element with a double structure: public, associated with media and culture, as well as civil society (Carayannis, Campbell, 2012, p. 13). The concept of the quadruple helix is closest to the theoretical framework of the NIS, as it explicitly emphasizes institutional factors (media, culture), which become particularly important for the creation and use of innovation.

In contemporary world, national innovation systems do not exist in isolation from each other, but differ in the degree of difficulty and complexity of development. For example, the U.S. NIS can be considered as one of the most complex, where the main components of the quadruple helix: academia, business, government regulation of innovation and the public (civil society) have evolved into an

effective system associated with the production of a significant share of global innovations and innovative products (Alnafrah, Zeno, 2019).

The main hypothesis of the research work is that the successful functioning of the NIS requires the implementation of the previously highlighted three conditions of innovative development of the economy: political and economic stability, entrepreneurial initiative, increasing returns; and two prerequisites: development of market infrastructure and development of education and science (Volchik, 2022; Volchik, Maslyukova, 2022). The development of each of the national innovation systems has many points in common. Still, the most important in the context of this study is the emphasis on the specifics of the institutional structure and economic policy in the innovation sphere.

In this article, we consistently verify the presence of these three conditions and two prerequisites for the NIS of China, the United Kingdom, the USA and Iran, based on the available scientific papers, reports and statistical data of international organizations (the World Bank, Eurostat, WIPO, OECD, UNCTAD). *Table 1* presents the position of countries in the various world rankings.

Table 1. Position of countries in various world rankings

Rating (index) name	Place			
	United Kingdom	USA	China	Iran
GDP, 2021 (current U.S. dollars) ¹⁾	6	1	2	42
GDP per capita, 2021 (current U.S. dollars) ²⁾	29	12	80	139
Global Innovation Index, 2022 ³⁾	4	2	11	53
International Property Right Index, 2022 ⁴⁾	17	13	47	113
Index of Economic Freedom, 2023 ⁵⁾	28	25	154	169
Global Soft Power Index, 2023 ⁶⁾	2	1	5	77
Readiness for frontier technologies index, 2023 ⁷⁾	17	1	35	75

¹⁾ https://data.worldbank.org/indicator/Ny.Gdp.Mktp.Cd?most_recent_value_desc=true
²⁾ https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?most_recent_value_desc=true
³⁾ <https://www.globalinnovationindex.org/Home>
⁴⁾ <https://www.internationalpropertyrightsindex.org/>
⁵⁾ <https://www.heritage.org/index/ranking>
⁶⁾ <https://brandirectory.com/softpower/>
⁷⁾ <https://unctad.org/publication/technology-and-innovation-report-2023>
Source: own compilation based on the listed indices.

The choice of countries is motivated by the following considerations. The U.S. and China are the world's largest economies, implementing different approaches to the formation and development of their NIS. The United Kingdom, in turn, is one of the leaders in the innovation sphere on the European continent. At the same time, the United Kingdom NIS has more independence, as after Brexit it is not part of the supranational innovation system of the European Union. As for Iran, its experience in building its national innovation system seems particularly interesting because the state has been under various economic sanctions for a long time, primarily on the part of Western countries.

China's national innovation system

Historically, the concept of China's technological development was shaped to overcome the legacy of the "century of humiliation" and create the basis of China's civilian and military capabilities, starting with Mao Zedong's policy based on "self-reliance" and ending with Xi Jinping's policy with increased emphasis on innovative development (Gaida et al., 2023, p. 15). In the initial stage of building a socialist economy, Soviet experience and Soviet scientific, technical, and economic assistance were greatly influenced.

Since 1978, China has begun implementing economic reforms, focusing on the development of market relations. The reforms were aimed not only at the evolutionary formation of market

mechanisms, but also at the gradual opening of the economy to the increasing inclusion of China in the world economic relations system. The most important task during the reforms was economic modernization: "The strategy of the four modernization policies, which included agriculture, industry, national defense, and science and technology, became the most important flagship programs and national goals after the 1978 reforms" (Yi et al., 2021, p. 32). These reforms allowed not only the development of the construction of socialism with Chinese characteristics, but also, for the first time, the construction of an efficient and stable socialist market economy². It was within the system of a socialist market economy that the NIS began developing vigorously. Higher education and science development played the leading role in the modernization policy.

A major educational reform called the "Three Ds" began in 1985³. Along with the educational policy there was a policy aimed at encouraging the use of the results of intellectual activity in the real economy, called the "Three Cs"⁴ (Klochikhin, 2016, p. 40–41).

In 1985, a decree of the Central Committee of the Communist Party of China was also adopted, which set the vector of departure from the Soviet innovation system model. Therefore, the main efforts were aimed at creating market incentives for the interaction of research institutes and universities with industry (Motohashi, Yun, 2007, p. 1251–1252).

² We should clarify that in this article we use the official designation of the economic system of modern China as a "socialist market economy". This type of economic order is characterized by the considerable development of market mechanisms and institutions and is actually a specific form of the market economic order with Chinese specifics. The key mechanism of economic coordination is still the market, but the economy is socialist because, thanks to the institutions formed by the Chinese Communist Party, the tasks of building a middle-income society, in which the political power of capital is greatly restricted, are solved.

³ "The "Three Ds" include decentralization, depoliticization, and diversity. The management of local universities was transferred to the provincial and municipal levels. Universities were better able to develop their own teaching guidelines and courses without having to wait for political approval. The principle of diversity implied the introduction of a large number of new educational services, as well as the permission to open private universities and schools" (Klochikhin, 2016, p. 40).

⁴ "The "Three Cs" are commercialization, competition, and cooperation. Universities have more freedom in establishing partnerships and contractual agreements with the private sector and local governments, in introducing tuition fees, and in developing mechanisms to compete for the best students, funding, scientists, and subsidies. (Klochikhin, 2016, pp. 40–41).

In the early stages, R&D activities were primarily demanded by large enterprises. Gradually, both private and state-owned enterprises formed their own research units. Moreover, studies of R&D returns depending on the form of ownership show that private enterprises get higher returns from their own R&D than state-owned ones (Boeing et al., 2016).

In the 2000s, China's innovation development took two paths: imitation of existing technologies and in-house innovation. Innovation and imitation organically complemented each other: "The findings on the complementarity of imitation and innovation show that imitation is not only a necessary strategy independent of innovation, but also vital for the effectiveness of innovation" (Wu et al., 2020, p. 748). For example, during the first decade of reforms, the Chinese innovation system faced a reduction in state funding of scientific and technological activities and a low level of industrial research and development (Xue, 1997, p. 79), but it was through consistent reforms and the development of the market segment of the innovation system that impressive results were achieved.

China's national innovation system is organized on several levels: at the top level the state and the Chinese Communist Party determine the main directions of innovation policy, at the middle level the regional authorities have some autonomy in conducting innovation policy (Gu, Lundvall, 2006) and at the lower level the entrepreneurial initiative (including large corporations) in implementing innovation is realized.

The development of the Chinese innovation system took place in a complex way. Still, when analyzing it, it is necessary to consider institutional and economic peculiarities and historical contexts. Ten years ago, China was lagging far behind developed countries in the share

of R&D in GDP (1.7%). The emphasis was on applied research, and the share of basic research was only 4.7% in 2013 (Ding, Li, 2014, p. 383). But by 2018, China had already made impressive progress, becoming the world leader in the number of scientific articles and patents (Lundvall, Rikap, 2022, p. 5). In addition, China has developed large corporations (Baidu, Alibaba, Tencent, Huawei), which modern scientific literature refers to the class of corporate innovation systems⁵.

It is necessary to consider the development's cultural and political features to understand which institutions and reforms contributed to this success. China represents a very specific economic order, so when analyzing the characteristics of the development of the Chinese national innovation system, we consider the duality of the policy and regulation brought in. This duality is based on a harmonious combination of the leading role of the Chinese Communist Party in the ongoing reforms and mechanisms of activation and use of grassroots initiatives for creating new products and technologies. The specific nature of the Chinese economy makes it difficult to copy the regulatory institutions of developed countries and determines the high adaptability of the ongoing innovation policy (Klochikhin, 2016; Gu, Lundvall, 2006).

Entrepreneurial specificity is very important for the Chinese innovation system: "Entrepreneurial activity from the bottom up, rather than state-led reform, has given rise to various new forms of entrepreneurship, capitalist economic institutions in China. Without codified property rights, these entrepreneurs spontaneously develop

⁵ Lundvall and Rikap define the corporate innovation system as "sets of actors, activities, resources and institutions, and causal relationships that are in some sense important to the innovation activities of a corporation or groups of cooperating companies and other actors (e.g. universities, institutions, agencies)" (Lundvall, Rikap, 2022, p. 2).

informal rules and norms to overcome collective action problems. They create networks with other economic factors such as suppliers and distributors, create industrial clusters, and by trial and error create informal mechanisms to develop private manufacturing businesses” (Nee, Oppen, 2012, p. 9). “These rules and practices emerging from below stimulate, motivate, and guide start-up firms, allowing private firms to survive and even catch up with state giants, while creating the institutional foundations of China’s nascent capitalist economic order” (Nee, Oppen, 2012, pp. 8–9).

China has made impressive progress in its catch-up model. But it is now becoming a full-fledged leader in technological and strategic innovation: “The foundations of recent economic success are being used to transform China into an innovative and green China. The strength of Chinese culture, such as the power of hierarchy and collectivism, is being used strategically. A holistic long-term pragmatic approach helps the Chinese see the national economy as a system that needs a comprehensive approach. The strong symbiosis between the Chinese government and Chinese firms forms the basis of a new sustainable growth curve” (van Someren, van Someren-Wang, 2014, p. 21).

In the example of the previously highlighted three conditions for the innovative development of the economy: political and economic stability, entrepreneurial initiative, and increasing returns – and two prerequisites: the development of market infrastructure and the development of education and science – (Volchik, 2022; Volchik, Maslyukova, 2022), we can characterize the features of the Chinese national innovation system.

Political and economic stability is ensured by a system of governance based on the dominance of the Communist Party and the implementation of the principle of democratic centralism. China’s political and economic order can be called of democrat centralism by the title of Article 3

of the constitution, “The state authorities of the People’s Republic of China shall implement the principle of democratic centralism”⁶. This political system definitely has significant differences from liberal democracy, but given China’s specificity, it best ensures stability and sustainability. Moreover, contemporary China has managed to build a modern market economy under the political and economic order of democratic centralism.

The development of entrepreneurial initiative is provided, on the one hand, by the possibility of implementing grassroots initiatives under flexible institutional constraints, and on the other hand, by the government policy aimed at creating conditions for the entrepreneurship development. Contrary to stereotypes about Chinese interventionist government policy, measures to stimulate and provide resources for innovation activities in the Chinese context are predominantly market-based in nature (Băzăvan, 2019, p. 4).

The most important factor in the development of China’s national innovation system has been the reform of education and science. During the reform period, the number of higher education institutions increased fivefold, and the number of students enrolled increased 23-fold (Gaofeng et al., 2021, p. 44). This impressive growth has affected the quality of human capital and created a significant foundation for the development of both industry and agriculture, as well as science and related industries that use and create technological innovation.

The significant growth in the number of students has made China the leading country in the number of graduates as well as doctors of sciences in natural science and engineering disciplines. China has surpassed Europe, the United States, and India in this regard (Gaofeng et al., 2021, p. 49).

⁶ PRC Constitution (2018 edition). Available at: https://chinalaw.center/constitutional_law/china_constitution_revised_2018_russian/ (accessed: June 2, 2023).

According to the Australian Strategic Policy Institute (ASPI), China is currently the leader in 37 of 44 critical research areas for innovative development. Based on the analysis of scientific publications in 44 areas, the ASPI researchers developed a system of indicators to determine the risk of technological monopoly in each area. Based on this analysis, China has a high risk of technological monopoly in 8 research areas, and medium risk in 15. By comparison, the USA has only two items with a medium risk of technological monopoly (Gaida et al., 2023, p. 8).

In the area of innovative manufacturing, one of China's leading positions is held by digital Internet giants. Network effects and increasing returns are fully realized here. In China, three Internet companies have emerged: Baidu, Alibaba and Tencent, most often referred to by the acronym BAT. BAT companies have played a significant role in shaping China's policy to "accelerate the creation and improvement of ICT infrastructure and technology that would directly benefit companies commercially" (To, 2022, p. 108).

State-owned enterprises in China, like those around the world, definitely face challenges in the efficient use of resources. For example, the return on assets fell between 2010 and 2018 for both private and foreign firms (from more than 11% to about 7%), but from 4% to less than 3% for state-owned enterprises (Clay, Atkinson, 2023, p. 66). The difference in the profitability of state-owned enterprises is also because they often perform strategic functions in the economy and are associated with the production of public and quasi-public goods.

China's experience shows that the key to the development of the national innovation system is not only the amount of state funding for R&D, but also the quality of state regulation to create infrastructure and effective mechanisms of market coordination and administrative control.

The institutions governing markets and innovation markets change occasionally to counter various manifestations of social instability: financial risks, social inequality, economic slowdown, or social unrest. Big corporate players like tech giants or regional elites influence changes in rules and institutions, but the stabilizing factor is the Chinese Communist Party, whose policies are the foundation for development and conflict resolution. Although historically associated with the state and state capital, the Chinese government willingly delegates economic freedoms to domestic or even foreign market players if it promotes economic development (To, 2022, pp. 186–187).

National innovation systems in the United Kingdom and United States

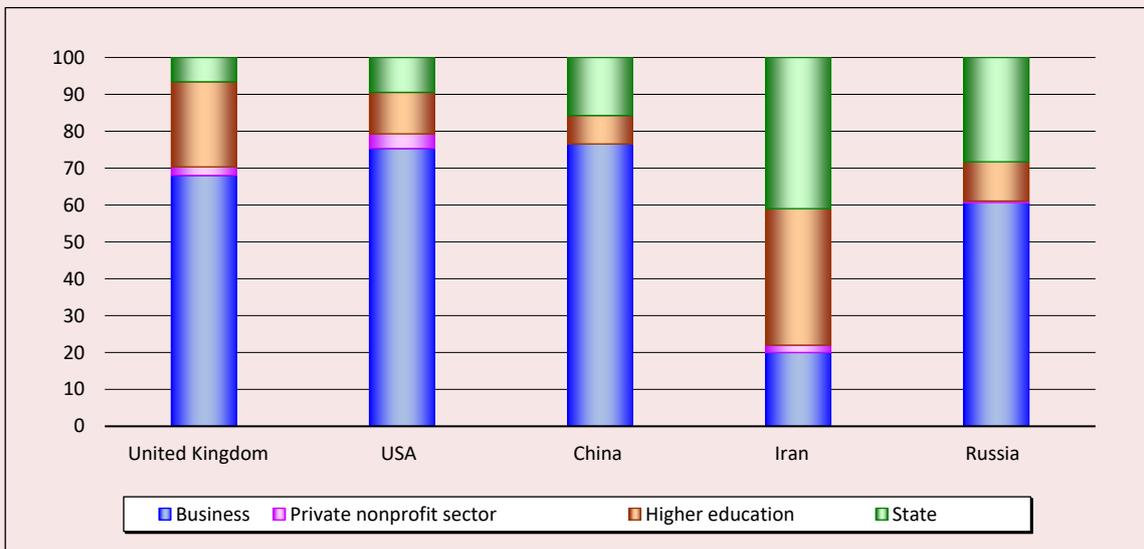
The United Kingdom and the United States of America, on the one hand, are united by their global leadership in various socio-economic aspects, and, on the other hand, by the seeming similarity of their national innovation systems. With incomparably fewer resources, the United Kingdom has to prioritize its innovation policy differently. Table 1 shows that the United Kingdom and the USA have leading positions in various world rankings.

The leadership, including in the Global Innovation Index, objectively confirms the presence in these countries of the necessary three fundamental conditions for their innovative development. For example, political and economic stability in the USA and the United Kingdom, unlike China and Iran, has long been ensured by well-developed democratic institutions, as well as the protection of property rights and the judicial system's independence. And increasing returns to scale are, in turn, ensured, on the one hand, by the availability of technological industries, and on the other hand, by the presence of the necessary demand for innovation through the functioning of the market economy, which promotes entrepreneurial initiative.

In general, we can say that this is due to the presence of political and economic inclusive institutions, i.e., those institutions that facilitate the population's participation in government and best allow them to realize their talents and skills (Acemoglu, Robinson, 2012, p. 89). In the UK and the USA, unlike in China, these institutions have been formed by locating them in a "narrow corridor", i.e., a corridor of balance between the state's power and the society that controls it (Acemoglu, Robinson, 2021). When applied to the USA innovation system, the actual fulfillment of the above fundamental conditions for the country's innovative development is called the "innovation success triangle" – success in business, innovation environment and regulation (Atkinson, 2014, p. 2).

Business and academia are central actors in the British and American innovation systems. The combined contribution of these two actors to R&D spending is 91.10% in the UK and 86.57% in the USA (Fig. 1). The leading role of business is related to the widespread view of innovation regulation in these countries, which is that business is better at allocating R&D investments than government (Melaas, Zhang, 2016, p. 4). International rankings confirm the leading roles of British and American higher education globally. There are 5 American and 4 British universities in the top ten of the world's leading universities according to QS (QS World University Rankings 2023) or 7 American and 3 British universities according to The Times (The Times Higher Education World University Rankings 2023)⁷. In addition, it is worth noting

Figure 1. Share of sectors in the structure of R&D expenditures, %



Source: Eurostat and UNCTAD*.

* For the United States and China, we used Eurostat data for 2020; for the United Kingdom and Russia, only 2019 data are available. The most relevant data for Iran are from the 2016 UNCTAD report. The "Private and non-profit sector" column provides information on "Private and non-profit sector expenditure on R&D".

⁷ By comparison, the best Chinese university is ranked 12th by QS (Peking University) and 16th by The Times (Tsinghua University). Among Russian universities, Moscow State University has the highest place (75 and 163 places in the rankings, respectively). Sharif University of Technology in Tehran ranks 380th according to QS, and the positions of Iranian universities according to The Times rankings start only from 350–400th place.

that the Academy's share of UK R&D expenditures exceeds 23%, which is about twice that of the U.S., or three times that of China.

The UK's rich scientific tradition is combined with effective science management (Liu et al., 2015, p. 328). The UK Research and Innovation (UKRI), a specialized body sponsored by the Department for Science, Innovation and Technology, was established in 2018 to develop and manage the NIS. Bodies such as UKRI play a vital role in the success of public innovation policy because they "pool expertise, organize innovation processes, and serve as links between sectors and levels of activity" (Breitinger et al., 2021, p. 8).

We should emphasize that the UK NIS is historically linked to the macro-European innovation system due to the country's geographical location and economic integration within the European community. The British NIS is characterized by an extremely high degree of internationalization, which was one of the highest among all members of the European Union before Brexit (Hughes, 2012, p. 48; Weresa, 2018, p. 20).

Naturally, Brexit itself and its consequences, still not entirely predictable (Breitinger et al., 2021, p. 58), are a challenge for the future. Before Brexit, Britain was heavily reliant on sources of research funding from European funds, which, on the one hand, provided stability through long-term research projects and, on the other hand, formed synergies in combination with domestic funding sources (Weresa, 2018, p. 37). For example, whereas previously Oxford and Cambridge Universities jointly received funding from European research programs of 130 million euro annually, this amount has now been reduced to 1 million euro⁸.

⁸ Brexit causes collapse in European research funding for Oxbridge. The Guardian. February 4, 2023. Available at: <https://www.theguardian.com/education/2023/feb/04/brexit-causes-collapse-in-european-research-funding-for-oxbridge-universities> (accessed: June 2, 2023).

In addition, the United States spends about twice as much money on R&D (as a percentage of GDP) as the United Kingdom (*Fig. 2*). Moreover, compared to the 2000s, the United Kingdom's share of this expenditure in GDP has increased by only 10%, while the percentage of the United States has increased by 38, Iran's share has increased by 76%, and China's share has increased by 238%.

It is evident that lagging behind the U.S. and China in gross expenditure on R&D is a challenge for the British NIS, so the UKRI Strategy 2022–2027 sets out plans to increase this figure to 2.4% by 2027⁹, which acts as a priority for the fourth strategic objective "World Class Innovation".

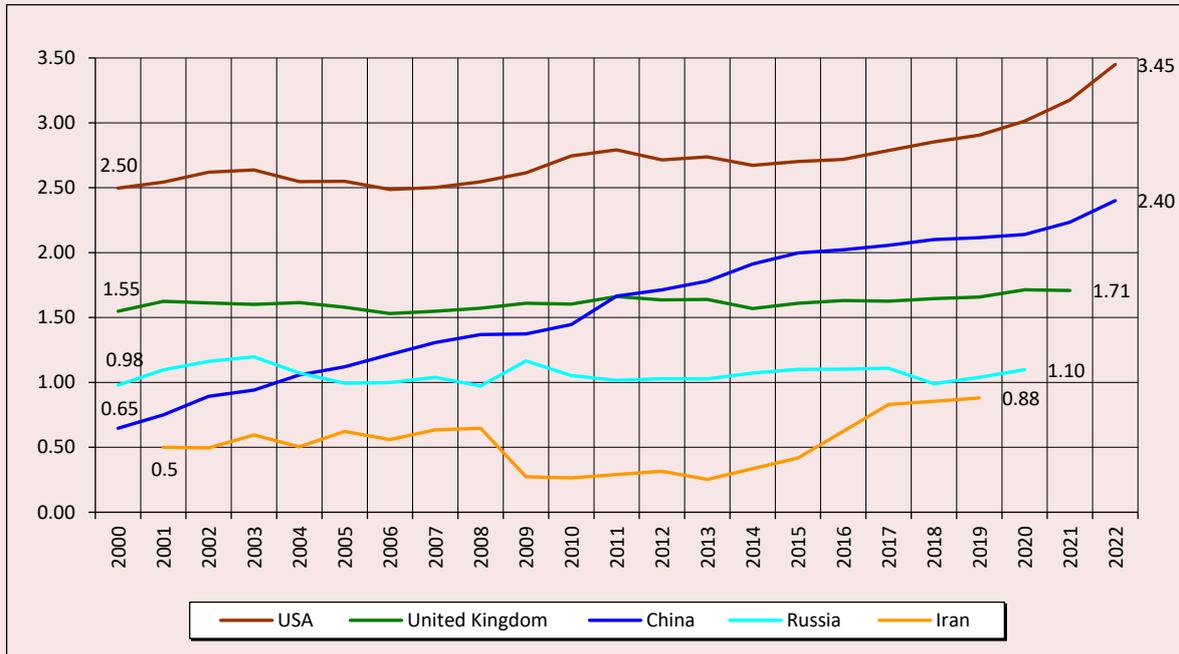
Reaching the 2.4% of GDP figure in R&D expenditure is planned in close cooperation with private businesses, as emphasized several times in Strategy 2022–2027. For example, for every pound of grant funding Innovate UK will receive 13 euro of venture capital investment in the future. As an example of attracting private investment, the UK Research Partnership Investment Fund, which supports investment in British universities for every pound it has, also uses 2 euro from nongovernment funding sources. Based on Strategy 2022–2027, the UKRI Corporate Plan 2022–2025 was adopted, which includes a specific list of actions and a set of targets for the coming years.

Having analyzed Strategy 2022–2027 and Corporate Plan UKRI 2022–2025, we can conclude that the main task in the UK is to create the necessary institutional environment for the development of the national innovation system, the

⁹ UKRI Strategy 2022–2027. Available at: <https://www.ukri.org/wp-content/uploads/2022/03/UKRI-210422-Strategy2022To2027TransformingTomorrowTogether.pdf> (accessed: June 2, 2023).

¹⁰ UKRI Corporate Plan 2022–2025. Available at: <https://www.ukri.org/wp-content/uploads/2022/08/UKRI-190822-CorporatePlan2022to2025.pdf> (accessed: June 2, 2023).

Figure 2. Total spending on R&D, % of GDP



Source: OECD and World Bank

development of human capital (for example, attracting highly qualified specialists, creating conditions for the appearance of jobs for such specialists), as well as attracting private investment in the innovation sphere; it means that this approach can be characterized as a market approach to innovation regulation.

In addition, researchers (Breitinger et al., 2021, p. 57; Lampel et al., 2020, p. 105) note the important role in the development of the British NIS of the non-profit body Nesta (formerly, it is called the National Endowment for Science, Technology and the Arts). Nesta conducts basic, applied research to promote UK innovation and implements practical innovation programs. Some of these programs combine funding from Nesta and other sources (Bakhshi, Flew, 2018).

In contrast to the United Kingdom, due to the truly federal structure of the state, the U.S. innovation system is decentralized (Shapira, Youtie,

2010, p. 5). Nevertheless, the National Science and Technology Council plays a significant role in the NIS development by the federal government, which specializes in consulting and helping to develop and evaluate public policy in relevant areas (Kang et al., 2019, p. 9). This council belongs to the cabinet level, and its status, for example, is underlined by the fact that it comprises the vice president and the director of the Office of Science and Technology Policy. In 2023, the National Science and Technology Council released a report on the role of artificial intelligence in science and technology policy “Strengthening and Democratizing the U.S. Artificial Intelligence Innovation Ecosystem¹¹, in which Artificial Intelligence is seen as a driver of innovation.

¹¹ Available at: <https://www.ai.gov/wp-content/uploads/2023/01/NAIRR-TF-Final-Report-2023.pdf> (accessed: June 2, 2023).

Innovation occupies an important place in the National Security Strategy¹², adopted by the White House in 2022, which notes that “while the private sector and open markets are a key driver of American innovation, strategic public investment is the foundation of a strong industrial and innovative base of the global economy of the 21st century. In 2021, the United States also passed The United States Innovation and Competition Act (in 2022 it became part of the CHIPS and Science Act)¹³, which plans to spend about 250 billion US dollars on innovation by 2026, namely on semiconductor manufacturing, scientific research, artificial intelligence development and space exploration¹⁴ in competition with China as the main rival to the U.S. on the world stage.

The U.S. global leadership in innovation is also confirmed by the Global Intangible Finance Tracker 2022, according to which 9 of the 10 most expensive brands in the world belong to the U.S. national innovation system, with the most expensive “Chinese” brand in 34th place and the “British” brand in 37th.

Nevertheless, despite U.S. leadership in this and other rankings, some scholars suggest that the U.S. NIS faces particular challenges due to slowing productivity growth in innovation-driven sectors¹⁵. Ignoring these challenges could allow China to overtake global leadership in innovation.

¹² Available at: <https://www.whitehouse.gov/wp-content/uploads/2022/11/8-November-Combined-PDF-for-Upload.pdf> (accessed: June 2, 2023).

¹³ Available at: <https://www.congress.gov/bill/117th-congress/senate-bill/1260> (accessed: June 2, 2023).

¹⁴ The U.S. Innovation and Competition Act: Senate Passes Sweeping \$250 Billion Bill to Bolster Scientific Innovation and Compete with China. Sidley, July 16, 2021. Available at: <https://www.sidley.com/en/insights/newsupdates/2021/06/an-overview-of-the-united-states-innovation-and-competition-act>. (accessed: June 2, 2023).

¹⁵ Why the U.S. Innovation Ecosystem Is Slowing Down. Harvard Business Review, November 29, 2019. Available at: <https://hbr.org/2019/11/why-the-u-s-innovation-ecosystem-is-slowing-down> (accessed: June 2, 2023).

Iran’s national innovation system

Studying the evolution of the national innovation system of Iran is connected with the difficulties caused by the language barrier, unreliable statistics and the relative closedness of the Internet space to the outside observer. Also, the study of the NIS structure faces limitations due to the features of the distribution of power and the Iran’s internal political structure. Even the institutional structure of the Iranian NIS can be described in several ways. Goodarzi, Rezaalizadeh, and Gharibi propose a hierarchical scheme for the NIS organization (*Fig. 3*), subordinated to the Supreme Leader of Iran, Ali Khamenei, who combines the supreme political and religious power (Goodarzi et al., 2017).

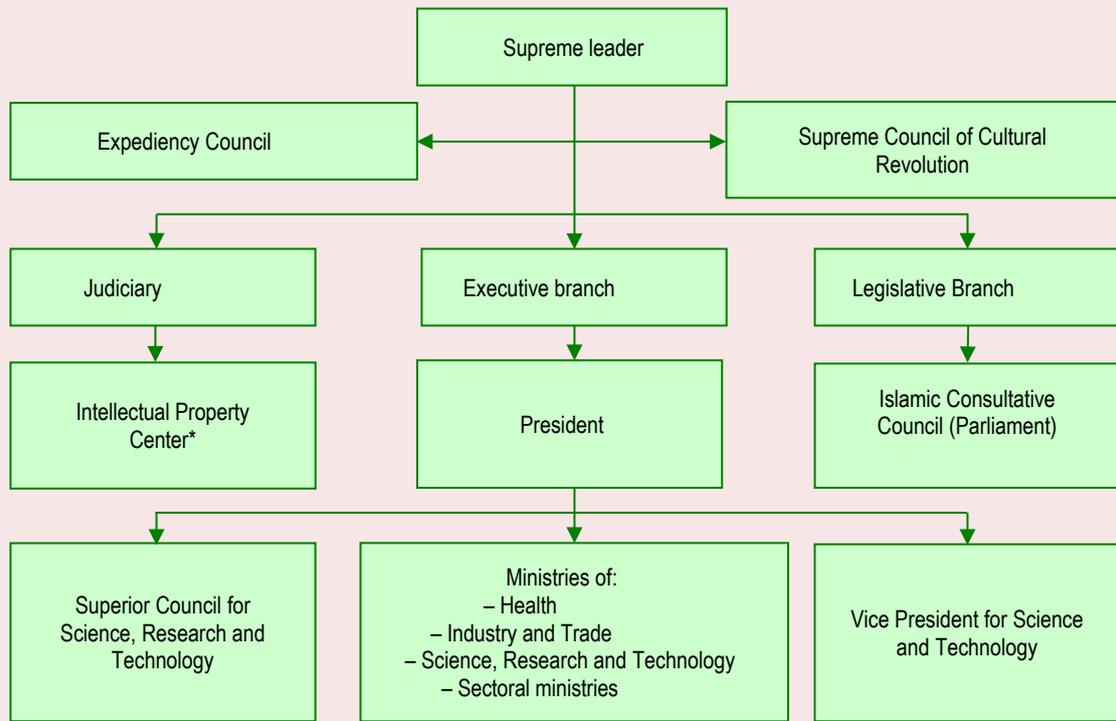
The hierarchical structure does not reflect the political complexities and real governing functions of ministries and agencies in Iran, so the work of several researchers (Heshmati, Dibaji, 2019; Afshari-Mofrad et al., 2020) and a new report by the Iran Institute for Technology and Innovation Development¹⁶ suggest that Iran’s NIS should be viewed as a multi-level system of multiple subordination with complex informal ties.

The zero level is responsible for shaping strategy and defining strategic goals at the state level, on the basis of which science and technology policy is determined. These are the Supreme Council for Science, Research and Technology, the Supreme Council for the Cultural Revolution, and the Expediency Council.

The first level includes the organizations that develop science and technology policies and are responsible for their implementation and

¹⁶ Iranian Technology and Innovation Development Institute (2023). Science and Technology in Iran: a Brief Review 2023. Tehran. Available at: <https://rome.mfa.gov.ir/en/newsview/710019/sciencetechnology-and-innovation-in-iran-a-brief-review-iran2023> (accessed: June 2, 2023).

Figure 3. Institutional Map of Iran's NIS (hierarchical approach)



* Iran' feature can be considered the fact that the Intellectual Property Center falls under the jurisdiction of the judiciary, not the executive branch, as in other countries.

According to: Iranian Technology and Innovation Development Institute (2019). Science and Technology in Iran: a Brief Review 2019. Tehran; (Goodarzi et al., 2017, p. 16).

monitoring. The key ones are the Ministry of Science, Research and Technology (which regulates all universities in Iran, except medical universities) and the Ministry of Health and Medical Education (responsible for all medical colleges and universities).

The second level is represented by the institutions responsible for financing and distributing the budget for science and education. The central organization at this level is the Plan and Budget Organization, which reports directly to the president. It also includes a variety of foundations, most of which are funded from the budget, but private foundations provide venture capital or startup support.

The third level includes organizations directly responsible for research and development: universities, research centers, and innovative enterprises.

Representatives of several foreign research organizations have noted the special role of the Islamic Revolutionary Guard Corps (IRGC) and the Ministry of Information of the Islamic Republic of Iran in developing cybersecurity-related technologies. According to the report, these organizations have concentrated development in this area, allowing them to achieve meaningful technological solutions despite their lack of access to advanced hardware and software products (Anderson, Sadjadpour, 2018).

Although Iran had long been under economic sanctions¹⁷, it was only in 2004 that the U.S. Treasury Department imposed measures against scientific activities. In fact, this was the first time the USA equated publishing and reviewing scientific papers from Iran to circumvent the embargo (Brumfiel, 2004). Further, from 2006 to 2010, the UN Security Council passed six resolutions against Iran's nuclear program, severely affecting the country's economy. For instance, leading universities and research institutes were effectively denied access to scientific databases. Iranian academic institutions faced bans on procurement of high-tech equipment, including computer hardware, for fear that it could be used to pursue a nuclear program. In addition, Iranian Internet users often face IP address blocking, which prevents them from using a number of research tools and foreign software products.

The main damage that sanctions do to the NIS is to create barriers to technology transfer. First, there is a ban on the purchase of technology from high-tech firms – technology cannot be bought. Second, restrictions are imposed on commercial activities with a sub-sanctioned country – it is impossible to buy high-tech goods¹⁸. And third, obstacles are created for academic institutions and scientists – the process of creating new knowledge

¹⁷ The starting point can be considered 1951, when Prime Minister M. Mossaddegh announced the nationalization of the Anglo-Persian Oil Company. This was followed by an embargo on Iranian oil products by Britain and the United States, which led to the overthrow of the democratically elected Mossaddegh government in 1953 with the direct involvement of the intelligence services of those countries. Due to the unresolved Anglo-American contradictions in the Middle East, a similar method was used in 1979 against Shah M.R. Pahlavi (Axworthy, 2013; Smirnov, 2020).

¹⁸ In addition, it exacerbates the bottle-neck problem of Iran's NIS: the low level of private sector participation in the science and education system. Isolation from the global market limits the ability to scale innovation and, as a consequence, leads to greater government involvement in innovation (Abdi et al., 2014).

and technologies and technology transfer using their own technological base becomes more complicated, which leads to scientific and technological lagging and, consequently, to a decrease in domestic economic and political stability (Fakhari, 2017).

Despite this, in 2010 Iran was among the leading countries in terms of the growth rate of scientific publications. Today, Iran is ranked 21st in the Scopus citation database by the number of articles and 29th by the number of citations, slightly behind Turkey (20th and 27th, respectively). At the same time, Turkey is not subject to measures to restrict publication activity. And in 2015, Iran ranked among the top five engineering graduates¹⁹ (Heshmati, Dibaji, 2019).

The main reason for the growth is demographic. Iran's fertility rate has fallen below two children per woman, but the population is growing due to increased life expectancy, with only about 7.7% of the elderly population. The mentioned demographic trends are competently used by the government policy, which was carried out in three directions: increasing access to higher education (1990–2010); defining priority areas of research (since 2010); developing a mechanism for the transfer of innovation for the transition to a knowledge-based economy (since 2015).

The management model of the innovation system is based on policy documents. The main one was issued back in 2005 – it was the “Vision 2025” strategy²⁰. The Supreme Leader proclaimed the updated key goals of the national policy on science and technology in September 2014. These included improving the NIS to increase

¹⁹ See also: World Economic Forum (2015). The Human Capital Report 2015. Available at: <https://www.weforum.org/reports/human-capital-report-2015/> (accessed: June 2, 2023).

²⁰ 20-Year national vision. Available at: <https://irandataportal.syr.edu/20-year-national-vision> (accessed: June 2, 2023).

the share of knowledge-based products, as well as bringing spending on higher education and research and development to 4% of GDP. By 2019, this spending exceeded only 2% of GDP²¹. In general, Iran has maintained higher education spending at 1–1.2% of GDP, which has led to an increase in the number of persons with higher education and, most importantly, an increase in the number of researchers.

Large number of young people demanding higher education, coupled with an active educational policy, allows Iran to cope with the challenges of sanctions and create its own science and engineering schools. While in 1953 Iran had only four universities with 14,500 students, by 1977 there were 16 with 154,000 students. The Islamic Revolution did not stop the development of higher education, but contributed to the continuation of the trend of increasing the availability of education²². The active establishment of universities and research centers has increased the number of students from 1.5 million to 3.1 million between 2000 and 2021 (49.2% women, 50.8% men)²³. More than 260,000 people are trained in PhD programs²⁴. The total number of universities in the country is 1102, of which 57 are under the Ministry of Health, 149 are affiliated with the Ministry of Science, Research and Technology, 329 are private universities and

567 are affiliated with the Islamic Azad University²⁵; and there are 686 research centers, of which 356 are attached to universities and 233 are private research institutes.

Despite all the sanctions, Iran has managed to build a distinctive national innovation system, leading among Central and South Asian countries (it gives in only to India) and among lower-middle-income countries (it gives in only to India and Vietnam) in terms of the innovation development index. Iran has the ability to independently develop or borrow critical technologies from various sources, taking advantage of its favorable geographical location, oil revenues, and the growing level of education of its population.

Conclusion

We have studied the national innovation systems of four countries: China, the United Kingdom, the USA and Iran. If the USA and the United Kingdom are characterized by a stable and developed NIS with a long history, Iran and China can be classified as developing innovation systems, although they demonstrate significant success.

One of the main prerequisites for the development of innovation systems in Iran and China can be considered a truly long-term higher education policy, which, combined with population growth, has led to a significant increase in access to higher education. Under such conditions, creating one's own science and engineering schools is inevitable. Education and science play a significant role in national innovation policy in the USA and the United Kingdom. On the one hand, this is confirmed by the dominance of British and American universities in world rankings,

²¹ If we consider that higher education accounts for about 1/3 of total education spending, then together with R&D spending, the figure would be 2.08% of GDP.

²² Average years of schooling increased from 4.2 years in 1990 to 10 years in 2010.

²³ According to: Iranian Technology and Innovation Development Institute (2019). *Science and Technology in Iran: A Brief Review 2019*. Tehran. Available at: <http://en.cpidi.ir/uploads/1/2021/Nov/22/Science%20and%20Technology%20in%20Iran-A%20brief%20review%202019.pdf> (accessed: June 2, 2023).

²⁴ But we should remember about the brain drain problem in Iran: an average of 63,000 people a year (mostly with high levels of human capital) immigrate to the United States (32%), Canada (14%), Germany (11%), the Netherlands (6%), Sweden (5%) and Turkey (5%) (Azadi et al., 2020).

²⁵ Islamic Azad University is a private university with an extensive network of branches, one of the largest universities in the world with more than 1 million students in 2022 (annually enrolls about 320 thousand students at various levels, including 10 thousand for PhD programs).

and on the other hand, by the understanding of the need to invest in R&D (in the USA this indicator is more than 1.4 times higher than in China; the UK plans to increase its indicator by 40% by 2027 compared with 2020). It confirms the importance of the *premise related to education and science* for the sustainable development of the NIS.

An equally important factor is the focus on the development of market infrastructure. However, there is a discrepancy between the experience of China and Iran. Due to the smaller size of the domestic market and limited access to the international market, Iran is forced to pursue a more centralized innovation policy to solve key economic and military-political problems. At the same time, China, due to its access to advanced technologies and global markets, was able to use a market-oriented mechanism to create an innovation system that not only competes on an equal footing with innovation systems of the West, but also poses a threat to them, moving from copying to developing its own innovative technologies.

Success in developing market infrastructure is directly related to mechanisms of increasing returns, which are fully used by the USA, the UK and China, integrated into the still global system of division of labor. Iran's opportunities here are severely limited; they face serious sanctioning opposition from Western countries.

Iran's NIS is just at the initial stage of forming an entrepreneurial initiative in the field of innovation mainly due to the sanctions policy

against the republic, which significantly increases the costs associated with innovation activities. In contrast, the innovation systems of China, the USA and the United Kingdom can be considered far ahead on this criterion.

Still, the main difference between the innovative systems under consideration lies in the way of achieving political and economic stability. Whereas in the United States and Britain stability is achieved through strong democratic institutions, as well as the protection of property rights and the independence of the judiciary, China achieves stability through the leadership of the Communist Party, balancing the interests of large entrepreneurs, elite groups and the general population by legitimizing its efforts with economic success. Describing the mechanisms contributing to Iran's relative stability is the most challenging task, as it implies considering cultural and religious values combined with the intertwining of divergent national interests.

The combination of institutions that promote political stability and the development of a market economy is necessary for developing the NIS. The obtained conclusions of the study, including our identified prerequisites for the NIS development in the four countries, make us think about how the Russian innovation system is developing. Further research in this area can be directed to the development of specific recommendations in the sphere of domestic innovation policy, including those based on the world's best practices.

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Harnessing the Potential of Social Economy to Generate an Encompassing Triple Transition: Social, Green and Digital



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Abstract. Social economy (SE) is an economic system that promotes sustainable and inclusive development and makes a relevant contribution with regards to the major challenges facing economies and societies. These are organizations with their triple differentiating characteristics: a) the pursuit of the collective interest of their members, b) the general economic and social welfare interest as they carry out economic and business activities for the market, and c) while meeting the needs of society, generating wealth and opportunities for development at individual and social level. Their primary purpose is social, thus its name, so the social economy enterprises (SEE) requires differential organizational and governance models based on specific values and operating principles. It is precisely this triple dimension and its differential characteristics that produce very positive socio-economic effects, recognized by the different international organizations, the countries and the European Union itself. In fact, the European Union envisages social economy entities as proactive actors in achieving what is known as the triple transition:

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social, environmental and digital. Recent crises, have led to a profound questioning of conventional growth and development strategies, and a reflection on the role social economy may play due to its double social and economic dimension and the positive impacts it generates, as analyzed in the article. Among others, employment is one of the most decisive mechanisms for a more just and cohesive society, where social economy has a very important role worldwide. So, the European Union Policy and its European Action Plan for Social Economy aim to increase the development of this business model, precisely in order to improve its impact on employment and social cohesion. The article reflects and analyses on these topics focusing on the transformative role of social economy as a key driver of a more just and cohesive society and the triple transition.

Key words: social economy, social enterprise, European Union, sustainable development goals, just triple transition, social justice, social innovation.

Introduction

There is a consensus regarding the social economy (SE) as an economic system that promotes sustainable and inclusive development both economically and socially and makes a relevant contribution with regards to the major challenges facing economies and societies, like the achievement of the Sustainable Development Goals, the climate change or the accomplishment of more cohesive societies¹.

This paper focuses on exploring the relevance that the SE, in its multiple unfoldings, is acquiring as a more sustainable, inclusive and fair alternative to move towards the objectives of a just triple transition (green, digital and social). A more holistic way to walk towards the realization of the twin transition, placing the societal dimension in the driving wheel.

To make its approach feasible, this paper focuses on the intersection between SE and employment in the European Union and it is divided in the following three sections:

1. Conceptual clarification, beginning with the definition of the concept of SE and its distinction

¹ Social and Solidarity Economy and the Challenge of Sustainable Development. Available at: https://unsse.org/wp-content/uploads/2014/08/Position-Paper_TFSSE_Eng1.pdf; Advancing the 2030 Agenda through the Social and Solidarity Economy. Available at: <https://unsse.org/wp-content/uploads/2022/09/Advancing-the-2030-Agenda-through-the-Social-and-Solidarity-Economy-UNTFSSSE-2022.pdf>

from other similar concepts with which it is usually muddled up with. Therefore, SE's main features, principles, and underlying values are analyzed. Then, the triple transition is briefly explained to contextualize the importance of SE to realize the twin transition and become a key engine to unfold more holistic triple transformation.

2. Analysis of the evolution of the greater relevance acquired by SE in the global and European policies² in the last 20 years, focusing specifically on the relationship between the SE and employment; and

3. Finally, the paper reflects on understanding the transformative role of SE to become one of the key drivers for the triple transition which is firmly rooted in worthwhile human development, social-driven and environmentally neutral, underpinned by the Sustainable Development Goals (Caro-González et al., 2023).

Conceptual clarification: Social economy in the framework of the triple transition

Social economy

SE is an economic model based on specific values, principles and operating logics, as well as its own legal structures. In general, a definition is not found, but rather differential configuring elements

² The study of their importance at national, regional and local levels will need to be the subject of a separate study.

and legal structures that are specific to it. This is the approach of the International Organizations, such as the International Labor Organization³, the United Nations (Bouchard, Salathé-Beaulieu, 2021), the OECD⁴ and the European Union and its various bodies⁵. Furthermore, a significant number of scientific works align with this approach⁶ (Defourny, Nyssens, 2012). Some European countries have ad hoc legislation on the SE or social enterprises, such as Belgium, Bulgaria, Denmark, France, Greece, Italy, Luxembourg, Portugal, Romania, Slovakia, Slovenia and Spain. All these approaches, in different ways and intensities, include a business model with three axes (economic, governance and legal), as shown in *Table 1*.

The economic dimension indicates that SE entities carry out financial and business activities for the market, with their differentiating characteristics being: the pursuit of the collective interest of their members, the general economic and social

welfare while meeting the needs of society. Their primary purpose is social, thus its name, so the SE requires differential organizational and governance models based on specific values and operating principles hitherto unseen. These are listed in the second column of Table 1 below. Finally, the legal dimension reflects the formal nature of the legal person and the types of legal structures specific to the SE.

The inclusion of the concept of social *entreprise* as part of SE since 2011⁷ opened a period of discussion on the appropriateness of using this expression along with the already existing SE conceptualization which was still struggling to establish its key distinctive features and to gain visibility both in the market and in society. In this regard, it should be noted that the concept of Social Enterprise is not new, nor are the attempts to define it (Defourny, Nyssens, 2012), the novelty is the European Union using it as part of its SE

Table 1. Characterizing dimensions of the social economy (SE)

Economic dimension	Governance dimension	Legal dimension
<ul style="list-style-type: none"> • Operate within the market • Produce goods and services • Meet the needs of individuals, households and families • Socially driven 	<ul style="list-style-type: none"> • Primacy of individuals and social objective over capital • Democratic member control • Voluntary and open membership • Combination of the interests of member or users and general interest • Defense and application of the principle of solidarity and responsibility • Autonomy and independence from public authorities • Reinvestment of most profits to carry out sustainable development objectives, services of interest to members or of general interest 	<ul style="list-style-type: none"> • Formal organizations • Legal personality • Legal structures: <ul style="list-style-type: none"> - Cooperatives - Mutuels - Associations - Foundations - Social enterprises

Source: own elaboration based on: Recent developments of the social economy in the European Union. Available at: <https://www.eesc.europa.eu/sites/default/files/files/qe-04-17-875-en-n.pdf>

³ Social and Solidarity Economy: Building a Common Understanding. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---coop/documents/publication/wcms_546398.pdf; Resolution concerning decent work and the social and solidarity economy. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_848633.pdf

⁴ Social economy and the COVID-19 crisis: Current and future roles. Available at: <https://www.oecd.org/coronavirus/policy-responses/social-economy-and-the-covid-19-crisis-current-and-future-roles-f904b89f/>

⁵ A Blueprint to Safeguard Europe's Water Resources. Available at: <https://eur-lex.europa.eu/legal-content/EN/ALL/?uri=CELEX%3A52012DC0673>

⁶ Recent developments of the social economy in the European Union. Available at: <https://www.eesc.europa.eu/sites/default/files/files/qe-04-17-875-en-n.pdf>

⁷ Creating a favorable climate for social enterprises, key stakeholders in the social economy and innovation. Available at: <https://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2011:0682:FIN:en:PDF>

strategy. In this regard, mention should be made of the work of the International Research Network (EMES), which defines these entities as “not-for-profit private organizations providing goods or services directly related to their explicit aim to benefit the community. They generally rely on collective dynamics involving various types of stakeholders in their governing bodies, they place a high value on their autonomy, and they bear economic risks related to their activity” (Defourny, Nyssens, 2008).

The European Union understands the social enterprises as having three main features⁸:

1) social enterprises operate by providing goods and services for the market in an entrepreneurial and often innovative fashion, having social and/or environmental objectives as the reason for their commercial activity;

2) profits are mainly reinvested with a view to achieving their societal objective;

3) their method of organization and ownership also follow democratic or participatory principles or focus on social progress. Social enterprises adopt a variety of legal forms depending on the national context.

According to the EU criterion, it shares characteristics with SE entities: primacy of people

as well as social and/or environmental purpose over profit, reinvestment of most of the profits and surpluses to carry out activities in the interest of members/users (“collective interest”) or society at large (“general interest”) and democratic and/or participatory governance⁹.

For all these reasons, it is possible to conclude that social enterprises has been accepted and included within the SE conceptualization due to the shared bases: a) social aims and their orientation towards social justice, b) the organizational model (democracy, participation), c) the idea of innovation in its most social dimension (Enciso-Santocildes et al., 2012). *Table 2* shows the similarities between both types of entities.

Perhaps, therefore, the differences lie not so much in the underlying principles and values, but in the legal formulas, which, although in the field of the SE are standardized, are not so in the field of social enterprises, which would allow the opening up of a new legal framework. The discussion remains open, is relevant, and therefore the first axe in the European Social Economy Action Plan¹⁰, is devoted to the definition of the concept of SE. The discussion on the concept and characteristics will remain open and new works that will shed light on this issue will be carried out.

Table 2. comparison of characterizing dimensions of the social enterprises and social economy enterprises

Social enterprises	Social economy enterprises
Social and/or environmental objectives as the reason for their commercial activity	Primacy of people as well as social and/or environmental purpose over profit
Profits are mainly reinvested with a view to achieving their societal objective	Reinvestment of most of the profits and surpluses to carry out activities in the interest of members/users (“collective interest”) or society at large (“general interest”)
Method of organization and ownership also follow democratic or participatory principles or focus on social progress	Democratic and/or participatory governance mechanism
Source: own elaboration.	

⁸ Social Economy in the EU. Available at: https://ec.europa.eu/growth/sectors/social-economy_en

⁹ Social Economy in the EU. Available at: https://ec.europa.eu/growth/sectors/social-economy_en

¹⁰ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

It can be argued that the SE has a set of shared characteristic features that distinguish and differentiate it, *ad extra*, that is from other economic models. However, the differential elements found among the SE entities cause greater complexity in the definition and understanding of SE. At the same time, *ad intra*, there are differences between its constituent entities, among others, the profit-nonprofit feature or the social or more economic oriented approaches. Furthermore, there are some legal types that only exist in some countries, such is the case of the *Sociedades Laborales*¹¹ in Spain, which undoubtedly should be labelled as SE entities.

Conventionally, SE entities are considered in between the private (first sector) and the public (second) sector, hence they have been classified as third sector. This categorization has been completely surpassed, and nowadays the third social sector is part of the SE, composed of not-for-profit entities¹². This not-for-profit third social sector is also known as the solidarity-based sector. In Latin America, the term solidarity-based economy (*Economía Solidaria*) is often used as a synonym for SE (Razeto, 2010).

From the twin to the triple transition

In addition to the more widely recognized twin transition, the green and digital, there is an urgent need to speed up a third, social transition.

A fair encompassing triple transition (green, digital and social) refers to a holistic and equitable approach to transforming society and the economy in a sustainable and inclusive manner with each person and organisation assuming its responsibility within this systemic triple transition. The following is an overview of the key considerations for each component:

¹¹ The Labor Societies (*Sociedades Laborales*) are public limited companies or limited liability companies in which the majority of the capital stock is owned by the workers who provide them with paid services personally and directly, whose employment relationship is for an indefinite period of time.

¹² Handbook on Non-Profit Institutions in the System of National Accounts. Available at: https://unstats.un.org/unsd/publication/seriesf/seriesf_91e.pdf

The **green transition** focuses on transitioning to a low-carbon, resource-efficient and environmentally sustainable economy. It involves reducing greenhouse gas emissions, promoting renewable energy sources, improving energy efficiency, and adopting sustainable practices in various sectors such as transportation, agriculture and industry. Key considerations for a fair green transition include:

- just transition, ensuring that the transition does not disproportionately impact vulnerable communities and workers in sectors undergoing transformation; this involves providing support for reskilling, retraining, and creating new job opportunities in green industries;
- environmental justice, addressing and mitigating environmental inequalities and ensuring that the burden of environmental impacts is not unfairly borne by marginalised communities;
- ensuring equal access to clean energy, sustainable infrastructure and green technologies for all individuals and communities, regardless of socioeconomic status or geographical location.

The **digital transition** entails harnessing the potential of digital technologies to drive innovation, productivity and inclusivity in the different socio-economic and cultural contexts. It involves adopting and leveraging technologies such as artificial intelligence, automation, Internet of Things and data analytics. Key considerations for a fair digital transition include:

- digital inclusion which ensures that everyone has equal access to digital technologies, affordable internet connectivity, and digital skills training; bridging the digital divide and promoting digital literacy are crucial aspects of an equitable digital transition;
- data privacy and security, safeguarding individual privacy rights and protecting personal data while promoting the responsible use of data for societal benefit; ensuring robust cybersecurity measures and regulatory frameworks is essential;

– job transformation which addresses the potential displacement of certain jobs due to automation and digitalization by fostering reskilling, upskilling, and creating new employment opportunities in emerging digital sectors.

The **social transition** focuses on fostering social cohesion, equality, and well-being as the economy undergoes transformation. It involves addressing social inequalities, promoting social inclusion and ensuring access to essential services and rights for all. Key considerations for a fair social transition include:

– social protection reinforcing social safety nets, access to quality healthcare, affordable housing and education to comply with the principle that no one is left behind;

– gender equality to promote gender equality and empower women and other vulnerable genders in all aspects of the economy and society; this includes addressing gender pay gaps, promoting women’s leadership and combating gender-based discrimination and violence;

– participatory governance by engaging citizens, communities and quadruple or n-helix stakeholders in decision-making processes, fostering participatory democracy and ensuring that diverse voices are heard in shaping policies and programs related to the transition.

By integrating these fair components into the triple transition, societies can strive for an inclusive, sustainable, and equitable future that addresses environmental challenges, harnesses the potential of technology, and prioritises social well-being and justice.

The European industry-led twin transition aiming to climate neutrality and digital leadership, cannot be achieved without a firm, responsive, responsible social and environmental engagement. None of these transitions can go separately and/or isolated, they all need to intertwine around the notion of a more, firmer and determined just transition. Precisely, these are the main values and principles of SE and Social Innovation (SI).

The Single Market Annual Report 2021¹³ presented an analysis of challenges in 14 industrial ecosystems and transformative initiatives to achieve the twin green and digital transition and increase resilience. Building on this work, the Commission proposed to co-create post COVID-19 transition pathways with stakeholders, as an essential collaborative tool for the transformation of industrial ecosystems, implemented with SE.

A more holistic and transformative vision on the imperative need to boost a more human-cultural-centered and planet-friendly triple transition has been embodied in the Three MoskeUteers’ vision. This “all for one, one for all” boundaryless triple transition (social, digital and green) in Europe and beyond, advocated by a group of interdisciplinary, intersectoral and international authors (Caro-González at al., 2023), presents the European society as a huge “co-laboratory”, to respond to the urgent radical changes demanded by humanity and by the planet.

The EU is launching ambitious initiatives encompassing crucial pathways for sustainability, inclusion and development: the European Pillar of Social Rights¹⁴, the Green Deal¹⁵, the EU Digital Strategy¹⁶ and the new EU industrial policy¹⁷. These create synergies and if addressed in a more encompassing systemic way and intertwined with SE, the pathways towards a more just triple transition may be closer.

¹³ Commission Staff Working Document. Annual Single Market Report 2021. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52021SC0351>

¹⁴ European Pillar of Social Rights. Brussels: European Union. Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/economy-works-people/jobs-growth-and-investment/european-pillar-social-rights_en

¹⁵ A European Green Deal. Striving to be the first climate-neutral continent. Available at: https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/european-green-deal_en

¹⁶ Shaping Europe’s digital future. Available at: <https://digital-strategy.ec.europa.eu/en>

¹⁷ New Industrial Strategy: Building a stronger Single Market for Europe’s recovery. Available at: <https://eur-lex.europa.eu/legal-content/en/ALL/?uri=CELEX%3A52021DC0350>

The first of these is Social Justice (in relation to redistribution, introducing the social and more human factor to economic approaches for the first time, wanting to establish an active dialogue). So, when we talk about Social Justice, we look at various aspects such as: climate change, environmental challenges, digitalization, globalization and demographic trends are factors that are changing our daily lives very rapidly. COVID-19 has exposed Europe to drastic new changes in our jobs, education, economy, welfare systems and social life. The European Union is therefore proposing the European Pillar of Social Rights Action Plan¹⁸ to address these needs. In relation to working conditions, this plan devotes a section to *more and better jobs*¹⁹. To provide some security for workers in this new labor context of digitalization and new landscapes.

Secondly, the Green Transition (linked with concepts of degrowth, circular economy, etc.). It is adding a dominant element and current issue, such as sustainability and care for the environment, so necessary in a sector such as the economy that sets the pace of production. In terms of Green Transition, the EU offers the GreenComp (Bianchi et al., 2022) as a reference framework for sustainability competencies. It provides common ground for learners and guidance for educators, promoting an agreed definition of what sustainability implies as competence-responding to the growing need for individuals to improve and develop the knowledge, skills and attitudes to live, work and act sustainably. It is designed to support education and training programs for lifelong learning.

¹⁸ The European Pillar of Social Rights Action Plan. Available at: <https://ec.europa.eu/social/main.jsp?catId=1607&langId=en>

¹⁹ Social Economy in the EU. Available at: https://ec.europa.eu/growth/sectors/social-economy_en

Finally, and thirdly, the Digital Transition, linked to the world of work and its conditions. After the COVID-19 pandemic, there has been an even greater and accelerated revolution in the workplace and the necessary skills that are now needed. So, there must be a generalized adaptation to ensure everyone is included, giving equal opportunities and equipping human capital with the new skills required. Linked to the Digital Transition we find that the Digital Compass program²⁰ was presented on 9 March 2021 to update Europe's digital strategy. It positions Europe as digitally sovereign in an interconnected world by building and deploying technological capabilities in a way that empowers people and businesses to harness the potential of digital transformation and helps build a healthier and greener society.

Importance and evolution of SE

Due to its social impact and the positive socio-economic effects, the major International Organizations have highlighted SE by developing analyses, statistics, policies or proposals applicable to the sector. For instance, in 2009 ILO launched the Action Plan for the promotion of SE enterprises and organizations²¹ and in 2022 adopted a resolution on the link between decent employment and the social and solidarity economy²²; Since 2013, the United Nations has had a working group: UNTFSSSE (Task Force on Social and Solidarity Economy); while the OECD launched the Global Action "Promoting Social and Solidarity Economy Ecosystems"

²⁰ 2030 Digital Compass. The European Way for the Digital Decade. Available at: <https://eufordigital.eu/wp-content/uploads/2021/03/2030-Digital-Compass-the-European-way-for-the-Digital-Decade.pdf>

²¹ Social and Solidarity Economy: Building a Common Understanding. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---emp_ent/---coop/documents/publication/wcms_546398.pdf

²² Resolution concerning decent work and the social and solidarity economy. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_848633.pdf

to unlock the potential of the SSE, focusing on legal frameworks and social impact measurement, considering the entire policy ecosystem as a framework²³. Likewise, the EU Directorate-General for Growth includes the SE, with the support of a group of experts on social economy and social enterprises (GECES) since 2011. The European Parliament has a Social Economy Intergroup. It has been recognized for a long time at EU level the SE further contributes to several EU key objectives, including the achievement of smart, sustainable and inclusive growth, high-quality employment, social cohesion, social innovation, local and regional development and environmental protection²⁴. Finally, the Commission has launched in 2021 a European action plan for SE²⁵ to deploy the SE to its full potential and to incorporate it into the different socio-economic European policies.

Many scholars consider that market and state failures build the ground for social innovation, a field in which SE plays a leading role in addressing them. This capacity to increase economic and social resilience is linked to the two main roles that the SE plays in the economic system: repair and transform²⁶. Thus, a critical question is the relationship of social innovation with the state: how the state can promote practices that foster SE, given the multi-level interactions that exist between different stakeholders, the opportunities and tensions between the third sector and the different

levels of the state; and the difficulty in adapting public administration processes and practices to social innovations dynamics and creative and co-creative nature (Pinto et al., 2021).

Furthermore, social innovation is an essential element of a form of economic development based on Social Justice. The SE has proven to be a pioneer in identifying and implementing social innovations that quite often has been adopted later by the rest of the economy²⁷. The SE responds to environmental and societal challenges as it is rooted at the local level, which gives it the capacity to detect new needs as well as to seek creative and innovative solutions²⁸. It is also expected that economic, social and environmental challenges will increase in the future, meaning that all agents: academia, governments, organizations and citizens. These actors are integrated in evolving innovation models, such as the Quadruple Helix which confer priority to co-creative processes with multi-stakeholder participation in innovation processes²⁹ within volatile, uncertain, complex and ambiguous (VUCA) contexts. This will require a creative response to promote growth, development and sustainability³⁰.

Recent food and financial crises, wars, climate change, persistent poverty and rising inequalities have led to a profound questioning of conventional

²³ Global Action: Promoting Social and Solidarity Economy Ecosystems. Available at: <https://www.oecd.org/cfe/leed/social-economy/oecd-global-action/>

²⁴ The promotion of the social economy as a key driver of economic and social development in Europe. Available at: <http://data.consilium.europa.eu/doc/document/ST-15071-2015-INIT/en/pdf>

²⁵ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

²⁶ Social economy and the COVID-19 crisis: Current and future roles. Available at: <https://www.oecd.org/coronavirus/policy-responses/social-economy-and-the-covid-19-crisis-current-and-future-roles-f904b89f/>

²⁷ Ibidem.

²⁸ Building Local Ecosystems for Social Innovation A Methodological Framework. Available at: https://www.oecd-ilibrary.org/industry-and-services/building-local-ecosystems-for-social-innovation_bef867cd-en

²⁹ An example of this is the Horizon Europe project: INTEGER – Interconnecting 4 Helix Innovation Ecosystems in European Regions. It is based on a peer-to-peer approach between business-driven and society-driven innovations, INTEGER aims to accelerate transformative integration results through the creation of new win-win games, mission-driven local synergies, innovative coordination of actions, governance, implementation, uptake and exploitation dynamics.

³⁰ Social innovation trends 2020–2030: The next decade of social innovation. Available at: <https://www.socialinnovationacademy.eu/social-innovation-trends-2020-2030/>

growth and development strategies³¹. The status quo does not allow contemporary development challenges to be addressed. There is a need to “further mainstream sustainable development at all levels, integrating its economic, social and environmental aspects and recognizing the linkages between them”³². In this vein, SE has an important role to play due to its double social and economic dimension and the positive impacts it generates, as it will be analyzed in the section below. An example of its crucial role is the European Social Economy Regions (ESER) initiative providing Europe with a network of more

than 100 members. Promoting the Commission’s SE policies and actively participating in the process of co-creating the transition path for the proximity and ecosystem of the SE. Its ultimate goal is to transition from the current model to a SE³³. On the other hand, in Spain, at the beginning of this year, Impact Economy was discussed, with the aim of familiarizing the concepts of Impact Economy and Impact Investment for the Public Sector, establishing a dialogue between society (SE, third sector, impact funds and investment and companies with a purpose) and the Public Sector, motivating a transition towards the social³⁴.

Table 3. Main initiatives promoting social economy delivered by international organizations

Year	Entity	Initiative
2009	ILO	Launched its Action Plan for the promotion of SE enterprises and organizations
2011	European Commission	Inclusion of the concept of social enterprise
2015	Council of European Union	SE enhances the labor market inclusiveness for vulnerable groups that due to their characteristics may face difficulties in accessing the labor market, such as young people without or limited experience, or with little training; long-term unemployed or people with labor market mismatches
2020	OCDE	Global Action “Promoting Social and Solidarity Economy Ecosystems”
2021	European Commission	Action plan for SE
		European Social Economy Action Plan
		Single Market Annual Report
		European Pillar of Social Rights Action Plan
	Digital Compass	
2022	European Commission	GreenComp
2022	European Commission	Transition pathway (launched November 14, 2022)*
2023	European Commission	European Social Economy Regions (ESER)
*Co-implementation of the transition pathway: as part of the process, public and private stakeholders’ commitments for concrete actions are encouraged, collected, promoted and supported. Adding to the importance the European Commission addressed stakeholders through a call for pledges on “proximity and SE” published on 14 November to 28 February 2023. (Call for proposals as a result of teamwork, proposals with great scope for success due to previous participation). Source: own elaboration.		

³¹ In the literature on degrowth, wealth and income ceilings are frequently mentioned among the policy instruments that could support transitions towards ecologically and socially sustainable societies. However, an in-depth discussion of concrete policy proposals has yet to be initiated (Buch-Hansen, Koch, 2019).

³² Social and Solidarity Economy and the Challenge of Sustainable Development. Available at: https://unsse.org/wp-content/uploads/2014/08/Position-Paper_TFSSE_Eng1.pdf

³³ Call for Expression of Interest – Deadline. Available at: https://single-market-economy.ec.europa.eu/european-social-economy-regions-eser-2023-call-expression-interest_en

³⁴ Information provided by Consejo Asesor Nacional para la Inversión de Impacto [National Advisory Council for Impact Investment].

At the global level, there are no figures available for the SE, but there are data available for cooperatives, the sector with the greatest weight in terms of number, employment and turnover, and therefore social impact³⁵:

- more than 12% of humanity is part of any of the three million cooperatives in the world;
- cooperatives provide jobs or work opportunities to 280 million people across the globe, in other words, 10% of the world's employed population;
- more than one billion cooperative members from any of the three million cooperatives worldwide.

On the other hand, at EU level data is available regarding SE, with certain limitations. The following figures reflect the weight of the social economy enterprises (SEE) in Europe³⁶:

- 8% of EU GDP;
- 2.8 million SE enterprises;
- 13.6 million paid workers for SE enterprises, 6,3% European task force; at the global level, cooperatives provide 100 million jobs, 20% more than multinational enterprises.
- 82.8 million volunteers, equivalent to 5.5 million (non-paid) full-time workers;
- up to 160 million members of SE enterprises.

Regarding employment SEE has demonstrated an ability to create jobs in situations where the mainstream economic system and the state have failed. This is the case for people with difficulties in accessing the labor market or maintaining their job, exploring new areas of economic activity and new ways of delivering a service. In many cases, the main purpose of a SEE is the creation and maintenance of high-quality jobs that produce

cohesive and inclusive growth. However, these data do not capture the total contribution of the SE, nor it measures their complete performance and impact. Therefore, further research is needed in this sense.

In fact, to obtain a clear and complete picture of the sector, the implementation of official statistics is requested, which could also become the basis for policy makers and allow the recognition and visibility the sector deserves (Chaves-Avila, 2021). Since 2006, Manual for the compilation of satellite accounts of the SE at European level was published (Barea, Monzón, 2006), which is a framework of presentation for the economic data of a particular area (in this case, SE) in relation to the overall economic analysis of the central framework of the national accounts. This type of mechanism (already in place in some countries such as Poland, Portugal, the United Kingdom and soon in Italy) allows the systematic quantification of the sector through comparable magnitudes in accounting terms and by branches of activity, with the same methodology as the National Accounts Systems³⁷, and therefore the resulting information provides homogeneous evidence, and hence its comparability both internal and internationally.

The importance of statistics for the SE remains a priority objective, and indeed the European Action Plan for Social Economy acknowledges that appropriate data and statistics would lead to the recognition and development of the sector, fostering a better understanding of the business model specificities, and will ensure evidence-based policy. In fact, one of the axes of the action plan is entitled enhancing recognition of the SE and its potential³⁸. But in addition, society in general,

³⁵ Fact and Figures. Geneva: International Cooperative Alliance. Available at: <https://www.ica.coop/en/cooperatives/facts-and-figures>

³⁶ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

³⁷ National accounts or national account systems are the implementations of complete and consistent accounting techniques for measuring the economic activity of a nation. These include detailed underlying measures that rely on double-entry accounting.

³⁸ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

but also social partners, stakeholders, and funders, still have an insufficient awareness of the positive impact of the SE, even beyond the statistical data. The underlying idea is how to measure the differential characteristics of the SE business model, which is driven by a mission of social purpose and other common values and principles³⁹.

When assessing the level of development of the social economy, authorities may use a range of target indicators to measure progress and impact. Here are some examples of target indicators commonly used:

- *the number of social enterprises* measures the quantity and growth of social enterprises within a specific jurisdiction; it provides insights into the overall presence and development of social economy organisations;

- *employment in the social economy* is an indicator that tracks the number of jobs created within the social economy sector; it helps gauge the sector's contribution to local employment and the extent to which it generates meaningful and sustainable livelihoods;

- *social return on investment (SROI)* is a methodology used to measure the social, environmental, and economic value created by social economy organisations; it quantifies the broader impact of their activities, beyond traditional financial metrics;

- *community participation* is an indicator that assesses the level of community engagement and participation in social economy initiatives; it examines the involvement of individuals, local organisations, and stakeholders in decision-making processes and the overall impact of their contributions;

- *funding and investment* focuses on the availability and accessibility of financial resources for social economy entities; it tracks public and

private funding, grants, investments, and other financial mechanisms directed towards supporting the growth and sustainability of the social economy;

- *collaboration and partnerships* is an indicator that evaluates the level of collaboration and partnerships between social economy organisations, government entities, private sector actors, and civil society; it highlights the degree of cooperation and collective efforts to address social and environmental challenges;

- *innovation and technology adoption* measures the integration of innovative practices and technologies within the social economy sector; it assesses the extent to which organisations embrace digital tools, data analytics and technological advancements to enhance their operations and impact.

These target indicators can provide authorities with a comprehensive understanding of the social economy's development and effectiveness. By monitoring these indicators over time, policymakers can make informed decisions, allocate resources and implement policies that promote the growth and positive impact of the social economy.

Social economy and employment

As seen above, the latest data show that SE provides paid employment for some 13.6 million people in Europe. If volunteers are added (5.5 million full time), the estimated total European workforce within SE would be 19.1 million people. But, if we analyze the data in more depth, we see that the share of SE employment within each country varies considerably, ranging from 0.6% to 9.9% of the total. There are countries such as France, Spain, Italy or the Netherlands where the share of SE in employment is high, together with other countries with a significant growth potential in terms of employment⁴⁰. Due to these figures and

³⁹ Social impact measurement for the Social and Solidarity Economy: OECD Global Action Promoting Social & Solidarity Economy Ecosystems. Available at: <https://doi.org/10.1787/d20a57ac-en>

⁴⁰ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

Table 4. European Commission headline targets to be achieved by the end of the decade in the areas of employment, skills and social protection

<p>At least 78% of the population aged 20 to 64 should be in employment by 2030.</p> <ul style="list-style-type: none"> • At least halve the gender employment gap compared to 2019. This will be paramount to progress on gender equality and achieve the employment target for the entire working age population. • Increase the provision of formal early childhood education and care (ECEC), thus contributing to better reconciliation between professional and private life and supporting stronger female labor market participation. • Decrease the rate of young people neither in employment, nor in education or training (NEETs) aged 15-29 from 12.6% (2019) to 9%, namely by improving their employment prospects.
<p>At least 60% of all adults should participate in training every year.</p> <ul style="list-style-type: none"> • At least 80% of those aged 16-74 should have basic digital skills, a precondition for inclusion and participation in the labor market and society in a digitally transformed Europe. • Early school leaving should be further reduced and participation in upper secondary education increased.
<p>The number of people at risk of poverty or social exclusion should be reduced by at least 15 million by 2030. Out of 15 million people to lift out of poverty or social exclusion, at least 5 million should be children</p>
<p>Source: own elaboration based on: The European pillar of Social Rights Action Plan. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52021DC0102</p>

the positive socio-economic impact that generates, at European Union level, SE is considered a key sector to achieve the European Pillar of Social Rights (*Table 4*).

In objective 1, the creation of more and better jobs is where the EU considers that the SE fits, revealing a major untapped economic potential that creates jobs while addressing key societal challenges in a wide range of sectors. It has also acknowledged the SE sector during the pandemic crisis with a leading role⁴¹. These are the main

reasons for the EU to set an Action Plan for SE (APSE). The aim is to support the development of the SE to boost its social and economic transformative power (to create quality jobs and contribute to fair, sustainable, and inclusive growth) and to optimize the potential of the SE in the single market, as its potential is still under-exploited. This plan seeks to enhance social innovation, support the development of the SE, and boost its social and economic transformative power (*Table 5*).

Table 5. Action lines of the European Action Plan for Social Economy (2022–2030)

<p>Defining SE</p>
<p>Creating the right framework for the SE to thrive</p> <ul style="list-style-type: none"> • Developing policy and legal frameworks • SE and State aid • Better access to markets: socially responsible public procurement • Promoting the SE at regional and local levels • Promoting the SE at international level
<p>Opening up opportunities for SE entities to develop</p> <ul style="list-style-type: none"> • Business support and capacity building • Improving access to funding • Maximizing the contribution of the SE to the green and digital transitions • Boosting social innovation
<p>Enhancing recognition of the SE and its potential</p>
<p>Source: own elaboration based on: Building an economy that works for people: An action plan for the social economy. Available at: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778</p>

⁴¹ Building Local Ecosystems for Social Innovation: A Methodological Framework. Available at: https://www.oecd-ilibrary.org/industry-and-services/building-local-ecosystems-for-social-innovation_bef867cd-en

These lines of action are furthermore deployed in concrete actions of various kinds: training measures, information management measures, recommendations to member states and initiatives at European Community level. Some of them are already underway, with a development target of 2030.

This tendency to consider SE positively in terms of employment is not new in the framework of the European Union, but what is new is the existence of a transversal and multiannual plan, which makes SE a fundamental element rooted in the very heart of Community policies (Gómez Urquijo, 2021).

Indeed, for over two decades now, SE has proved its capability of rectifying the three major labor market imbalances: unemployment, job instability, and the social and labor-market exclusion of unemployed people. Furthermore, the EU notes that the SE plays a role in improving employability and creates jobs that do not normally delocalize, which contributed to meeting the Lisbon Strategy objectives⁴². SE enhances the labor market inclusiveness for vulnerable groups that due to their characteristics may face difficulties in accessing the labor market, such as young people without or limited experience, or with little training; long-term unemployed or people with labor market mismatches⁴³. The SEE also favor social and labor inclusion of migrant persons and the improvement of gender equality⁴⁴.

⁴² Resolution of 19 February 2009 on Social Economy (2008/2250(INI)) (2010/C 76 E/04. Available at: <https://op.europa.eu/en/publication-detail/-/publication/c8b497b7-c360-4f61-8cfc-553324610673/language-en>

⁴³ The promotion of the social economy as a key driver of economic and social development in Europe. Available at: <http://data.consilium.europa.eu/doc/document/ST-15071-2015-INIT/en/pdf>

⁴⁴ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

Besides, in periods of economic downturns, SE maintains employment at higher rates and even creates jobs, showing capacity to mitigate the pervasive effects of the crisis⁴⁵. SE employment is not likely to be delocalized, as it is locally anchored⁴⁶. The value of the SE in times of crisis is generally acknowledged. The SE has been resilient in economic downturns following the financial crisis in 2008, just to give an example closer in time. In countries such as Italy and Belgium, employment in the public and private sectors decreased sharply during the period 2008–2010 just after the crisis, while employment in social enterprises actually grew (11.5% growth in Belgium and 20.1% growth in Italian social cooperatives) In France, between 2000 and 2014, employment in the SE registered significant and continuous growth (25%), while employment growth in the private sector was much lower (6%)⁴⁷. This contribution to social and economic resilience is directly related to the nature of SEE, their activity and business models that better equip them to resist shocks. Firstly, outwards, the range of activities and services are directly linked to society's needs to cope with the crisis (health services, social services, etc.). Secondly, the SEE governance system helps the organizations withstand the economic setbacks⁴⁸.

The quality of the jobs generated by the SE is also positively valued, as corroborated by several

⁴⁵ Social economy and the COVID-19 crisis: Current and future roles. Available at: <https://www.oecd.org/coronavirus/policy-responses/social-economy-and-the-covid-19-crisis-current-and-future-roles-f904b89f/>

⁴⁶ Job creation through the Social Economy and Social Entrepreneurship. Available at: https://www.oecd.org/cfe/leed/130228_Job%20Creation%20through%20the%20Social%20Economy%20and%20Social%20Entrepreneurship_RC_FINALBIS.pdf

⁴⁷ Social economy and the COVID-19 crisis: Current and future roles. Available at: <https://www.oecd.org/coronavirus/policy-responses/social-economy-and-the-covid-19-crisis-current-and-future-roles-f904b89f/>

⁴⁸ Social economy and the COVID-19 crisis: Current and future roles. Available at: <https://www.oecd.org/coronavirus/policy-responses/social-economy-and-the-covid-19-crisis-current-and-future-roles-f904b89f/>

studies⁴⁹ (Defourny, Nyssens, 2012; Monzón Campos, Chaves Ávila, 2012). On the one hand, workers perceived the quality of jobs within cooperatives and social enterprises to be good, both in absolute terms and in relation to the quality offered by other types of organizations⁵⁰. On the other hand, managers also rank positively the level of achievement of the quality employment indicators⁵¹.

The SEE highly contribute to implementing the ILO's specific international framework and its four pillars: labor standards and rights at work, decent employment and income, social protection and social dialogue⁵². SSE units provide a wide range of services to their members and communities that improve incomes and livelihoods⁵³. The ILO recognizes the contribution of the SEE to decent work, inclusive and sustainable economies, Social justice, sustainable development and the improvement of standards of living for all. The role of SE in relation to decent work is intrinsically linked to the respect, promotion and realization

of the fundamental principles and rights at work, other human rights, and relevant international labor standards. These entities are also considered to be particularly prone to respecting “human dignity, building community and fostering diversity, solidarity, and respect for traditional knowledge and cultures, including among indigenous and tribal peoples”⁵⁴.

In many countries, SEE facilitate the transition from the informal to the formal economy, which is a necessary condition to reduce poverty and inequalities and the lack of social protection. Through SE, economic activities consolidate and become more predictable and sustainable (Roelants, 2015). This transition has been the focus for 2022 Social Justice Day established by the United Nations⁵⁵. In fact, at global level, more than 60 per cent of the world's employed population (two billion people) earn their livelihoods in the informal economy, not by choice, but due to lack of opportunities in the formal economy. These people lack social protection or employment-related benefits and suffer twice as much from poverty⁵⁶. Informal work may be found across all sectors of the economy, in both public and private spaces. The ILO therefore urges member states to implement measures of all kinds for the informal economy to achieve an adequate level of formality and the benefits to be gained from it, with the structures of the SE being particularly well suited to achieve this⁵⁷.

⁴⁹ Job creation through the Social Economy and Social Entrepreneurship. Available at: https://www.oecd.org/cfe/leed/130228_Job%20Creation%20through%20the%20Social%20Economy%20and%20Social%20Entrepreneurship_RC_FINALBIS.pdf; Recent developments of the social economy in the European Union. Available at: <https://www.eesc.europa.eu/sites/default/files/files/qe-04-17-875-en-n.pdf>; Social economy and the COVID-19 crisis: current and future roles. Available at: <https://www.oecd.org/coronavirus/policy-responses/social-economy-and-the-covid-19-crisis-current-and-future-roles-f904b89f/>

⁵⁰ Building an economy that works for people: An action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

⁵¹ Job creation through the Social Economy and Social Entrepreneurship. Available at: https://www.oecd.org/cfe/leed/130228_Job%20Creation%20through%20the%20Social%20Economy%20and%20Social%20Entrepreneurship_RC_FINALBIS.pdf

⁵² ILO Monitor: COVID-19 and the World of Work. Updated Estimates and Analysis. Available at: https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS_767028/lang--en/index.htm

⁵³ Resolution concerning decent work and the social and solidarity economy. Available at: https://www.ilo.org/wcmsp5/groups/public/---ed_norm/---relconf/documents/meetingdocument/wcms_848633.pdf

⁵⁴ ILO Monitor: COVID-19 and the World of Work. Updated Estimates and Analysis. Available at: https://www.ilo.org/global/topics/coronavirus/impacts-and-responses/WCMS_767028/lang--en/index.htm

⁵⁵ November 26, 2007, the General Assembly declared that, starting from the sixty-third session of the General Assembly, 20 February will be celebrated annually as the World Day of Social Justice.

⁵⁶ 2022 Theme: Achieving Social Justice through Formal Employment. Available at: <https://www.un.org/en/observances/social-justice-day>

⁵⁷ Transition from the Informal to the Formal Economy Recommendation, 2015 (No. 204). Available at: https://www.ilo.org/dyn/normlex/en/f?p=NORMLEXPUB:12100:0:NO:P12100_ILO_CODE:R204

A robust industrial sector can also be found within the SE, as recognized by the EU, who has declared the SE the 11th sector within the list of 14 industrial ecosystems under the heading “Proximity, Social Economy and Civil Security”⁵⁸. A well-known and world-renowned example is the Mondragon Group (Gipuzkoa, Spain), whose industry area integrates a wide variety of activities, including products and services in the consumer goods, capital goods, industrial components, construction and business services sectors.

A critical reflection and outlook

Despite its economic and social weight, and the increasing efforts to leverage its socio-economic prominent role, the SE is still largely unknown at EU level. Seemingly it is its positive impacts on employment, social cohesion and balanced growth. SE organizations provide the European market with quality products and services while responding to challenge-driven social and economic needs of citizens and deprived contexts.

The SE action plan designed by the EU⁵⁹ is of utmost interest, as its implementation will help to develop the full potential of the SE in general, with specific focus on the employment prospects. Each member state must deploy and fund national policies to enhance the sector and its positive effects and impacts.

Entrepreneurs are encouraged to consider the SE as a structure on which to design and develop their business. It is considered a sector that can better project and benefit themselves, their workers and the society in general. Citizens should be more aware of the features of the SE, know more about

⁵⁸ 14 industrial ecosystems have been determined: 1. Aerospace & Defence, 2. Agri-food, 3. Construction, 4. Cultural and Creative Industries, 5. Digital, 6. Electronics, 7. Energy Intensive Industries, 8. Energy-Renewables, 9. Health, 10. Mobility-Transport-Automotive, 11. Proximity, Social Economy and Civil Security, 12. Retail, 13. Textiles, 14. Tourism.

⁵⁹ Building an economy that works for people: an action plan for the social economy. Available at: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021DC0778>

its positive effects and value it. Therefore, the development and deployment of the action plan in the coming years will be key to achieve all the set goals (Gómez Urquijo, 2018).

To understand these transitions in such a context, the following concepts need to be considered:

(1) More equitable redistribution of resources to achieve fairer and more inclusive and sustainable development. However, counting with the right instruments to implement this is another issue. These instruments – from progressive taxation, cash transfers and investment in human capital to regulation and inclusive growth strategies – exist. Nonetheless, they are not yet well established in most developed economies.

(2) As for fair working conditions, we see them guaranteed in Article 31 of the EU Charter of Fundamental Rights, which states that every worker has the right to working conditions which respect his or her health, safety and dignity. Secondly, every worker has the right to limitation of maximum working hours, to daily and weekly rest periods and to an annual period of paid leave⁶⁰.

(3) Degrowth means sustaining economies rather than growing them, so we use less of the world’s energy and resources and put well-being, quality of life, and inclusion alongside sustainability and profit. The idea is that by pursuing degrowth policies, economies can help themselves, their citizens and the planet to balance sustainability and re-generation.

(4) The circular economy is presented as a model of production and consumption that involves sharing, renting, reusing, repairing, renewing and recycling existing materials and products for as long as possible. In this way, the life cycle of products is extended, in line with one of its fundamental principles, sustainability.

⁶⁰ This is in line with initiatives being tested, such as the 4-day work week, flex-security, telework, etc.

(5) New realities call for circular transformation: a future-oriented business thrives, when quadruple or n-helix innovation models in which interconnected citizens, stakeholders, partners and the community identify challenges, define priorities, shared values and negotiate common pathways. This will help design new systems that focus on creating circular solutions and positive impact.

We need to further explore the connections between SE and wealth redistribution, together with the circular economy and transformative economic approaches, all of which are key to inclusive, quality employment and in line with the principles of SE and the triple transition. A closer look at these concepts and its intertwined correlation is of utmost importance.

Radically new visions are proposed to pursue a non-explored transformative way to ideate, design, develop and deliver science, innovation and collaboration through experimentation and learning, and throughout multi-stakeholder engagement from the n-helix spectrum⁶¹. All forms of collaboration (international, interdisciplinary, intersectoral, intergenerational, inter-agency, cross-gender) are envisaged as alternative models of governance and distribution to overcome the unjust and unsustainable skewed status quo. Co-evolving, adaptive, flexible and transformative propeller ecosystems not only social but also governance to better align multi-stakeholder collaborations (quadruple, quintuple or n-helix) that encompass needs, rhythms, interests and diversity in the definition of agendas and forward looking shared and negotiated visions (Caro-Gonzalez et al., 2023).

We can therefore conclude from a review and analysis of the current landscape that SE is intimately linked to the triple transition and shares

its vision. Hence, its application to a successful triple transition is binding. The pathway ahead for SE is promising although still long and enduring to ensure that the 3 pillars mentioned above are fulfilled. Instruments, policies and initiatives, such as the ones proposed by the European Commission, will be decisive practical channels towards achieving these goals⁶².

By examining the mechanisms and characteristics of the social economy in different regions, we can gain a better understanding of their differences and operational frameworks. The EU has a well-established social economy sector characterised by a diverse range of social enterprises and cooperatives. These organisations are driven by social objectives, highlighting solidarity, community engagement, and sustainable development. The EU has implemented supportive policies, financial instruments, and legal frameworks to promote the growth and sustainability of the social economy.

In the case of Asia, social economy in Asia showcases a vibrant social economy landscape with unique characteristics across various countries. In countries like Japan and South Korea, there is a strong presence of cooperative movements, supporting sectors such as agriculture, finance, and consumer goods. In India, social enterprises play a vital role in addressing social challenges, particularly in areas of education, healthcare, and rural development. Microfinance initiatives have also gained prominence in countries like Bangladesh and Indonesia, providing financial services to underserved populations.

On the other hand, CIS countries exhibit a diverse range of social economy models. In countries such as Russia and Ukraine, social enterprises and cooperatives have emerged to

⁶¹ Eoh-for-Good multi-i co-creative vortexes. Available at: <https://eohforgood.com/design-a-process-of-change/>

⁶² Commission Staff Working Document. Annual Single Market Report 2021. Available at: <https://eur-lex.europa.eu/legal-content/en/TXT/?uri=CELEX%3A52021SC0351>

address social issues and provide employment opportunities. The social economy in CIS countries is influenced by historical factors, transitioning from a centrally planned economy to a market-oriented system. Challenges exist due to economic and political transitions, but efforts are being made to develop supportive policies and networks.

While the social economy shares common principles globally, variations exist in mechanisms and practices across regions. Factors such as cultural context, historical background, legal frameworks, and government support influence the functioning of the social economy. Differences can be observed in the scale and scope of social enterprises, forms of cooperatives, financial instruments available, and the level of public recognition and support.

We can also conclude, that analysing the specifics of the social economy in the EU, Asia, and CIS countries highlights the diversity of models and mechanisms employed to address social challenges and promote inclusive development. While the EU has established a comprehensive framework and support system for the social economy, Asia and CIS countries showcase unique approaches tailored to their specific contexts. Understanding these differences provides valuable insights for policymakers, practitioners, and stakeholders seeking to foster a robust and inclusive social economy in their respective regions. Sharing best practices and experiences can contribute to the continued growth and impact of the social economy worldwide.

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PUBLIC OPINION MONITORING

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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. The monitoring is conducted by VoIRC RAS in the Vologda Oblast¹.

The following tables and graphs show the dynamics of several parameters of social well-being and socio-political sentiment of the region's population according to the results of the latest round of the monitoring (June 2023) and for the period from June 2022 to June 2023 (the last seven surveys, that is, almost a year).

We compare the results of the surveys with the average annual data for 2000 (the first year of Vladimir Putin's first presidential term), 2007 (the last year of Vladimir Putin's second presidential term, when the assessment of the President's work was the highest), 2011 (the last year of Dmitry Medvedev's presidency), and 2012 (the first year of Vladimir Putin's third presidential term).

We also present the annual dynamics of the data for 2018 and for 2020–2022².

In April – June 2023, the share of positive assessments of the RF President's work did not change significantly (61%). The proportion of negative judgments is 23–24%³.

Over the past 12 months (from June 2022 to June 2023), the share of positive judgments about the work of the head of state increased by 3 percentage points (from 58 to 61%). The share of negative assessments decreased by 2 percentage points (from 25 to 23%)⁴.

¹ The surveys are held six times a year in the cities of Vologda and Cherepovets, in Babayevsky, Velikoustyugsky, Vozhegodsky, Gryazovetsky and Tarnogsky municipal okrugs, in Kirillovsky, Nikolsky and Sheksninsky municipal districts. 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 VoIRC RAS surveys is available at <http://www.vsc.ac.ru/>.

² In 2020, four "waves" of the monitoring were conducted. Surveys in April and June 2020 were not conducted due to quarantine restrictions during the spread of COVID-19.

³ Here and elsewhere, in all tables and in the text, positive changes are highlighted in green, negative changes are highlighted in red, and no changes – in blue. Due to the fact that the changes of +/- 2 p.p. fall within the limits of sampling error, they are considered insignificant and are marked in blue.

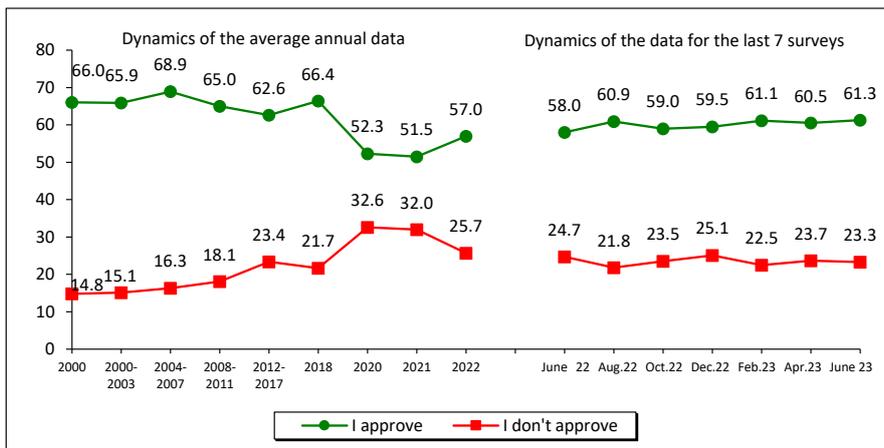
⁴ Here and elsewhere in the text, the results of a comparative analysis of the data from the survey conducted in June 2023 and the results of the monitoring "wave" conducted in June 2022 are given in the frame.

How would you assess the current work of...? (% of respondents)

Answer option	Dynamics of the average annual data									Dynamics of the data for the last 7 surveys							Dynamics (+/-), June 2023 to	
	2000	2007	2011	2012	2018	2020	2021	2022	June 2022	Aug. 2022	Oct. 2022	Dec. 2022	Feb. 2023	Apr. 2023	June 2023	June 2022	Apr. 2023	
RF President																		
I approve	66.0	75.3	58.7	51.7	66.4	52.3	51.5	57.0	58.0	60.9	59.0	59.5	61.1	60.5	61.3	+3	+1	
I don't approve	14.8	11.5	25.5	32.6	21.7	32.6	32.0	25.7	24.7	21.8	23.5	25.1	22.5	23.7	23.3	-2	0	
Chairman of the RF Government*																		
I approve	-*	-*	59.3	49.6	48.0	38.7	39.9	45.4	45.5	47.5	48.1	50.1	49.3	48.3	49.2	+4	+1	
I don't approve	-	-	24.7	33.3	31.6	40.4	37.6	32.0	31.4	29.4	31.3	29.9	27.9	28.1	27.1	-4	-1	
Vologda Oblast Governor																		
I approve	56.1	55.8	45.7	41.9	38.4	35.0	36.7	40.9	41.2	43.3	43.0	45.5	47.1	48.3	48.7	+8	0	
I don't approve	19.3	22.2	30.5	33.3	37.6	42.5	40.5	35.8	34.3	32.5	33.9	35.2	33.0	32.3	30.7	-4	-2	

Wording of the question: "How do you assess the current work of ...?"
 *Included in the survey since 2008.

How would you assess the current work of the RF President?
(% of respondents, VoIRC RAS data)



Dynamics (+/-), June 2023 to		
Answer option	June 2022	Apr. 2023
I approve	+3	+1
I don't approve	-2	0

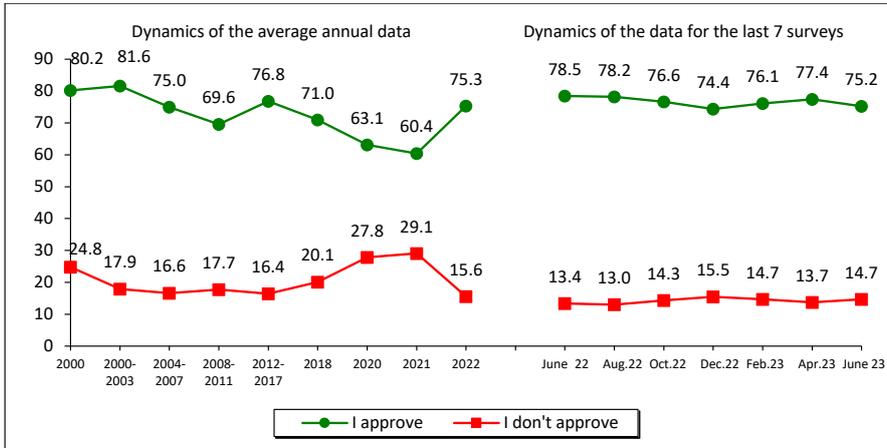
Here and elsewhere, all graphs show the average annual data for 2000, 2018, 2020, 2021, 2022, as well as the average annual data for the periods 2000–2003, 2004–2007, 2008–2011, 2012–2017, corresponding to presidential terms.

For reference:

According to VCIOM, the level of approval of the President's work from April to the first half of June 2023 decreased by 2 percentage points (from 77 to 75%). The share of negative judgments did not change and amounted to 14–15%.

From June 2022 to the first half of June 2023, the share of positive assessments of the activities of the head of state decreased by 4 percentage points (from 79 to 75%). The proportion of negative judgments was 13–15%.

**In general, do you approve or not approve of the work of the RF President?
(% of respondents; VCIOM data)**



Answer option	June 2022	Apr. 2023
I approve	-4	-2
I don't approve	+1	+1

Wording of the question: “In general, do you approve or not approve of the work of the President of the Russian Federation?”

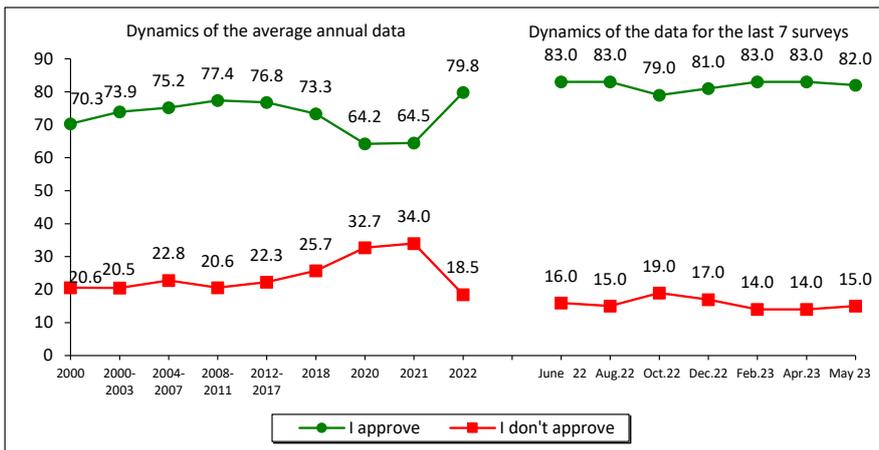
Data for June 2023 represent the average for three surveys: (June 4, 11 and 18).

Source: VCIOM. Available at: <https://wciom.ru/>

According to Levada-Center, the share of positive assessments of the President’s work in April – May 2023 was 82–83%; the proportion of negative judgments was 14–15%.*

There were no significant changes over the past 12 months: the share of positive assessments is 82% negative – 15–16%.

**In general, do you approve or not approve of the work of Vladimir Putin as President of Russia?
(% of respondents; Levada-Center* data)**



Answer option	June 2022	Apr. 2023
I approve	-1	-1
I don't approve	-1	+1

Wording of the question: “In general, do you approve or not approve of the work of Vladimir Putin as President of Russia?”

Source: Levada-Center*. Available at: <https://www.levada.ru>

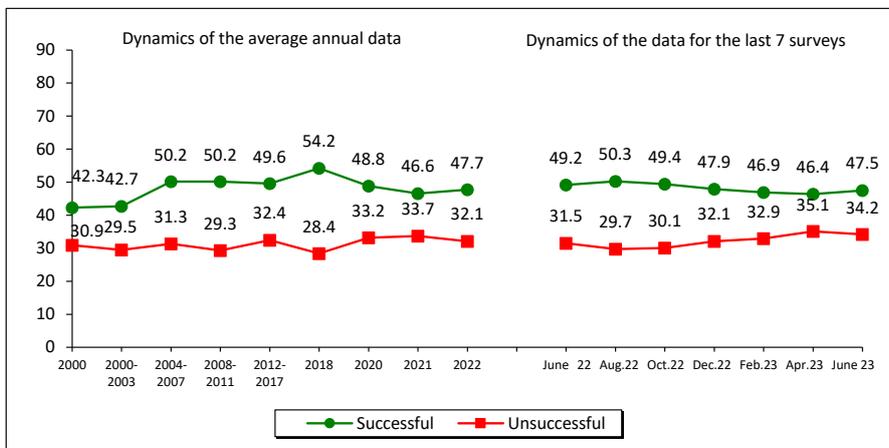
* Included in the register of foreign agents.

In your opinion, how successful is the RF President in coping with challenging issues?
(% of respondents; VolRC RAS data)

Over the past two months, the share of those who consider the RF President’s work to strengthen Russia’s international position to be successful increased by 2 percentage points (46–48%). The proportion of those who hold to the opposite point of view did not change significantly (34–35%).

From June 2022 to June 2023, the share of positive assessments of the President’s work aimed at strengthening Russia’s international position did not change and amounted to 48–49%; the share of negative judgments was 32–34%.

Strengthening Russia's international position

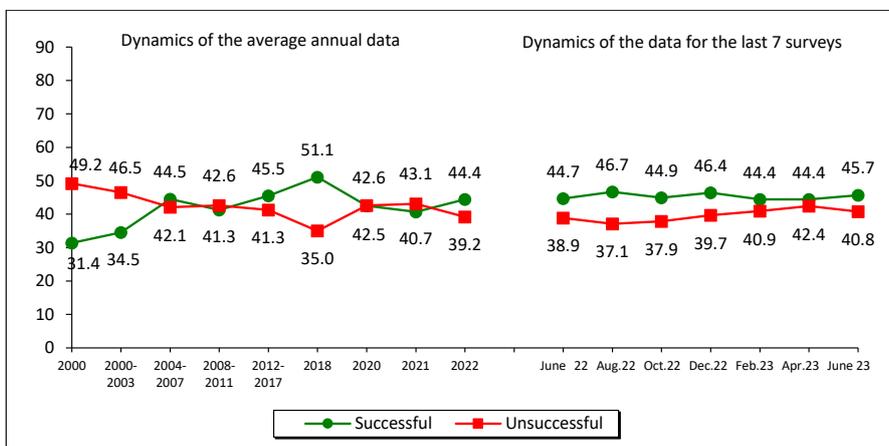


Dynamics (+/-), June 2023 to		
Answer option	June 2022	Apr. 2023
Successful	-2	+2
Unsuccessful	+2	-1

In April – June 2023, the share of Vologda Oblast residents who positively assess the work of the head of state aimed at restoring order in the country was 45–46%; the proportion of negative judgments was 41–42%.

Over the past 12 months, the share of those who positively assess the work of the head of state to restore order in the country did not change (45–46%). The proportion of negative judgments was 39–40%.

Imposing order in the country

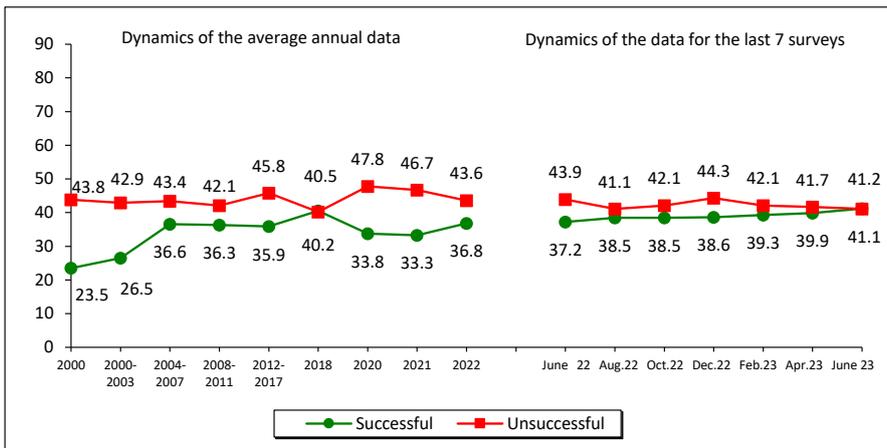


Dynamics (+/-), June 2023 to		
Answer option	June 2022	Apr. 2023
Successful	+1	+1
Unsuccessful	+2	-1

The assessment of the President’s work aimed at protecting democracy and strengthening citizens’ freedoms did not change over the past two months: the share of positive judgments is 40–41%, negative – 41–42%.

From June 2022 to June 2023, the share of positive assessments increased (by 4 percentage points, from 37 to 41%) and the proportion of negative judgments decreased (by 3 percentage points, from 44 to 41%).

Protecting democracy and strengthening citizens’ freedoms

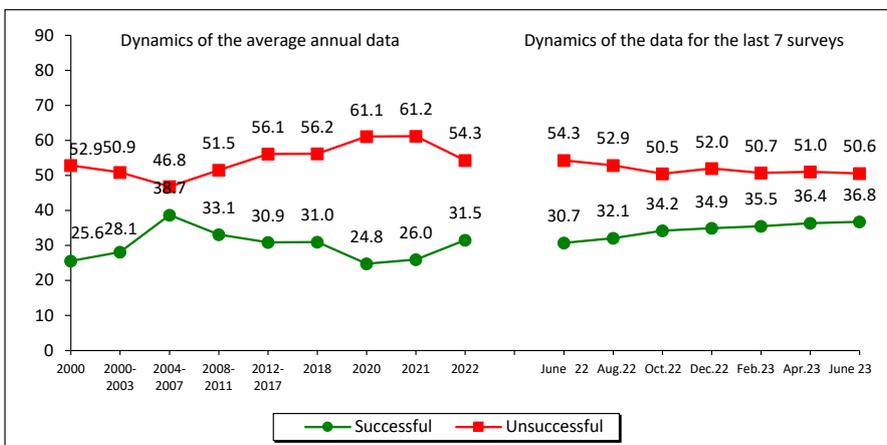


Answer option	June 2022	Apr. 2023
Successful	+4	+1
Unsuccessful	-3	-1

In April – June 2023, public opinion regarding the President’s work aimed at boosting the economy and increasing the welfare of citizens did not change significantly: the share of positive assessments was 36–37%, negative – 51%.

Over the past 12 months, the share of positive judgments increased by 6 percentage points (from 31 to 37%), the proportion of negative ones decreased by 3 percentage points (from 54 to 51%).

Economic recovery, increase in citizens’ welfare



Answer option	June 2022	Apr. 2023
Successful	+6	0
Unsuccessful	-3	0

The structure of political preferences of Vologda Oblast residents did not change over the past two months: the share of people whose interests are expressed by the United Russia party is 38–39%, the Communist Party – 9%, the Liberal Democratic Party – 7%, the Just Russia party – 5%, the New People party – 2%.

From June 2022 to June 2023, we note an increase in support for United Russia (by 4 percentage points, from 35 to 39%), as well as a slight decrease in the proportion of those who believe that none of the parliamentary parties expresses their interests (by 4 percentage points, from 31 to 27%).

Which party expresses your interests?
(% of respondents; VoIRC RAS data)

Party	Dynamics of the average annual data												Dynamics of the data for the last 7 surveys							Dynamics (+/-), June 2023 to	
	2000	2007	2011	Election to the RF State Duma 2011, fact	2012	2016	Election to the RF State Duma 2016, fact	2018	2020	Election to the RF State Duma 2020, fact	2021	2022	June 2022	Aug. 2022	Oct. 2022	Dec. 2022	Feb. 2023	Apr. 2023	June 2023	June 2022	June 2022
United Russia	18.5	30.2	31.1	33.4	29.1	35.4	38.0	37.9	31.5	49.8	31.7	35.2	34.9	36.2	36.7	38.3	39.1	37.6	39.3	+4	+2
KPRF	11.5	7.0	10.3	16.8	10.6	8.3	14.2	9.2	8.4	18.9	9.3	10.1	10.2	10.4	9.9	9.3	9.5	9.3	9.5	-1	0
LDPR	4.8	7.5	7.8	15.4	7.8	10.4	21.9	9.6	9.5	7.6	9.9	7.3	7.8	6.8	6.0	6.3	5.9	6.9	6.7	-1	0
Just Russia – Patriots for the Truth	-	7.8	5.6	27.2	6.6	4.2	10.8	2.9	4.7	7.5	4.7	4.9	4.8	4.9	4.5	4.7	4.6	4.7	4.7	0	0
New People*	-	-	-	-	-	-	-	-	-	5.3	2.3	1.5	1.6	1.9	1.1	1.5	1.3	2.1	2.1	+1	0
Other	0.9	1.8	1.9	-	2.1	0.3	-	0.7	0.5	-	0.2	0.3	0.1	0.1	0.5	0.0	0.1	0.1	0.0	0	0
None	29.6	17.8	29.4	-	31.3	29.4	-	28.5	34.2	-	33.9	30.6	30.7	29.3	30.6	29.9	28.0	28.0	26.5	-4	-2
I find it difficult to answer	20.3	21.2	13.2	-	11.7	12.0	-	11.2	11.1	-	10.0	10.1	9.9	10.5	10.8	9.9	11.4	11.4	11.4	+2	0

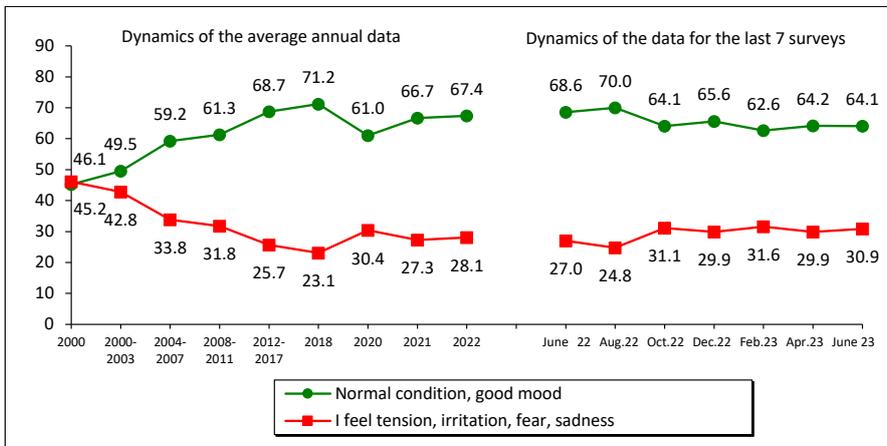
*The New People party was elected to the State Duma of the Russian Federation for the first time following the results of the election held on September 17–19, 2021.

Estimation of social condition (% of respondents; VoIRC RAS data)

From April to June 2023, the share of positive assessments of social mood remained at the level of 64%. The proportion of those who feel predominantly negative emotions did not change as well and was equal to 30–31%.

Over the past 12 months, the proportion of people describing their daily emotional state as “normal, fine” decreased by percentage points (from 69 to 64%). The proportion of those who experience mainly “tension, irritation, fear, sadness” increased by 4 percentage points (from 27 to 31%).

Social mood

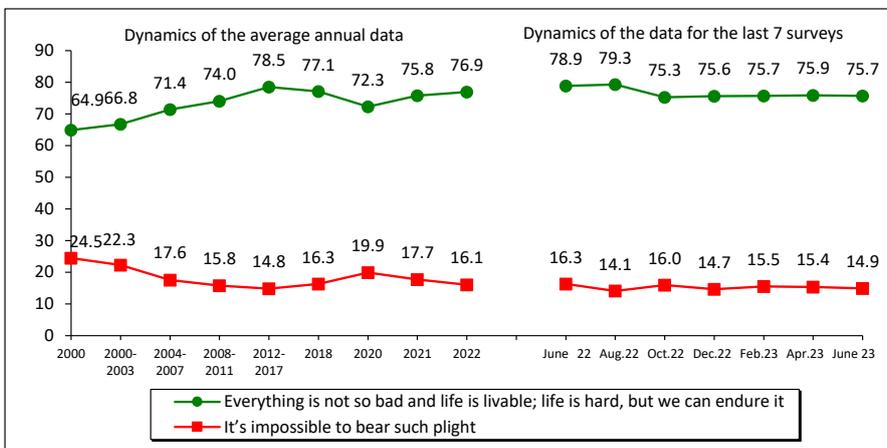


Dynamics (+/-), June 2023 to		
Answer option	June 2022	Apr. 2023
Usual condition good mood	-5	0
I feel tension, irritation, fear, sadness	+4	+1

In April – June 2023, the share of those who believe that “everything is not so bad and life is livable” (76%) and the proportion of those who note that “it’s impossible to bear such plight” (15%) remained stable.

Over the past 12 months, the proportion of positive assessments of the stock of patience decreased by 3 percentage points (from 79 to 76%), while the share of negative judgments did not change significantly (15–16%).

Stock of patience

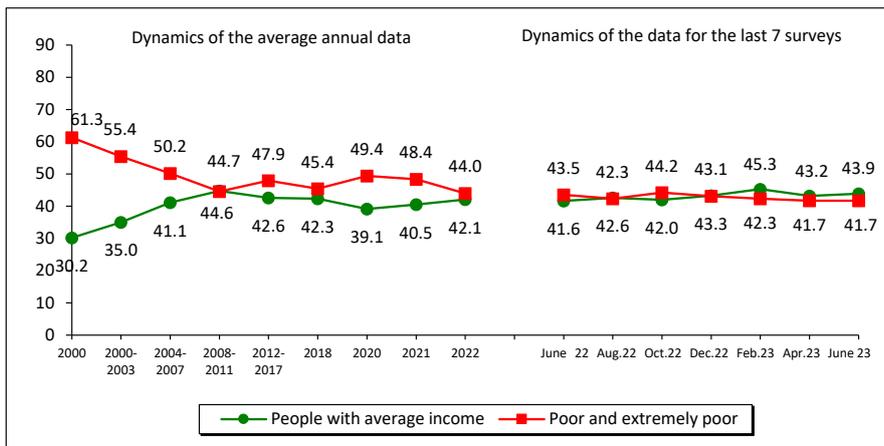


Dynamics (+/-), June 2023 to		
Answer option	June 2022	Apr. 2023
Everything is not so bad and life is livable; life is hard, but we can endure it	-3	0
It's impossible to bear such plight	-1	-1

The proportion of Vologda Oblast residents subjectively classifying themselves as “poor and extremely poor” in April – June 2023 was 42%. The share of those who classify themselves as “middle-income” people was 43–44%.

Compared to June 2022, mainly positive changes are noted: the share of the “poor and extremely poor” decreased by 2 percentage points (from 44 to 42%); the proportion of “middle-income” people increased by 2 percentage points (from 42 to 44%).

Social self-identification



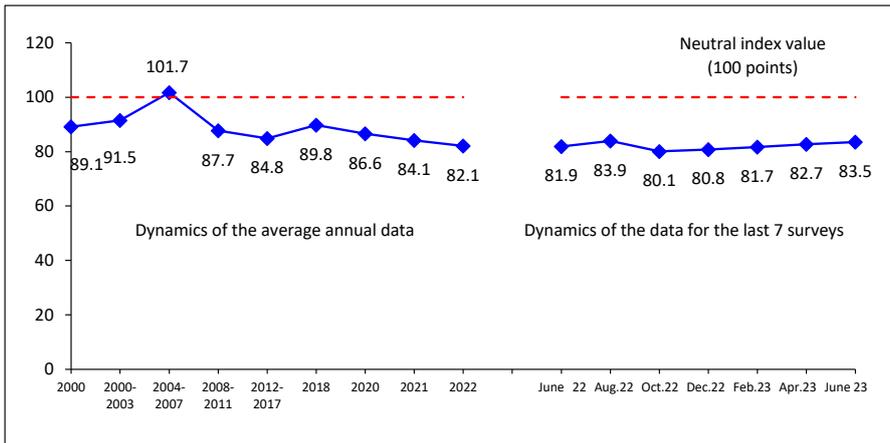
Dynamics (+/-), June 2023 to		
Answer option	June 2022	Apr. 2023
People with average income	+2	+1
Poor and extremely poor	-2	0

Question: “What category do you belong to, in your opinion?”

Over the past two months, the Consumer Sentiment Index (CSI) did not change; it amounted to 83–84 points.

Compared to June 2022, we note a positive trend: the CSI increased by 2 percentage points (from 82 to 84 points), which indicates a slight increase in people’s optimistic expectations about the future of the Russian economy and their personal financial situation.

Consumer Sentiment Index (CSI, points; data of VoIRC RAS for the Vologda Oblast)



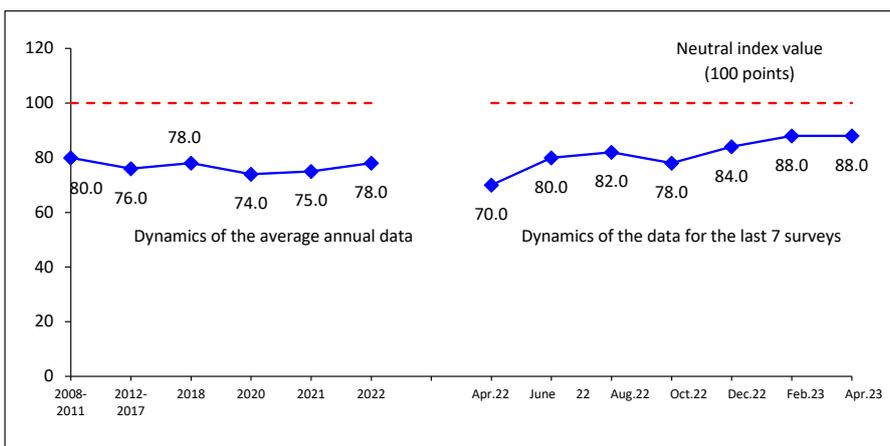
Dynamics (+/-), June 2023 to		
CSI	June 2022	Apr. 2023
Index value, points	+2	+1

For reference:

According to the latest data from the all-Russian polls conducted by Levada-Center*, the Consumer Sentiment Index for the period from February to April 2023 did not change and amounted to 88 points.

During the period from April 2022 to April 2023, positive changes are observed in the dynamics of the CSI (the index increased by 18 points, from 70 to 88 p.).

Consumer Sentiment Index (CSI; Levada-Center* data for Russia)



Dynamics (+/-), June 2023 to		
CSI	Apr. 2022	Feb. 2023
Index value, points	+18	0

The index is calculated since 2008.

Latest data are as of April 2023.

Source: Levada-Center*. Available at: URL: <https://www.levada.ru/indikatory/sotsialno-ekonomicheskie-indikatory/>

* Included in the register of foreign agents.

From April to June 2023, the estimates of social mood did not change significantly in most of the main socio-demographic groups (in 12 out of 14). Exceptions are those who, according to self-estimates of income, belong to the category of 20% of the least well-off (in this group, the share of positive characteristics of social mood increased by 3 percentage points, from 47 to 50%) and 20% of the most affluent (we note a decrease in the share of positive judgments by 6 percentage points, from 78 to 72%).

Over the past 12 months (from June 2022 to June 2023), negative changes were observed in almost all segments of the population, especially among people over 55 years of age (the share of positive assessments decreased by 10 percentage points, from 65 to 55%).

The share of positive assessments of social mood did not change only in two groups: people with higher and incomplete higher education (68–70%), and people aged 30–55 (69%).

Social mood in different social groups
(answer option: "Wonderful mood, normal, stable condition", % of respondents; VoIRC RAS data)

Population group	Dynamics of the average annual data										Dynamics of the data for the last 7 surveys						Dynamics (+/-), June 2023 to	
	2000	2007	2011	2012	2018	2019	2020	2021	2022	June 2022	Aug. 2022	Oct. 2022	Dec. 2022	Feb. 2023	Apr. 2023	June 2023	June 2022	Apr. 2023
Sex																		
Men	50.1	65.9	64.5	69.1	72.8	70.1	60.8	65.7	66.8	67.4	69.9	65.0	64.7	62.5	65.4	63.4	-4	-2
Women	43.3	61.7	62.0	65.8	69.8	69.6	61.2	67.4	67.9	69.7	70.2	63.3	66.5	62.7	63.4	64.7	-5	+1
Age																		
Under 30	59.1	71.3	70.0	72.3	80.0	81.1	67.6	73.5	77.6	77.3	77.8	74.5	78.7	70.6	72.9	72.9	-4	0
30–55	44.2	64.8	62.5	67.9	72.6	71.2	61.8	69.5	69.4	68.8	72.0	65.2	68.5	63.9	67.7	68.6	0	+1
Over 55	37.4	54.8	58.3	62.1	65.2	63.3	57.4	60.5	61.1	65.3	64.6	58.7	57.2	58.1	56.9	55.4	-10	-2
Education																		
Secondary and incomplete secondary	41.7	58.4	57.4	57.2	64.8	63.2	56.1	62.1	64.6	65.8	68.5	58.9	62.7	57.2	60.2	61.6	-4	+1
Secondary vocational	46.4	64.6	63.6	66.7	72.2	72.7	63.5	66.7	68.3	70.5	71.0	65.8	64.3	63.7	65.1	63.7	-7	-1
Higher and incomplete higher	53.3	68.6	68.3	77.0	76.8	73.4	63.3	71.5	69.5	69.7	70.8	67.5	70.6	67.3	67.3	68.2	-2	+1
Income group																		
Bottom 20%	28.4	51.6	45.3	51.5	57.3	53.2	43.4	54.6	57.0	58.4	55.4	50.7	55.4	46.2	47.8	50.4	-8	+3
Middle 60%	45.5	62.9	65.3	68.7	71.9	71.4	62.6	67.3	68.1	70.3	73.2	65.9	66.1	62.2	64.4	65.7	-5	+1
Top 20%	64.6	74.9	75.3	81.1	82.9	81.8	75.6	79.9	78.3	75.7	77.0	78.7	74.9	73.8	78.2	72.1	-4	-6
Territory																		
Vologda	49.2	63.1	67.1	73.6	71.0	68.6	60.9	60.3	59.8	61.0	61.5	55.7	57.2	54.5	56.0	57.8	-3	+2
Cherepovets	50.8	68.1	71.2	76.2	75.8	71.2	60.4	71.0	71.2	72.8	74.6	67.9	69.1	65.9	68.4	67.9	-5	-1
Districts	42.2	61.6	57.1	59.8	68.7	69.8	61.4	67.8	69.5	70.6	72.3	66.6	68.5	65.3	66.6	65.6	-5	-1
Oblast	46.2	63.6	63.1	67.3	71.2	69.9	61.0	66.6	67.4	68.7	70.1	64.1	65.7	62.6	64.3	64.1	-5	0

RESUME

The next round of the public opinion monitoring took place in May – June 2023 against the background of aggravated threats to national security, primarily of a military and terrorist nature, among which we should highlight the drone attack on residential areas of Moscow (May 30), the beginning of the AFU counteroffensive (June 4), the terrorist attack on the Kakhovka Hydroelectric Power Plant carried out on the night of June 5 to 6, 2023⁵.

However, according to the results of the surveys, these events did not lead to a significant increase in social tension. According to key monitoring indicators, public opinion remains stable:

- ✓ the level of support for the President of the Russian Federation (61%) and the Government of the Russian Federation (49%) remain high;
- ✓ the share of people who believe that the United Russia party, which makes up the majority in the State Duma, expresses their interests has not changed (39%);
- ✓ there are no negative changes in the dynamics of the assessment of the standard of living (the share of the “poor and extremely poor” remained at the level of 30–31%) and the prospects for its development (the consumer sentiment index was 83–84 points); moreover, in the past 12 months, there has been a significant increase in the share of those who believe that the RF President is successfully coping with the problem of economic recovery and welfare growth (by 6 percentage points, from 31 to 37%);
- ✓ estimates of social mood remain consistently high (the proportion of those who experience predominantly positive emotions was 64%; the proportion of people who believe that “everything is not so bad and life is livable; life is hard, but we can endure it” is 76%).

These data indicate that the society retains a high potential for stability, support for the head of state and the goals of the SMO. According to the latest VCIOM data (as of February 2023), 68% of Russians support the decision of the head of state to conduct the special military operation; 20% of the population holds the opposite opinion⁶.

At the same time, according to the results of VolRC RAS surveys, over the past year (June 2022 – June 2023) the majority of the main socio-demographic groups showed a decrease in the proportion of those who positively characterize their daily emotional state. Moreover, this applies not only to low-income groups (where the share of positive assessments of social mood decreased by 8 percentage points, from 58 to 50%), but also urban residents (a decrease of 3–5 percentage points, from 61 to 58% in Vologda and from 73 to 68% in Cherepovets), people aged over 55 (by 10 percentage points, from 65 to 55%), persons with secondary vocational education (by 7 percentage points, from 71 to 64%), etc.

The main negative changes in the dynamics of social well-being occurred in 2019–2020 (against the background of the COVID-19 pandemic): the share of positive assessments for this period decreased by 9 percentage points (from 70 to 61%), negative changes were registered in all major population groups. In this context, we can point out that in 2021–2022, estimates of social mood stabilized (at the level of 67%).

⁵ The survey took place before the events of June 24, related to the attempted armed rebellion organized by E. Prigozhin, head of the PMC Wagner.

⁶ Special military operation: A year later. VCIOM analytical review. February 20, 2023. Available at: <https://wciom.ru/analytical-reviews/analiticheskii-obzor/specialnaja-voennaja-operacija-god-spustja>

However, the general decline in the share of positive characteristics of social well-being in the annual retrospective indicates in many ways that the patience of society is an exhaustible resource, and, like any other resource, it requires “replenishment” in the form of tangible successes on the front line and in addressing issues of social justice in the rear.

In both cases, the situation remains quite tense so far. Official reports of the Ministry of Defense of the Russian Federation⁷, public statements of the Supreme Commander-in-Chief⁸, as well as the assessments of military experts⁹ clearly indicate that the attempts at counteroffensive strikes on the part of the Armed Forces of Ukraine have not yet been successful. But we should also note that “the offensive potential of the enemy has not been exhausted, a number of strategic reserves have not yet been used ... and it is necessary to proceed from the realities”¹⁰.

As for the issues related to bringing the public administration system in line with the principles of the welfare state and social justice, their solution is designed rather for the long term and will actually be implemented after the end of the hostilities.

Many of these questions were asked to the RF President by war correspondents during a meeting on June 13, 2023: about the personnel promotion of the military who distinguished themselves during the SMO; about payments to participants in hostilities; about people leading anti-Russian propaganda in the rear, etc.¹¹ And judging by the answers of the head of state, the solution of a significant part of these problems is in the process of implementation. The President openly acknowledged the accumulated nature of difficulties and shortcomings in many areas of public life (in the space industry, in the work of the military-industrial complex, in the functioning of the bureaucratic system. etc.), but he still noted that “in general, the situation is changing for the better”, “there is groundwork in all areas” and, no less important, it was the SMO that has revealed the situation when “it became clear that many things are missing”¹².

Thus, the absence of tangible positive changes in key indicators of public opinion monitoring in May – June 2023, taking into account the increased military and terrorist threats to national security, can be attributed more to the “pros” than to the “cons”. But it must be borne in mind that society is still waiting for the SMO goals to be fully achieved, and then positive changes will begin to occur in the internal life of the country; besides, society pins its hopes on the head of state. And these hopes cannot but be justified.

Materials were prepared by M.V. Morev, I.M. Bakhvalova

⁷ See, for example: Meeting of the President with Permanent members of the Security Council. Available at: <http://www.kremlin.ru/events/president/transcripts/71482>

⁸ See, for example: The President’s answer to a journalist’s question about the situation at the front. Available at: <http://www.kremlin.ru/events/president/transcripts/71474>

⁹ See, for example: The expert recognized the fact of the failure of the first wave of the AFU counteroffensive (opinion of K. Sivkov. Doctor of Military Sciences. Captain 1st rank. retired). Available at: <https://voennoedelo.com/posts/id46045-konstatirovan-fakt-provala-pervoj-volny-nastuplenija-vsu>

¹⁰ Meeting of the President with Permanent members of the Security Council. Available at: <http://www.kremlin.ru/events/president/transcripts/71482>

¹¹ Vladimir Putin’s meeting with war correspondents. Available at: <http://www.kremlin.ru/events/president/transcripts/71391>

¹² Ibidem.

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