FEDERAL STATE BUDGETARY INSTITUTION OF SCIENCE
VOLOGDA RESEARCH CENTER OF THE RUSSIAN ACADEMY OF SCIENCES

ECONOMIC AND SOCIAL CHANGES:

FACTS, TRENDS, FORECAST

Volume 17, Issue 2, 2024

The journal was founded in 2008

Publication frequency: bimonthly

The publication is dedicated to the 300th anniversary of RAS

According to the Decision of the Ministry of Education and Science of the Russian Federation, the journal *Economic and Social Changes: Facts, Trends, Forecast* is on the List of peer-reviewed scientific journals and editions that are authorized to publish principal research findings of doctoral (Ph.D., candidate's) dissertations in scientific specialties:
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All research articles submitted to the journal are subject to mandatory peer-review.
Opinions presented in the articles can differ from those of the editor.
Authors of the articles are responsible for the material selected and stated.

ISSN 2307-0331 (Print)
ISSN 2312-9824 (Online)

Internet address: **http://esc.volnc.ru**

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.

Founder: Vologda Research Center of the Russian Academy of Sciences

Federal State Budgetary Institution of Science Vologda Research Center of the Russian Academy of Sciences (VolRC RAS) is the only unit of the Academy on the territory of the Vologda Oblast. The history of the Center started in 1990 from a Department of the Institute for Economic Studies of the Kola Science Centre of RAS on studying the problems of socio-economic development of the Vologda Oblast. Since then the Center has undergone manifold transformations. In 1993 it became an independent subdivision – the Vologda Scientific Coordinating Center of RAS. In 2009 it transformed into the Institute of Socio-Economic Development of Territories of RAS (ISEDT RAS).

In 2017 the socio-economic research was supplemented by agricultural issues. ISEDT 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 VolRC 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.

INTERNATIONAL TIES AND PROJECTS

VolRC 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 ISEDT 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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DOI: 10.15838/esc.2024.2.92.1
UDC 354, LBC 66.03

A Solid "Mandate of Trust": 76 Million People Voted for Vladimir Putin's Fifth Presidential Term

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Abstract. According to the results of the presidential election held in Russia on March 17, 2024, more than 76 million people voted for the current head of state Vladimir Putin (87% of those who took part in the vote); this is almost twofold greater than in his first presidential election (on March 26, 2000, 40 million, or 53% of the voters who participated in the election, voted for Vladimir Putin). The article analyzes reasons for such a solid "mandate of trust" that the President obtained; they include not only the support of the majority of Russians for the general course of national development implemented by Vladimir Putin, but also the specifics of the historical period during which the 2024 presidential election was held, as well as the results of voting on the territory of the new RF constituent entities that joined Russia after the 2014 coup in Ukraine. In the context of the ongoing special military operation and lingering threats to national security, the internal situation in Russia, which determines popular support for the President, is of particular importance. In this regard, we draw attention to the importance of effective (full-fledged and timely) implementation of the election promises of the

For citation: Ilyin V.A., Morev M.V. (2024). A solid "mandate of trust": 76 million people voted for Vladimir Putin's fifth presidential term. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 9–42. DOI: 10.15838/esc.2024.2.92.1

head of state, which Vladimir Putin announced in his Address to the Federal Assembly of the Russian Federation on February 29, 2024. The fulfillment of the tasks set by the President for the period up to 2030 largely depends on the elites in the system of public administration; therefore, at the beginning of a new political cycle and Vladimir Putin's fifth presidential term (2024–2030) a lot will depend on the new Government of the Russian Federation, whose composition will be announced in May 2024, after the presidential inauguration. With the help of expert assessments, statistical data and the results of sociological surveys we analyze reasons for the incomplete fulfillment of instructions and tasks that Vladimir Putin outlined in his previous election speeches, and in relation to the current situation we conclude that the key conditions for further implementation of the national development course are the achievement of all the goals of the special military operation and the continuation of the process of nationalization of the elites. The article presents calculations based on official data of the Central Election Commission of the Russian Federation on the results of the presidential elections of 2024 and 2018 in all constituent entities and federal districts of the Russian Federation. We analyze the all-Russian dynamics of turnout and voting results in all presidential elections in Russia for the period from 2000 to 2024. We make an overview of expert assessments regarding the work of the RF Government headed by M.V. Mishustin. The facts showing the presence of acute unresolved problems in the system of public administration are collected and systematized in key areas of national development.

Key words: RF presidential election, national development course, elites, RF Government, "Time of heroes".

March 17, 2024, the presidential election was held in Russia; quite expectedly for the vast majority of experts, the current head of state, Vladimir Putin, won a landslide victory.

According to the data of the Central Election Commission of the Russian Federation (CEC RF), published on March 21, 2024[1], **more than 76 million people (87% of those who took part in the election) voted for Vladimir Putin.** It is important to note that in comparison with the previous presidential election (March 18, 2018), the share of votes cast for Vladimir Putin increased in almost all constituent entities and federal districts of the Russian Federation (*Appendix; pp. 37–41*).

An analysis of the CEC data for all the presidential elections held in Russia from 2000 to 2024 shows that **in the 24 years since Vladimir Putin was first elected head of state, his approval rating in the whole country has actually doubled (by almost 37 million people): from 39.74 to 76.28 million voters** (*Tab. 1*).

In our opinion, there are three constituent elements in the twofold increase in the level of support for Vladimir Putin in the presidential election in 2024 compared to 2000; each of the components is a kind of criterion for the effectiveness of public administration and Vladimir Putin's work as President of the Russian Federation:

The first element is actual assessment by the Russian society of the course of national development implemented by Vladimir Putin. According to experts, it is "approval of what the President has done in all previous years"[2].

[1] On the results of the RF presidential election scheduled for March 17, 2024: Resolution 163/1291-8 of the CEC RF, dated March 21, 2024. Available at: https://rg.ru/documents/2024/03/21/cik-post-resultaty2024-site-dok.html?ysclid=lvc0fiwyop599831692

[2] Political scientists discussed the results of the presidential election (opinion of A. Chesnakov, head of the Scientific Council at the Center for Political Conjuncture). Available at: https://rg.ru/2024/03/19/lider-i-brendy-ocenki.html?ysclid=lugn7jyv3x476786397

Table 1. Dynamics of voter turnout and approval rating of Vladimir Putin in the presidential elections for the period from 2000 to 2024 (nationwide, data of the Central Election Commission of the Russian Federation)

Indicator	Presidential election date						Dynamics (+/-), 2024 to …	
	March 26, 2000	March 14, 2004	March 2, 2008*	March 4, 2012	March 18, 2018	March 17, 2024	2018	2000
Turnout								
abs. million people	75.18	69.50	74.85	71.78	73.63	87.58	+13.95	+12.4
%	68.70	64.38	69.81	65.34	67.54	77.49	+9.95	+8.79
Support for Vladimir Putin								
abs. million people	39.74	49.56	52.53	45.60	56.43	76.28	+19.85	**+36.54**
%	52.94	71.31	70.28	63.60	76.69	87.28	+10.59	+34.34

* For Dmitry Medvedev.
Source: CEC RF.

The second element is expansion of the territorial borders of the Russian Federation. In total, almost five million people (4.77 million) voted for Vladimir Putin in the new territories of the Russian Federation (including the Republic of Crimea, city of Sevastopol, DPR, LPR, Zaporozhye and Kherson regions).

The third element is specifics of the historical period that Russia has been going through since Vladimir Putin announced the start of the special military operation on the territory of Ukraine (February 24, 2022).

In the context of increasing threats to national security: ongoing economic sanctions, the growth of terrorist activity on the part of the "Kiev regime"[3], as well as discussions at the highest level of the political and military leadership of NATO countries on the possibility of sending a military contingent to the zone of SMO, **the presidential elections in Russia were considered by society "as an event of common destiny, on which the future depends"**[4].

V.I. Egorov (Candidate of Sciences (Philology), State Duma deputy):

In the atmosphere of wartime, **the election was held in the mode of military mobilization... The logic "for power – or we perish" for many voters turned out to be the main dominant behavior on voting days".**

M. Muzaev (election expert, Moscow): "Surveys investigating the level of support for national leaders show that the rating of the government increases during tragedies and international conflicts... Therefore, indeed, **there is the effect of "consolidating around the flag" in the RF presidential election ... to deny the high rating of the President means to look at politics through rose-tinted spectacles. The Russians have given a mandate of support to the head of state against the background of the SMO"**[5].

[3] In 2022, the FSB of Russia prevented 34 terrorist attacks, in 2023 – 153 (4.5 times more). Available at: https://smotrim.ru/video/2787640?ysclid=luqpcxkjob465745053).

April 9, 2024, FSB Director A. Bortnikov announced that 27 terrorist attacks had been prevented in Russia since the beginning of 2024 alone. Available at: https://ria.ru/20240409/terrorizm-1938793985.html?ysclid=lusdrpsocp969833006).

[4] Political scientists discussed the results of the presidential election (opinion of A. Asafov, deputy chair of the Public Election Observation Headquarters in Moscow). Available at: https://rg.ru/2024/03/19/lider-i-brendy-ocenki.html?ysclid=lugn7jyv3x476786397

[5] The outcome of the presidential election: How can the results obtained by the contenders be assessed and what the prospects for the development of the domestic political situation in the country are: Analytical report of the Center for the Study of Political Culture of Russia. Available at: https://cipkr.ru/2024/03/26/analiticheskij-doklad-tsipkr-itogi-vyborov-prezidenta-kak-mozhno-otsenit-poluchennye-kandidatami-rezultaty-i-kakovy-perspektivy-razvitiya-vnutripoliticheskoj-situatsii-v-strane/

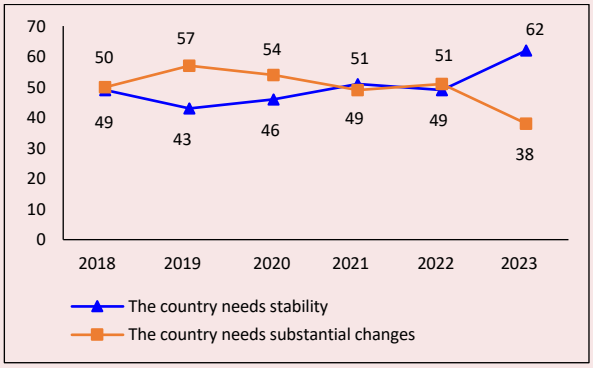
Therefore, it is no coincidence that among the motives of voters, many experts noted the effect of "consolidation around the flag", as well as the choice dictated by the logic such as "for power – or we perish".

This is also evidenced by the results of all-Russian and regional monitoring sociological studies, according to which, **since the beginning of the SMO, Russian society has shown an increased need for a stable and peaceful life**.

According to the Institute of Sociology FCTAS RAS, from 2022 to 2023, the share of Russians for whom stability is more important than change in the country increased by 13 percentage points (from 49 to 62%; *Fig. 1*). According to VolRC RAS public opinion monitoring, the proportion of Vologda Region residents who share this point of view increased by 8 percentage points over the period from 2022 to 2024 (from 39 to 47%; *Fig. 2*).

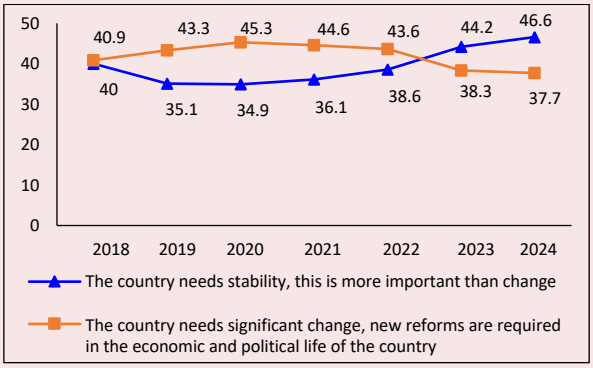
Today, as scientists note, "stability is the main thing that people want with all their heart"[6]; this is quite natural, because the understanding of stability before and during an actual full-fledged war has completely different content: in the first case, it is rather about stagnation, the absence of "new forms of economic and political life in the country"[7] and "maintaining a reduced standard of living"[8] (this was the reason for the request for change, which was observed before the start of the SMO); in the second case, stability is understood as the achievement of one of the natural human needs – the need for security.

Figure 1. "What is most important to you?" (IS FCTAS RAS data), % of respondents



Source: Rossiyskaya gazeta, November 22, 2023.

Figure 2. "What is more important for the country today – stability or change?" (VolRC RAS data), % of respondents



Source: VolRC RAS public opinion monitoring.

[6] Chetverikova A. Institute of Sociology of the Russian Academy of Sciences: The special operation gave Russians a feeling of belonging to a single people. Available at: https://rg.ru/2023/11/22/issledovanie-instituta-sociologii-ran-provedenie-specoperacii-porodilo-u-rossiian-oshchushchenie-prinadlezhnosti-k-edinomu-narodu.html?ysclid=lutg3eczi3112602781

[7] Russians want change, but they understand that "stability is what is currently required" (opinion of V. Petukhov, head of the Center for Integrated Social Research at the Institute of Sociology of the Russian Academy of Sciences). Available at: https://rg.ru/2019/07/04/vyzhutovich-rossiiane-hotiat-peremen-no-ponimaiut-chto-nuzhna-stabilnost.html?ysclid=lv685no95k275725863

[8] Ibidem (opinion of M.K. Gorshkov, survey supervisor, director of the Institute of Sociology of the Russian Academy of Sciences).

In conditions of a high level of uncertainty about the future and risks caused by threats to national security from the Collective West, Vladimir Putin's pre-election Address to the Federal Assembly of the Russian Federation inspired "confidence and optimism". This was noted by many experts[9]. Moreover, it is very important that "**80% of the Address announced by the head of state on February 29, 2024 was devoted to social policy and measures aimed at improving the quality of life of Russian citizens**"[10]. Vladimir Putin clearly outlined the goals and objectives for the next six years (until 2030) and, thus, let the public know that he understands how and at what expense the country will develop in the current geopolitical context.

At the same time, we should note that almost all pre-election public speeches by the President were oriented toward the future, contained a list of clear priorities for national development and concerned daily life of citizens (*Tab. 2*).

Some of the tasks set by the President of the Russian Federation in his Address to the Federal Assembly on February 29, 2024 to be implemented by 2030[11]**:**

- ✓ poverty level in Russia should be below 7%; among large families, it should decrease more than twofold, at least to 12%;
- ✓ maternity capital and the family mortgage program should be prolonged;
- ✓ life expectancy in Russia should reach at least 78 years;
- ✓ by 2030 to complete the major repairs of all schools; to open 12 leadership-level educational schools, 25 university campuses; to carry out major repairs of about 800 dormitories of higher education institutions and universities;
- ✓ minimum wage in Russia should increase almost twofold – up to 35 thousand rubles;
- ✓ by 2030 it is necessary to create digital platforms in all key sectors of the economy and social sphere;
- ✓ by 2030 to restore at least a thousand cultural heritage sites, to improve more than 30 thousand public spaces;
- ✓ by 2030 to allocate 4.5 trillion rubles for the modernization of municipal infrastructure;
- ✓ by 2030 the tourist flow should double and reach 140 million people per year; at the same time, the contribution of tourism to Russia's GDP will also double to 5%;
- ✓ in the next six years, more than a trillion rubles should be additionally allocated for the construction, repair and equipping of healthcare facilities;
- ✓ average income per employee in the field of small and medium-sized business in the next six years should grow faster than the rate of GDP growth.

[9] For example:
A. Voloshko, chair of the Legislative Assembly of the Primorye Territory. Available at: https://www.zspk.gov.ru/press-service/press-relizy/599220/?ysclid=lv2036nsw1951237132); A. Uss, senator of the Russian Federation from the Krasnoyarsk Territory. Available at: https://krasnoyarsk.er.ru/activity/news/aleksandr-uss-poslanie-prezidenta-vselyaet-uverennost-v-tom-chto-projdya-cherez-ispytaniya-rossiya-stanet-eshe-silnee?ysclid=lv202qpjl0673706621)

[10] A modern, comfortable and happy Russia. The President spoke about social policy for the next six years. Available at: https://www.gazeta.ru/social/2024/03/01/18354896.shtml?ysclid=lv200b20jg406719130&updated

[11] Presidential Address to the Federal Assembly, February 29, 2024. Available at: http://www.kremlin.ru/events/president/news/73585

Table 2. Vladimir Putin's public speeches before the presidential election

Source	Quote
"Open letter" to voters, February 25, 2000[12] (before the RF presidential election on March 26, 2000):	*"Our priority is to overcome our own poverty... if we are looking for a slogan for my election position, it is very simple. It's a decent life**; decent in the very sense in which most of my fellow citizens want to see it and believe in it"**.*
Vladimir Putin's speech before his trusted representatives, February 12, 2004[13] (before the RF presidential election on March 14, 2004):	***"The main goal of all out actions is to improve the quality of life**… Today we feel that the time of uncertainty and anxious expectations has passed. A new period has come – a period of work on creating conditions for the transition to a fundamentally better quality of life... it is in our power. And we will do it, we will definitely do it".*
Vladimir Putin's speech at an expanded meeting of the State Council "On the development strategy of Russia until 2020" February 8, 2008[14] (before the RF presidential election on March 2, 2008)	*"We need to ensure that **all citizens of our country**, using their knowledge and skills, and where necessary, state assistance, **have the opportunity to receive quality education, maintain their health, purchase housing, and receive decent incomes.** That is, to have a standard of living that determines belonging to the so-called middle class... today we set a much more ambitious task – to achieve a qualitative change in life, a qualitative change in the country, its economy and social sphere".*
Vladimir Putin's speech at the United Russia Party Congress on September 24, 2011[15] (before the RF presidential election on March 4, 2012)	*"If we really want to succeed, then **the focus of our attention should always be on a person – a citizen of Russia!** Russian families should feel positive changes in their lives, this is the main meaning and purpose of our entire work ... A lot needs to be changed for the better in our economy, in the social sphere, in the lives of our citizens. I am sure that we are able to do this and will do it on the basis of national consolidation".*
Address to the RF Federal Assembly on March 1, 2018[16] (before the RF presidential election on March 18, 2018)	*"At the heart of everything lies the preservation of the people of **Russia and the well-being of our citizens. It is here that we need to make a decisive breakthrough**... I think the main, key driver of development is the well-being of people, prosperity of Russian families…"*
Address to the RF Federal Assembly on February 29, 2024[17] (before the RF presidential election on March 17, 2024)	*"Citizens' proposals, their aspirations and hopes have become the basis, the core of those projects and initiatives that will be voiced today... The plans are big, the expenses are also significant. Large-scale investments in the social sphere, demography, economics, science, technology, infrastructure are coming... Solutions in the field of financial support for regions, economic growth, should **work to improve the quality of life of people** in all constituent entities of the Federation… I want to emphasize that the main result of our programs is not measured in tons, kilometers and the amount of money spent. **The main thing is assessment given by the people, how their lives are changing for the better**".*

[12] Official website of the RF President. Available at: http://www.kremlin.ru/events/president/transcripts/24144

[13] Official website of the RF President. Available at: http://www.kremlin.ru/events/president/transcripts/comminity_meetings/22393

[14] Official website of the RF President. Available at: http://www.kremlin.ru/events/president/transcripts/24825

[15] 12th Congress of the United Russia Party (transcript). Available at: http://www.kremlin.ru/events/president/news/12802

At the time of his speech on September 24, 2011, Vladimir Putin held the position of Chair of the Government of the Russian Federation and Chair of the United Russia Party. At the 12th Party Congress, he was nominated as a candidate from United Russia to participate in the RF presidential election on March 4, 2012.

[16] Official website of the RF President. Available at: http://www.kremlin.ru/acts/bank/42902/page/1

[17] Official website of the RF President. Available at: http://www.kremlin.ru/events/president/transcripts/73585

However, according to experts, many of the goals and objectives that were announced by the head of state on the eve of the presidential elections, were not fully achieved or remained "ink on paper".

And this is, obviously, due to the people who were entrusted with their implementation; those representatives of the ruling elites who were either unable or not interested in fulfilling the instructions of the head of state.

Many of their names became known after the beginning of the SMO (*Insert 1*), and, in short, **at different periods over the past 24 years, they were responsible for almost all key areas of state national policy: from the military-industrial complex and the economy to social development and interethnic relations.**

We can say that the threats to national security that the country faced after the start of the SMO made the task of achieving sovereignty in all spheres the issue of "life and death", and it depends primarily on the staffing of the public administration system – the ruling elites of the country, directly involved in the practical implementation of the guidelines designated by the head of state. However, even today, the real facts (*Insert 2*) indicate that elites often conduct their activities guided not by national interests and presidential instructions, but primarily by their own motives and ideological dogmas imposed on them by the Collective West, in particular through the recommendations and rules of international organizations (WTO, IOC, WHO, etc.).

"Activists of the All-Russian Popular Front (ONF) analyzed the implementation of the May decrees of Russian President Vladimir Putin. According to the statement of the head of the executive committee of the ONF A. Anisimova, out of 179 points, only 35 were fulfilled: "The ONF is monitoring the execution of orders based on eight May decrees and instructions for their development. Experts have prepared conclusions on the reports of the Russian government on 179 instructions within the framework of the implementation of the May decrees and in their development. Of these, the ONF considers 35 orders fulfilled, 44 orders are not executed, and 100 orders are partially executed and require revision"[18].

"On the eve of the announcement of the new presidential address to the Federal Assembly, the People's Front "For Russia" (NF) reported on the execution of the previous two. It turned out that the message of 2023 has been fulfilled by 86% so far, and the message of 2021 – only by 61%"[19].

We emphasize that these facts took place after the start of the SMO and therefore the doubts of experts that the special military operation really changed something in the Russian elites become quite understandable – **so much so that they can match the scale of the challenges and tasks facing the country at such a turning point in history**... Including the implementation of the instructions of the head of state, which were voiced in the Address to the Federal Assembly on February 29, 2024.

[18] The ONF reported on problems related to the implementation of the president's instructions. Available at: https://ura.news/news/1052759228

[19] That's what needed to be checked. Available at: https://www.kommersant.ru/doc/6533586

Insert 1

Main areas of governmental policy supervised by former members of the Government of the Russian Federation who left the country after February 24, 2022

Former Russian Prime Minister Mikhail Kasyanov has left Russia and now lives in Latvia. Deputy Prime Minister Aleksandr Dvorkovich has left for the United States. Israel was chosen as a place of residence by former deputy heads of government I. Klebanov, A. Khloponin and Ministers Ya. Urinson and M. Akimov. Former head of State Property A. Kokh lives in Germany. V. Khristenko has an apartment in Spain. Former Deputy Prime Minister O. Golodets lives in two countries, one of them is Spain. Former heads of the Presidential Administration of the Russian Federation live abroad (V. Voloshin, V. Yumashev with B. Yeltsin's daughter Tatyana), as well as former ministers and their deputies (A. Kozyrev, E. Skrynnik, A. Vavilov, I. Chuyan, A. Reimer, etc.), many former governors and their deputies, hundreds of federal government officials!"*[20]

For reference:

- ✓ M. Kasyanov*: Chair of the Government in 2000–2004;
- ✓ I. Klebanov: Deputy Chair of the Government of the Russian Federation, in 2000–2004 supervised issues of the military-industrial complex;
- ✓ V. Khristenko: Minister of Industry and Energy, Deputy Chair of the Government of the Russian Federation in 2000–2004;
- ✓ A. Dvorkovich: since 2000, Adviser to the Minister of Economic Development and Trade of the Russian Federation G. Gref; since 2008 – Assistant to President Dmitry Medvedev; in 2012–2018 – Deputy Chair of the Government of the Russian Federation;
- ✓ E. Skrynnik: Minister of Agriculture of the Russian Federation in 2009–2012;
- ✓ I. Chuyan: from 2009 to 2018 – Head of Rosalkogolregulirovanie (Federal Service for Alcohol Market Regulation);
- ✓ A. Khloponin: Deputy Chair of the Government of the Russian Federation from 2010 to 2018, Plenipotentiary Representative of the President of the Russian Federation in the North Caucasus Federal District; supervised the sphere of environmental management and turnover of alcoholic beverages, as well as issues of implementation of state national policy, improvement of organizational and legal foundations of national relations;
- ✓ O. Golodets: Deputy Chair of the Government of the Russian Federation from 2012 to 2020; supervised issues of healthcare, demography, labor relations, social development;
- ✓ M. Akimov: Deputy Chair of the Government of the Russian Federation from 2018 to 2020; supervised issues of communications, transport and digitalization of the economy...

* Included in the register of foreign agents.

[20] Toshchenko Zh.T. Old and new faces of betrayal. *Pravda*, 2023, no. 86, January 30.

Insert 2

Expert opinion on the problems of public administration efficiency

ECONOMY	
S. Anureev (Doctor of Sciences (Economics), professor at the Public Finance Department of the Financial University under the RF Government)[21]	"We have the highest tax burden on the manufacturing industry, and the lowest – on trade, services, banks, metal and coal exporters.... The most serious users of fragmentation and simplified taxation system are Yandex with pseudo-self-employed taxi drivers and delivery agents, as well as Wildberries with its outlets on the franchise. Taxi drivers pay 6% to the budget and 20–28% to Yandex, and if it were the other way around, the tax effect would be comparable, for example, with all federal subsidies to the regions of the North Caucasus. What if the outlets of Wildberries worked on the general tax system, and the branches of the Russian Post worked on the franchise and simplified taxation system? The previously discussed infrastructure fee from marketplaces to support the Russian Post at 0.5% of turnover is negligible. Restaurants and banks clearly earn above average, and taxes are visibly less than average, which can also be calculated from monthly tax statistics. It is easier and more profitable for young people to pour out coffee in Moscow caf s than to work on UAZ conveyor belt, for instance. Restaurants and banks do not officially pay VAT".
M. Delyagin (RF State Duma deputy)	"The descent into savagery of a significant part of Russia's top leadership, formed by 36 years of national betrayal that have not yet been completed, is clearly manifested in the fact that Russian bureaucrats are strong advocates of Russia's WTO membership. Let me remind you that liberals and oligarchs serving the interests of the West dragged our country into the WTO on deliberately enslaving, colonial conditions that exclude the possibility of full-scale development and turn us into an eternal "reliable and conscientious" donor of vital organs – raw materials, finance, brains and young people..."[22] "The RF Constitution proclaims the right to life. However, the state guarantees the economic expression of this right – a living wage (and even that is greatly underestimated) – only to pensioners and those officially employed full-time, thereby depriving the rest of the country's population of the right to life...According to Russian insurers, even at the beginning of coronavirus hysteria, more than 70% of Russians earned less than 25 thousand rubles per month per person (which then roughly corresponded to the real living wage, since the official one, according to estimates, was underestimated by at least half)"[23]. "The reorientation of the state from plundering Russia to its re-creation, and the economy from financial speculation to the development of technology requires a new tax system. It is necessary to abolish the monstrous "tax maneuver" (from 2018 in the oil industry, and from 2021 in the ferrous metallurgy), which withdraws the superprofits of the oligarchs not from their pockets, but from the pockets of the people and accelerates inflation...It is reasonable to untie the mineral extraction tax from world prices... We need a progressive scale of individual income tax (including dividends), mandatory social contributions, real estate and inheritance taxes (with exemption of the extremely poor from taxation and reduction of taxation for the poor), as well as fines, following the example of Finland... Instead of more than a decade of empty rhetoric about the "luxury tax", it is necessary to apply an imputed income tax after the Swiss model, based on the fact that the cost of maintaining a property cannot exceed a quarter of the income of its owner"[24].

[21] Anureev S. Putin's Address: Achievable goals without stalling, the "ball" passed to experts and officials. Available at: https://zavtra.ru/blogs/poslanie_putina_dostizhimie_tceli_bez_raskachki_myach_ekspertam_i_chinovnikam?ysclid=lumlb0h7y1858303711

[22] Delyagin M. It's high time you abandoned the rotting corpse of the WTO at last! Available at: https://zavtra.ru/blogs/da_vijdite_zhe_vi_nakonetc_iz_gniyushego_trupa_vto?ysclid=lvbyyal1rt798985089

[23] Delyagin M. The right to life is the sacred foundation of economic growth. Available at: https://zavtra.ru/blogs/povestka_dnya_-_9_pravo_na_zhizn_svyashennaya_osnova_ekonomicheskogo_rosta?ysclid=lvbyzwlypy452142695

[24] Delyagin M. Tax revolution. Available at: https://zavtra.ru/blogs/povestka_dnya_-_18_nalogovaya_revolyutciya_vse_dlya_dobavlennoj_stoimosti?ysclid=lvbz0xwl2m426740197

Continuation of Insert 2

EDUCATION, CULTURE, SPORT	
E. Birov (journalist)[25]	"...potential reduction in the amount of hours of instructional time spent on the subject "Fundamentals of the spiritual and moral culture of the peoples of the Russian Federation" is far from the worst thing that has happened in education... The school system under Sergey Kravtsov, Minister of Education, is experiencing serious degradation, despite the minister's bravura reports to the president about a certain moral revival in education. First, despite the beautiful and lofty words, the principle of educational services still prevails in the school... Second, respect toward teachers has not been instilled in the school; teachers do not have real mechanisms for educating and managing unruly children... Third, schools are still overcrowded (in large cities), teachers work at two rates, often in two shifts. There is a huge shortage of personnel; young teachers cannot withstand the crazy load and quickly leave ... Fourth, despite the anthems, conversations about important things and advisers on education, patriotic education is at a very low level. Often all these initiatives are turned into events for show... Fifth, the training programs are still full of oddities and distortions, somewhere there is a huge overload of data, and somewhere there is primitive presentation".
D. Korikov (lawyer, author of the educational project "Our Society") [26]	On March 19, 2024, the Ministry of Education of the Russian Federation published[27] Order 171, according to which, from September 1, 2025, social studies will be excluded from the school curriculum of grades 6–8. The introduction of the initiative can lead to students' failing main state exams (OGE) and the development of legal illiteracy among teenagers, says Dmitry Kokorikov, a lawyer, tutor, author of the educational project "Our Society": "Children aged 15–16 study in the ninth grade. So, they only find out at this age that they can be subject to criminal liability for some crimes since the age of 14, and since the age of 16, administrative liability begins... That is, at school we will talk about some super-advantages of the Russian economic system. But at the same time, we will not have to explain what an economic system is in general, that it can be market, traditional and command... Some teachers and school principals, on condition of anonymity, said that despite the changes in the program, they plan to introduce students to social studies on their own. In particular, to touch upon the topics of law and social relations in history lessons, as well as invite ninth graders to additional electives in preparation for the OGE in social studies". "The "Teacher" trade union has collected almost three thousand signatures against the reduction of the social studies course in schools. The signatures have already been sent to the Ministry of Education. Earlier, other public organizations, such as the Association of Teachers of History and Social Studies, sent appeals on this issue to the Ministry. The main complaint of teachers is the lack of a broad public discussion of such a serious reform, which involves the exclusion of the subject from three grades at once – from 6th to 8th"[28].

[25] Birov E. Patriarch is deservedly dissatisfied with Kravtsov's work. Available at: https://zavtra.ru/blogs/patriarh_zasluzhenno_nedovolen_rabotoj_kravtcova?ysclid=lumcvfl mxl313978541

[26] Social studies are excluded from secondary school. Experts' and teachers' attitude toward the initiative. Available at: https://www.kommersant.ru/doc/6608740

[27] "On amendments to some orders of the Ministry of Education of the Russian Federation concerning federal educational programs of primary general education, basic general education and secondary general education". Available at: http://publication.pravo.gov.ru/document/0001202404120003

[28] Social drop-out: Teachers demand to discuss the reform of social studies. Available at: https://iz.ru/1667510/sergei-gurianov/deklassirovannyi-element-uchitelia-trebuiut-obsudit-reformu-obshchestvoznaniia

Continuation of Insert 2

A. Goncharov (journalist) [29]	"Recently, the poetry collection of the Soviet and Russian writer, editor-in-chief of our newspaper Aleksandr Prokhanov was subjected to a hidden liberal obstruction... The commercial site Marketplace LLC did not distribute the book *Rasplavlennyi svinets* ("Molten Lead") (Prokhanov's poems devoted to the SMO). At the request of the publishers about the reason for the refusal, the following answer was received: "The product is prohibited for placement on the "Megamarket" site. Due to the unstable political situation, goods that may cause internal conflicts are not allowed to be sold on the site..." The OZON site has sent a notice of termination of distribution of this publication "in connection with customer complaints".
A. Ivanov (journalist)[30]	On March 7, the Ministry of Sports of the Russian Federation excluded Kamila Valieva from the lists of candidates for the Russian national team. The document of the Ministry of Sports clarifies that the exclusion of seventeen-year-old Kamila was carried out according to the regulations of the department. "Everything has been done in accordance with legislative documents", A. Kogan, director general of the Russian Figure Skating Federation, told TASS. How should we treat all this? With the deepest contempt, of course. To the bureaucrats (and their lackeys from the media), who, in principle, quite sincerely do not imagine any other form of relationship with Western elites, other than passive participation in doggy style games. It is impossible to reorient officials, and there are a great many of them – far from only in the sports field. They are educated, they owe their careers to this paradigm, within which there is only the almighty West and its lackeys. TV and radio presenter Sergey Mardan: "The situation turns out very ugly. Two years ago, all the Russian media, as well as all official speakers without exception, were foaming at the mouth saying that everything that was happening around Kamila Valieva was a disgrace, Russophobia and, they said, we would stand up for our dear little Kamila. The year 2024 is coming and the head of the Figure Skating Federation excludes Valieva from the national team for violating doping rules. Absolutely everyone who publicly defended Kamila two years ago finds themselves in the position of idiots. And only Aleksandr Kogan is squeaky clean and can safely travel the world as a person who does not violate any sanctions at all".
SCIENCE	
RAS experts[31]: ✓ G. Chucheva, Chair of the trade union, deputy director for science at Kotelnikov Institute of Radioengineering and Electronics of the Russian Academy of Sciences	"In the vast majority of developed and actively developing countries of the world (USA, China, Western European countries, Japan, South Korea), domestic research and development costs in relation to GDP are growing and exceed 2% of GDP, reaching even 4–5%. In Russia, this indicator has not increased in recent decades, mainly being in the range of 1–1.1% of GDP. And since 2020, it started to fall, and in 2022 it fell to the level of the 1990s – 0.94% of GDP. Budget expenditures on science in relation to GDP, including expenditures on basic research, are also falling. The Russian government ignored the recommendations of the Russian Academy of Sciences to allocate 415 billion rubles for basic research in 2024. It is planned to allocate 261 billion rubles, which is only 3.3% higher than the level of 2023 (with planned inflation at the level of 4.5%!)".

[29] Goncharov A. Sabotage without embellishment. Available at: https://zavtra.ru/blogs/sabotazh_bez_prikras?ysclid=lumdsaig8z997108882

[30] Ivanov A. It is necessary to "say out loud: Yes, figure skater Valieva is a Russian soldier at the war with the West". Available at: https://zavtra.ru/events/neobhodimo_skazat_vsluh_da_figuristka_valieva_eto_russkij_soldat_na_vojne_s_zapadom?ysclid=lumixbhet9673259839

[31] Press conference of the Trade Union of Workers of the Russian Academy of Sciences "Bleak financial prospects of Russian science in the year of the 300th anniversary of the Russian Academy of Sciences". Available at: https://new.ras.ru/activities/news/press-konferentsiya-profsoyuza-rabotnikov-rossiyskoy-akademii-nauk-bezradostnye-finansovye-perspekti/?ysclid=lv3o76akgv66483491

Continuation of Insert 2

	G. Chucheva, Chair of the trade union, deputy director for science at Kotelnikov Institute of Radioengineering and Electronics of the Russian Academy of Sciences: "Basic budgets of most of our institutions are spent mainly on modest salaries of the main staff, utilities and, if there is money left, for housekeeping needs. As for the purchase of consumables and equipment, the maintenance of infrastructure, it is done mainly with the help of grants and contracts, if there are any. In such conditions, it is extremely difficult to attract and retain young people, conduct breakthrough research, and not fall out of the global research mainstream".
✓ E. Onishchenko, Deputy Chair of the trade union, researcher at P.N. Lebedev Physical Institute	"In recent decades, domestic research and development costs in Russia amounted to about 1% of GDP, and from 2020 they began to decrease, falling to the level of the 1990s. In developed countries, this figure is 2–4 times higher. The situation is no better with the financing of basic research, the responsibility for the development of which lies with the government. In 2024, less than 0.15% of GDP is planned to be allocated from the budget for basic science; it is the lowest figure in the years of modern Russian history. In most developed countries, the figures are many times higher – 0.4–0.6%, and this level of financing is typical for the top thirty countries, and not the top five, which we dream so much of getting into".
✓ V. Kalinushkin, head of department at General Physics Institute of the Russian Academy of Sciences	"A huge problem associated with continuous underfunding is the imbalance in salaries of scientists from the central part of the country and regions, as well as in salaries of researchers and other categories of employees of research institutes, which has accumulated over the years of lack of money. How can we retain qualified staff when an engineer who worked at the Research Institute for decades receives three times less than a newly employed junior researcher?... An alarming factor is the researchers' lack of financial stability. The guaranteed part of remuneration – salaries – is only 20–30% of the money received. Without additional investments it is impossible to introduce a new remuneration system with an increased salary in science, as officials have been promising for several years".
✓ Academician B. Kashin, Deputy Academician-Secretary of the Department of Mathematical Sciences of the Russian Academy of Sciences, Chief Researcher at Steklov Mathematical Institute of the Russian Academy of Sciences	"After the presidential election, a new government will be formed. Therefore, the scientific community needs to think about whether the current form of science management meets the needs of the relevant community and the needs of the state, and in case of a negative answer, raise the question of changing it... From my point of view, the Ministry of Science and Higher Education has shown complete helplessness in terms of science, without solving any of the urgent problems that prevent scientists from working. Instead of developing comprehensive solutions to really important issues, officials are inventing indicators to evaluate the work of scientists".

End of Insert 2

CORRUPTION IN THE PUBLIC ADMINISTRATION SYSTEM	
RIA-novosti July 24, 2023[32]	"Investigators detained K. Polezhaev, former vice governor of the Belgorod Region, on suspicion of receiving a grand bribe – 17 million rubles ... Ex-mayor of Belgorod Anton Ivanov (2021–2022) was detained by FSB officers under a similar article – suspicion of grand bribery. On March 20, another official from Savchenko's team was detained. He was former mayor of Stary Oskol (2018–2021) A. Sergienko, who was accused of receiving three bribes totaling 15 million rubles".
RIA-novosti October 19, 2023[33]	"The Basmanny Court of Moscow arrested in absentia former top manager of Roscosmos V. Meshkov in the case of a grand fraud... Meshkov is involved in the theft of more than 600 million budget rubles allocated for the reconstruction of stands in the Research Center for the Rocket and Space Industry. This is the main structure of Roscosmos, which is engaged in testing liquid rocket engines... Now the suspect is abroad, he has been put on the international wanted list. Meshkov is valid state councilor of the 3rd class. In 2016, he headed the department of capital construction of Roscosmos and became an adviser to the general director of the state corporation. In 2019, he moved to the position of deputy head of the department in the office of the presidential envoy to the Volga Federal District".
RIA-novosti December 22, 2023[34]	"The Main Investigative Department of the Investigative Committee of the Russian Federation is investigating a criminal case against Oleg Frolov, Deputy Director General of the State Corporation for Space Activities Roscosmos, an individual entrepreneur, as well as a representative of a commercial organization. Each of the three defendants has been charged with committing a crime under Part 4 of Article 159 of the Criminal Code of Russia (grand fraud)".
RIA-novosti April 8, 2024[35].	"In the Krasnoyarsk Territory, ex-head of the department of JSC Academician M. F. Reshetnev Information Satellite Systems was detained on charges of fraud in excess of 28 million rubles. A criminal case has been launched... According to data from open sources, JSC Academician M. F. Reshetnev Information Satellite Systems is located in Zheleznogorsk, Krasnoyarsk Territory. The company is a leader in the creation of communication, broadcasting, retransmission, navigation, and geodesy spacecraft".
RBK April 24, 2024[36]	"The Basmanny Court sent Deputy Defense Minister Timur Ivanov to jail. He was arrested for two months, until June 23. Ivanov was charged under Part 6 of Article 290 of the Criminal Code (receiving a grand bribe) ... In several Russian regions, security forces are conducting dozens of searches related to the case of Deputy Defense Minister Timur Ivanov... The materials of the criminal case are related to Ivanov's official duties. The case may become multi-episode, as the investigation interviews possible participants in criminal activity who give evidence".

[32] Polezhaev, former vice-governor of the Belgorod Region, was detained on bribery charges. Available at: https://www.vedomosti.ru/politics/articles/2023/07/24/986576-bivshego-vitse-gubernatora-belgorodskoi-oblasti-polezhaeva-zaderzhali-po-delu-o-vzyatke

[33] In Moscow, former top manager of Roscosmos, Meshkov, was arrested in absentia. Available at: https://ria.ru/20231019/sud-1903770295.html?in=t

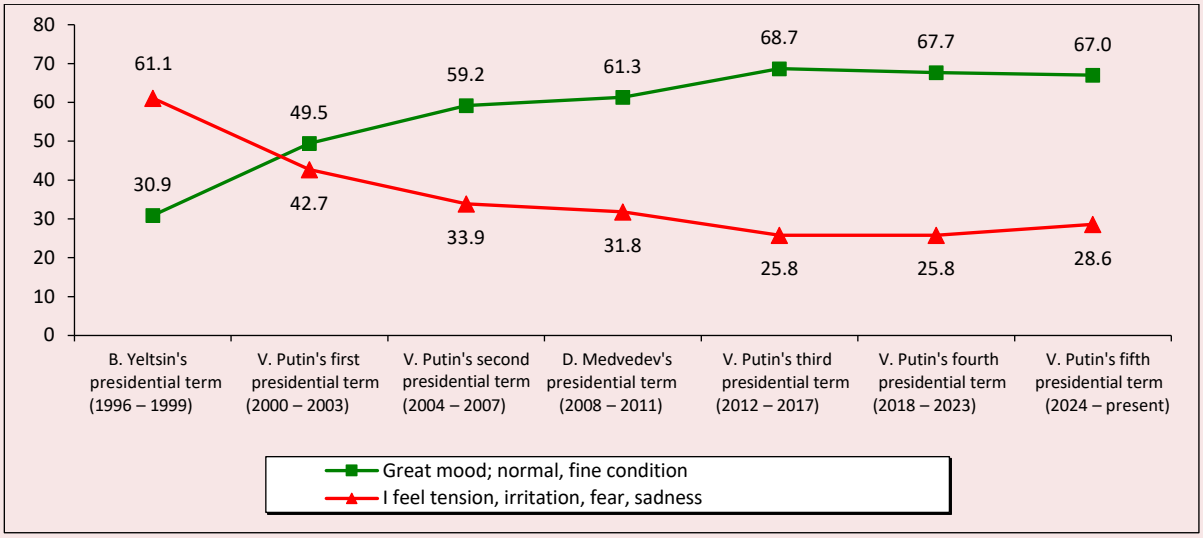
[34] Deputy director-general of Roscosmos was accused of fraud. Available at: https://ria.ru/20231222/obvinenie-1917585930.html?in=t

[35] Ex-head of the Roscosmos enterprise was suspected of fraud. Available at: https://ria.ru/20240408/moshennichestvo-1938496833.html?ysclid=lvbzcsps71376950195

[36] The court arrested deputy defense minister Timur Ivanov. Available at: https://www.rbc.ru/politics/24/04/2024/6628aa7c9a7947bd29bfbe82?ysclid=lvdj4d6ce4469838502

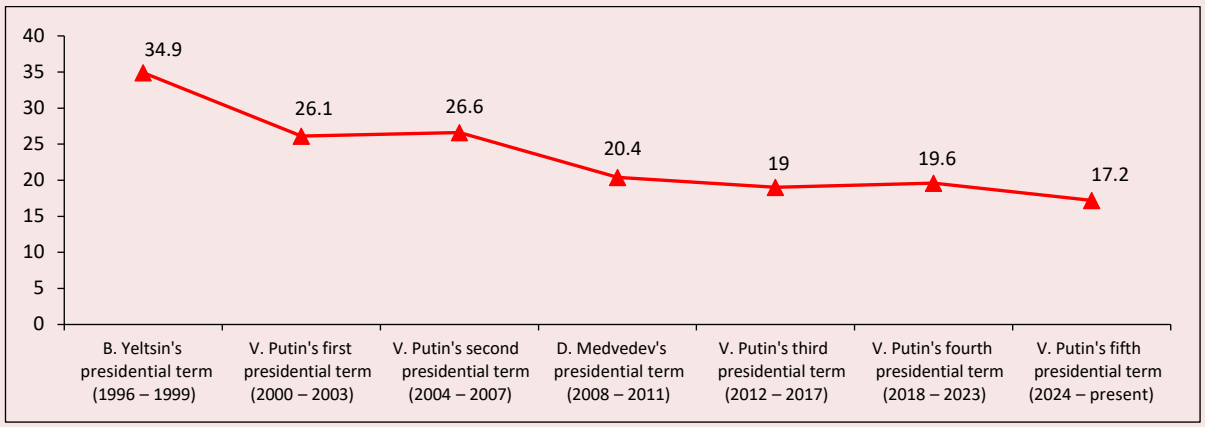
However, the issue is not even about achieving the specific indicators contained in the Address. As we noted earlier, many of them had not been achieved before, but this did not affect the stability of such important trends in society as an increase in the level of trust in almost all state and public institutions in the country (including all authorities), an improvement in the psychological well-being of the population (*Insert 3*), which "largely depends on the degree of resolvability of social problems and contradictions, as well as satisfaction of social interests[37]), decrease in protest potential (*Fig. 3*), and many others (*Fig. 4*).

Figure 3. Dynamics of social mood (VolRC RAS average annual data), % of respondents



Wording of the question: "What could you say about your mood in recent days?"

Figure 4. Dynamics of protest potential (VolRC RAS average annual data), % of respondents



The protest potential is the proportion of respondents who answered the question "What are you ready to do to protect your interests?" as follows: "I will go to a rally, demonstration"; "I will participate in strikes, protest actions"; "If necessary, I will take up arms, I will go to the barricades".

[37] Kharchenko S.V. (2011). Phenomenon and the nature of social attitudes. *Mir nauki, kultory, obrazovaniya*, 1, 168–170.

Insert 3

Dynamics of the level of trust in state and public institutions (*VolRC RAS data, % of respondents*)

Answer option	Average annual data							Dynamics (+/-), 2024 to 1996
	Presidential term of Boris Yeltsin (1996*)	Vladimir Putin's first presidential term (2000–2003)	Vladimir Putin's second presidential term (2004–2007)	Dmitry Medvedev's presidential term (2008–2011)	Vladimir Putin's third presidential term (2012–2017)	Vladimir Putin's fourth presidential term (2018–2023)	Vladimir Putin's fifth presidential term (2024**)	
RF President	26.5	58.2	58.6	56.0	55.3	54.3	59.3	+33
RF Government	18.5	39.3	39.3	51.7	45.5	43.8	51.9	+33
Police	14.1	26.0	27.0	33.6	37.2	43.4	49.6	+36
Prosecutor's Office	18.2	28.9	31.9	36.8	39.5	45.4	49.5	+31
Church	37.9	42.6	44.3	47.8	44.7	46.8	48.1	+10
FSB	12.6	32.6	33.4	37.5	38.5	43.7	47.2	+35
Army	34.2	33.8	27.8	35.0	39.6	42.6	46.8	+13
Court	19.8	30.9	33.9	37.4	39.1	42.2	46.3	+27
Leadership of the region	14.2	28.6	35.3	40.3	36.6	36.5	44.0	+30
Federation Council	13.4	27.9	31.7	39.3	37.4	34.2	43.3	+30
Local government bodies	-	-	29.5	35.9	32.9	34.3	42.9	-
Scientific organizations	-	-	-	-	-	34.0	41.2	-
RF Civic Chamber	-	-	-	27.3	31.2	30.3	39.2	-
State Duma	14.8	22.5	27.6	35.3	33.1	31.1	38.7	+24
Civic Chamber of the region	-	-	-	25.3	28.1	28.6	37.6	-
Mass media	15.4	29.1	29.1	30.5	28.0	29.7	36.9	+22
Trade unions	20.2	26.0	27.6	31.0	27.4	31.2	36.8	+17
Public organizations	-	-	22.2	27.5	25.5	28.0	36.3	-
Directors, CEOs	5.2	20.1	23.8	24.5	23.0	24.1	31.9	+27
Political parties, movements	6.8	12.9	17.2	23.1	19.5	21.6	30.1	+23
Bankers, entrepreneurs	8.5	13.9	20.5	22.2	19.4	21.8	29.7	+21

* The question was asked only in 1996.
** The question is asked twice a year (in April and October). The table shows data for April 2024.
Wording of the question: "Please determine your attitude toward the public structures and institutions of power operating in the country" (answer options: "I fully trust" and "I mostly trust").

In addition, the Government of the Russian Federation, chaired by Mikhail Mishustin (whose candidacy was proposed by the President on January 15, 2020), has managed to do a lot in four years to ensure that the Russian economy could develop successfully, and in extremely difficult conditions associated first with the COVID-19 epidemic, and then with the special military operation (*Insert 4*).

Today, the President and the Government continue to actively take measures aimed at strengthening the Russian economy, supporting the population and restoring order in the country, which ultimately allows Russia to continue to fight for its national sovereignty, or rather for the preservation of its statehood, culture, and territorial borders (*Insert 5*).

Thus, we cannot but agree that "currently, the immune system of our country is mobilized and is functioning at its peak[38] and that it has **"a large number of real patriots; a relatively large healthy core that is pulling the country out of the abyss"**. But given the unprecedented threats to national security that Russia has faced since February 24, 2022, it would be short-sighted and simply dangerous to look at the situation in the country through rose-tinted spectacles.

"... We cannot say that the entire current dominant social stratum is totally affected by vices, there is also a relatively large healthy core in it. This very core is now pulling the country out of the abyss, pushing through the measures necessary for its survival and development... There are many statespeople who, due to the circumstances, had to hide their patriotic views for a long time, adapt and work within the framework of the liberal matrix program imposed on the country and the total dominance of its bearers in government. In addition, both at the lower and middle levels, there are still a large number of real patriots in power"[39].

The problem, as we have already said, is not that some of the goals outlined in the Address have been achieved, and some have not, but that today for Russia there arises a question of "to be or not to be": the country must make a full-fledged U-turn from the liberal past in which it has existed for the last 30 years and which has produced not just a generation of elites, but an entire generation of Russian society. Therefore, the reversal should be appropriate in scale: starting from the everyday consciousness of ordinary citizens and ending with the conceptual, system-forming principles of economic development, culture, domestic and foreign policy, moral guidelines.

It is a big question whether the current ruling elite, in which "a critical mass of people who are incapable of mobilization and historical breakthrough, has accumulated over the previous ... decades"[40], will be capable of making such a U-turn. This, of course, arouses concern for the future of the country in the external context in which it found itself after February 24, 2022.

"The presence of a large "liberal tumor" that has formed over decades significantly complicates and hinders the implementation of solutions necessary for the survival and development of the country... **There are not so many outright enemies, as they say, but they are well placed"**[41].

[38] Shkolnikov A. The immune system does not understand jokes. Available at: https://zavtra.ru/blogs/immunnaya_sistema_shutok_ne_ponimaet?ysclid=lumdm3w0t9636788891

[39] Kassin O. On the "political oncology" of the modern "elite" and measures for its treatment. Available at: https://zavtra.ru/blogs/o_politicheskoj_onkologii_sovremennoj_eliti_i_merah_eyo_lecheniya?ysclid=lumf3jtu5x135750817

[40] Dugin A. We need an image of the Victory. Available at: https://zavtra.ru/blogs/nam_neobhodim_obraz_pobedi?ysclid=luqleiyu8z777167398

[41] Kassin O. On the "political oncology" of the modern "elite" and measures for its treatment. Available at: https://zavtra.ru/blogs/o_politicheskoj_onkologii_sovremennoj_eliti_i_merah_eyo_lecheniya?ysclid=lumf3jtu5x135750817

Insert 4

Experts on the work of the Mishustin Government

M.G. Delyagin (RF State Duma deputy)	*"During the four years of its work, the Government of Mikhail Mishustin has demonstrated outstanding abilities to stabilize the socio-economic situation ..."*[42]
	"The Mishustin Government had to act, in fact, in extraordinary circumstances, solving the tasks primarily of stabilizing, adaptinga highly integrated economy to fundamentally new conditions of the collapse of global markets and the formation of macro regions... And we must pay tribute – the Mishustin Government has demonstrated outstanding abilities to stabilize the socio-economic situation... the main success factor is the organization of the socio-economic sphere by the Mishustin Government"[43].
	"The Mishustin Government as a whole, being unable to call the Ministry of Finance to order (due to its exceptional political influence), is forced to compensate for the consequences of its policy, in fact, with the help of emergency measures, which in today's situation are fully justified... It should be noted that Prime Minister Mishustin has become a true virtuoso in the way he responds to the current situation. It is thanks to his efforts that the Russian economy as a whole is developing quite stably and successfully, and its key areas receive timely protection from the destructive actions of the liberal financial authorities"[44].
	"Investment growth in 2023 amounted to 9.8%. This is only slightly less than at the beginning of the 2000s, when, after the impetus given to the Russian economy by the concerted efforts of the Primakov – Maslyukov Government and the Central Bank headed by Gerashchenko, investments, despite all the efforts of the liberals, who regained economic power in May 1999, increased by 10% for two years in a row. The current achievement is all the more valuable because it was achieved in incomparably less favorable conditions such as direct opposition to the investment process by the leadership of the Ministry of Finance and a number of other liberal-led public administration structures..."[45]

[42] Delyagin M. From stabilization to modernization. Available at: https://zavtra.ru/blogs/ot_stabilizatcii_k_modernizatcii_ob_ektivnie_zadachi_pravitel_stva_mishustina?ysclid=lvbzst7kg0396933428

[43] Delyagin M. The Government of stability yesterday and development tomorrow. Available at: https://zavtra.ru/blogs/pravitel_stvo_mishustina_pravitel_stvo_stabil_nosti_vchera_i_razvitiya_zavtra?ysclid=lvbztmh5rc435989899

[44] Delyagin M. The Mishustin Government is saving the oil products market. Available at: https://zavtra.ru/blogs/pravitel_stvo_mishustina_spasaet_rinok_nefteproduktov?ysclid=lvbzudxlyu518349934

[45] Delyagin M. The miracle of Prime Minister Mishustin: Investments are growing faster than after Primakov. What's ahead? Available at: https://zavtra.ru/blogs/chudo_prem_era_mishustina_investitcii_rastut_bistree_chem_posle_primakova_chto_vperedi?ysclid=lvc15py1o9147800141

Continuation of Insert 4

	"Amazing data on the execution of the federal budget in the first quarter of 2024 have been published: its deficit collapsed from last year's 2.1 trillion rubles by 3.5 times – to 0.6 trillion, that is, to 0.3% of GDP (which is four times lower than the level of the first quarter of 2023 – 1.2% of GDP and three times the annual deficit of 2024, approved by law in the amount of 0.9% of GDP)... Thus, the federal budget of 2024 is practically stabilized against the background (and to a decisive extent due to) steadily accelerating economic growth, which is the result of the consistent policy of Prime Minister Mishustin"[46].
	"Despite Western sanctions and liberal financial policies that keep Russia in a state of artificially created "money hunger", the Mishustin Government ensured not only stabilization of the socio-economic situation, but also economic growth (accelerated, according to the Ministry of Economic Development, from last year's 3.6'% to 4.6% in January and 7.7% in February), and an increase in investments by almost 10%. Now, on the basis of the achieved results, confident social development is ensured"[47].
S.Yu. Glazyev[48] (RAS Academician, member of the Board for Integration and Macroeconomics of the Eurasian Economic Commission)	*"The Government of Mikhail Mishustin had to deal with two of the largest socio-economic shocks in the last quarter of a century: the pandemic, which many now call an act of biological warfare, and the aggression of NATO countries with the aim of defeating our country. Out of a thousand days of his work, there is hardly a single quiet week.* ***The Cabinet of Ministers withstood the "test of strength" with honor****. The fight against the coronavirus pandemic, which required mobilization of all health care resources, medical science and social services, and the adoption of many non-trivial decisions, was followed by the closure of Russia's main foreign market, the European Union market, along with the seizure of foreign exchange assets and the beginning of a hybrid war of the West against Russia.* ***Timely and adequate responses were given to all these challenges****. Already in 2021, it was possible to fully catch up with the decline in economic activity caused by forced measures of social isolation. Thanks to the promptly taken measures of state support, hundreds of thousands of small and medium-sized enterprises were saved and resumed their work, construction and the service sector were restored. Real GDP growth amounted to 4.7% in 2021, industrial production – 5.3%, investment – 7.7%.*

[46] Delyagin M. Effective policy. Available at: https://zavtra.ru/blogs/pravitel_stvo_mishustina_sokratilo_byudzhetnij_defitcit_v_35_raza_i_uskorilo_ekonomicheskij_rost_do_77

[47] Delyagin M. The Mishustin Government ensures the development of the social sphere. Available at: https://www.zavtra.ru/blogs/pravitel_stvo_mishustina_ obespechivaet_ razvitie_sotcial_noj_sferi

[48] Glazyev S.Yu. Oil, and guns, and vaccines. Available at: https://www.ng.ru/economics/2023-01-19/5_8639_government.html

End of Insert 4

	As a result of timely and competent actions, Russia's economy has not collapsed; moreover, new opportunities for its development have opened up. Russian enterprises have rushed to the fast-growing markets of Southeast Asia, which has become a new center for the development of the global economy. In trade with foreign partners, the transition to national currencies has been carried out. The use of Russian payment systems and digital currency assets protected from sanctions threats is expanding. Despite the closure of Western markets, last year ended with a record trade surplus, and the ruble exchange rate strengthened. Real wages have increased, pensions and social benefits have been indexed.
	Despite all the difficulties of the turbulence regime in which the economy is now operating, the main thing in the current management of the economy was ensured – vertical (with regions and municipalities) and horizontal (between different government bodies) coordination, both in the case of the pandemic and in the last year of the economy's adaptation to unprecedented sanctions. The productivity of executive authorities has more than doubled: in the period from 2000 to 2020, an average of 950 acts (resolutions) of the Russian government were adopted annually, while in 2020–2022 – more than 2 thousand acts per year; The budget execution of national projects has increased dramatically – from 90% of the plan in 2019 to 97% or more in 2020 and 2021. Schemes and procedures for project and program financing, public-private partnerships, and interactive strategic planning are being worked out".
V. Volodin (RF State Duma Chair)[49]	*"The political system and economic model created by President Vladimir Putin have shown their effectiveness, despite the 19 thousand sanctions that have been imposed against our country. And this is a great merit of the Government of the Russian Federation".*
M. Shchapov[50] (RF State Duma deputy)	*"The Mishustin Government is distinguished by the fact that, on the whole, it has coped with two major crises provoked by external conditions at once: the pandemic and the sanctions war".*
S. Razvorotneva[51] (RF State Duma deputy)	*"Mikhail Mishustin has proved himself to be the most effective prime minister since the new Russia... He was lucky to work during a difficult period. First the pandemic, then the imposition of sanctions. But the government is doing well. The country is developing, economic growth is underway, social programs are being implemented... full-scale modernization of housing and communal services began only under Mishustin. And there has never been such a road and housing construction either. We started investing in our manufacturing sector".*

[49] Solovyova O. The outgoing government sets its own goals for the future. Available at: https://www.ng.ru/economics/2024-04-03/1_8986_future.html?ysclid=lv55ldr2f2575049498
[50] Ibidem.
[51] Ibidem.

Insert 5

The monitoring of regulatory legal acts (laws, decrees) signed by the RF President in the period from February 29 to April 21, 2024 [52]

MEASURES TO SUPPORT THE PARTICIPANTS OF THE SMO AND THEIR FAMILY MEMBERS, TO DEVELOP THE MILITARY-INDUSTRIAL COMPLEX, MEASURES ON MOBILIZATION, ORGANIZATION OF MARTIAL LAW, IMPROVEMENT OF ANTI-TERRORIST PROTECTION OF FACILITIES
March 11 – Decree 171 "On additional social guarantees for certain categories of persons". In case of death or injury, additional social support measures (one-time payments) are established for civilian personnel of the Armed Forces of the Russian Federation, federal state civil servants and employees of federal executive authorities (federal state bodies) in which military service is provided by federal law, internal affairs bodies of the Russian Federation, institutions and bodies of the penal enforcement system of the Russian Federation Of the Russian Federation, bodies of compulsory enforcement of the Russian Federation, bodies of the federal courier service, customs authorities of the Russian Federation, organizations of the Federal Customs Service and their family members. **March 23 – Federal Law 61 "On amendments to the Federal Law "On mobilization training and mobilization in the Russian Federation", Article 34 of the Federal Law "On military duty and military service" and invalidation of the Federal Law "On the specifics of criminal liability of persons involved in the special military operation"".** The conditions for concluding contracts on military service in the Armed Forces of the Russian Federation during mobilization, during martial law and during wartime with citizens in respect of whom a preliminary investigation is being carried out or who have a criminal record are being clarified. At the same time, the powers of federal executive authorities are established to determine the procedure for interaction on issues related to conscription during mobilization or during wartime of citizens with a criminal record, as well as on issues related to the conclusion of contracts with such citizens on military service in the Armed Forces of the Russian Federation during mobilization, martial law and in wartime.

[52] The insert is a continuation of the monitoring of the most important regulatory legal acts signed by the RF President; we have been conducting the monitoring since June 2022. Thus, it has been going on for 19 months; its results have been published in 10 articles (the first issue of the monitoring is presented in the article: Ilyin V.A., Morev M.V. (2022). A difficult road after the Rubicon. *Economic and Social Changes: Facts, Trends, Forecast*, 15(3), 9–41).

Continuation of Insert 5

March 23 – Federal Law 64 "On amendments to the Criminal Code of the Russian Federation and the Code of Criminal Procedure of the Russian Federation". The grounds and procedure for exemption from criminal liability and punishment of persons called up for military service during mobilization or during wartime in the Armed Forces of the Russian Federation or who concluded a contract for military service in the Armed Forces of the Russian Federation during mobilization, during martial law or during wartime, as well as the grounds for having their conviction expunged in relation to such persons.

March 23 – Federal Law 65 "On amendments to Article 333-35 of Part Two of the Tax Code of the Russian Federation". The state duty for registration of vehicles transferred free of charge to the SMO zone is canceled.

April 6 – Federal Law 70 "On amendments to the Labor Code of the Russian Federation". It is prohibited to terminate, at the initiative of the employer, an employment contract with the spouse of a deceased combat veteran who has not remarried within one year from the date of death of a combat veteran (except in cases of liquidation of an organization or termination of activity by an individual entrepreneur, as well as committing some types of guilty actions by the employee).

April 6 – Federal Law 72 "On amendments to Article 1 of the Federal Law "On the specifics of fulfilling obligations under loan agreements by persons called up for military service on mobilization into the Armed Forces of the Russian Federation, persons taking part in the special military operation, as well as their family members, and on amendments to certain legislative acts of the Russian Federation"". It is envisaged that under loan agreements, with the exception of loan agreements, the obligations under which are secured by a mortgage, concluded with persons taking part in the special military operation, interest accrued during the grace period is not payable.

April 16 – Decree 262 "On amendments to Presidential Decree 582, dated August 3, 2023 "On measures to ensure compulsory state life and health insurance for citizens of the Russian Federation participating in volunteer formations". Insurance guarantees in the form of compensation for members of volunteer formations are extended to citizens who joined such formations to facilitate the fulfillment of tasks assigned to the National Guard troops. Now the Rosguard volunteers will be able to receive compensation for injury or disability. In case of death of a fighter, it will be paid to their relatives. Such payments will be made by Rosguard or an insurer that has concluded a compulsory state insurance contract with it.

End of Insert 5

MEASURES TO PROTECT INFORMATION SECURITY AND REGULATE THE ACTIVITIES OF FOREIGN AGENTS, MEASURES AIMED AT THE EDUCATION AND UPBRINGING OF THE YOUNGER GENERATION
March 11 – Federal Law 42 "On amendments to Article 11 of the Federal Law "On control over the activities of persons under foreign influence" and certain legislative acts of the Russian Federation". It is prohibited to advertise information resources of foreign agents in the mass media and in messages and materials of the mass media in information and telecommunication networks. In addition, according to the Federal Law, it is not allowed to distribute advertising on the information resource of a foreign agent. **March 23 – Federal Constitutional Law 1 "On amendments to Article 4 of the Federal Constitutional Law "On the State Flag of the Russian Federation".** In accordance with the Federal Constitutional Law, the State Flag of the Russian Federation must be permanently displayed on the buildings of educational organizations, regardless of ownership forms, or permanently installed on their territories.
MEASURES TO PROVIDE SOCIO-ECONOMIC SUPPORT TO THE GENERAL POPULATION, STRENGTHEN THE NATIONAL ECONOMY, INCLUDING IN THE INTERNATIONAL ARENA
March 11 – Federal Law 47 "On amendments to Articles 10 and 17 of the Federal Law "On insurance pensions". It is envisaged to increase the fixed payment to the old-age insurance pension and disability insurance pension to persons providing for great-grandchildren who have not reached the age of 18 or have reached the specified age and are studying full-time in educational organizations until they complete such training, but no longer than until they reach the age of 23 or older of this age, if they have become disabled before the age of 18. The specified increase is established in the amount of one third of the fixed amount of payment to the old-age insurance pension or disability insurance pension for each disabled family member (but not more than three family members). **March 23 – Federal Law 56 "On amendments to Article 7–1 of the Federal Law "On the Special Economic Zone in the Magadan Region and in the territories of the South Kuril, Kuril and North Kuril urban districts of the Sakhalin Region" and Article 2 of the Federal Law :On state support for entrepreneurial activity in the Arctic Zone of the Russian Federation"".** The term of operation of the special economic zone on the territory of Magadan within its administrative borders is extended until December 31, 2046. In addition, the municipalities of Beloyarsky Municipal District and Berezovsky Municipal District of Khanty-Mansi Autonomous Area – Yugra are classified as land territories of the Arctic Zone of the Russian Federation.

Much in this matter will depend on the composition of the new Government of the Russian Federation, which will be announced in May 2024 after the presidential inauguration. Will the head of state really succeed "in determining who and in what position will work most effectively so that the overall result and teamwork are most effective"[53], or will the Cabinet of Ministers be filled by people who exclude the social studies course from the school curriculum, and include courses such as golf and cheerleading in the junior school physical education program, allegedly forming in students "a sense of patriotism, moral qualities ... a manifestation of a sense of pride for their Homeland, the Russian people and the history of Russia..."[54] (as some experts have noted, "... it is very difficult to comment on this without using swearwords. It turns out that in our country, in the current conditions, a sense of patriotism and collectivism can and should be fostered through golf classes. But here we are..."[55]

"What kind of patriotism is this and in the interests of whose country, may I ask?... If the minister, based on personal relationships and an understanding of values, needs to introduce golf classes in some specific elite school on Rublevka or Novorizhskoye highway at a budget expense, then it is not necessary to mix this Western American culture with our domestic patriotism... The Ministry of Education becomes completely non-Russian and completely toxic. We believe that it is high time for the bodies responsible for the protection of state sovereignty to become interested in his activities" (*Kirill Kabanov, member of the Human Rights Council under the President of the Russian Federation*)[56].

"Since when has the favorite game of Deputy Prime Minister Golikova's husband Viktor Khristenko and other Russian and Western oligarchs become a measure of morality and patriotism? Many notable Russian oligarchs promote the development of golf: Oleg Deripaska, Roman Abramovich, Vladimir Potanin and others. Of course, the digital transformer globalist German Gref is also very fond of golf. In 2017, an auction was held in Ljubljana (Slovenia), at which Sberbank bought a golf club previously owned by Golf Projekti for 5.78 million euros. **The common people have no money for this sport, and in our country it has never been popular – for obvious reasons. Moreover, golf has little to do with physical development... As you can see, Kravtsov's office is not at all embarrassed by all this. And what kind of collectivism is there in golf, and what are our traditional values – who can explain it clearly?** And most importantly, how can you give the opportunity to conduct "golf classes" as part of the main physical education classes? **During the war with the Collective West, this looks like outright mockery and a demonstration of the complete isolation of the government from the people. So, for them, a patriot is not a guy who gave his life "for his friends", but a member of an elite golf club from a family of oligarchs**" (*RIA "Katyusha"*).

"I consider this initiative unjustified, hasty and as if from another space that is not even in the neighborhood of the field of education" (*A. Snegurov, Honored Teacher of the Russian Federation, historian, Candidate of Sciences (Psychology), Professor of the Moscow State Pedagogical University*)[57].

[53] Vladimir Putin's press conference on the election day, March 18, 2024. Available at: https://www.kommersant.ru/doc/6579136?ysclid=lutu4bywzz143534713

[54] "On amendments to some orders of the Ministry of Education of the Russian Federation concerning federal educational programs of primary general education, basic general education and secondary general education": Order 171 of the Ministry of Education of the Russian Federation, dated March 19, 2024. Available at: http://publication.pravo.gov.ru/document/0001202404120003?pageSize=100&index=1

[55] The Ministry of Education of the Russian Federation has included golf and cheerleading in the school physical education program. Available at: https://zavtra.ru/events/minprosvesheniya_rf_vklyuchilo_gol_f_i_chirliding_v_shkol_nuyu_programmu_po_fizkul_ture (comment by the presenter of Vesti-fm G. Saralidze).

[56] The HRC sharply criticized the inclusion of golf in the school curriculum. Available at: https://www.nakanune.ru/news/2024/04/18/22766947/?ysclid=lv6jhir55l601714254

[57] Teachers criticized the idea of the Ministry of Education to introduce golf classes in schools. Available at: https://radio1.ru/news/obschestvo/pochemu-ne-hokkei-ne-sambo-ne-borba-ekspert-schitaet-golf-v-shkolah-pitkoi/

The importance of personnel decisions that the President will make in May can be judged, for example, by the "intensity" of publications of M.G. Delyagin, one of the experts whose opinion we often refer to in our articles and who pays considerable attention to the analysis of Government activities and is himself part of the public administration system – an economist, a deputy of the State Duma of the Russian Federation from the party "The Just Russia – For the Truth".

Since March 15, 2024 (that is, literally on the eve of the presidential election), he engaged in harsh criticism of "*fictitious managers" and "young technology thieves" nurtured by the country, which are the fruits of 37 years of national betrayal that have not yet come to an end*"[58], as well as calls to "*bring a decisive end to the 37-year era of national betrayal*"[59], "*purify public administration from the slaves of the West... and, most importantly, to change the colonial economic mechanism created in the late 1980s – early 1990s"*[60].

However, even despite the considerable attention and hopes that experts express regarding the formation of a new cabinet of ministers, many of them are very skeptical about this. They do not see "any hints of abandoning the liberal paradigm" do not expect serious changes in the Government and, on the contrary, predict a strategy of "sweeping problems under the carpet".

And this, unfortunately, creates risks for the full-fledged implementation of the elite change mechanism, the establishment of which was initiated by Vladimir Putin in his Address to the Federal Assembly on February 29, 2024; this mechanism is the educational program Time of Heroes".

D.A. Bulanov (election analyst, Saratov Region Duma deputy, editor-in-chief of the newspaper "Kommunist – Vek XX–XXI"): "Now the Kremlin is able to maintain a balance, but no one knows what will happen in the future – **the planning horizon in the country is at critically low values... we should not wait for a "thaw" and reforms, but on the contrary – there will be a continuation of "tightening the screws" and sweeping problems under the carpet**".

N.I. Popov (publicist, election analyst): **"As for the changes in the country after the presidential election, there will be tactical changes, but not strategical ones"**.

A.M. Safronov (specialist in election processes, Krasnodar City Duma deputy): **"As long as there are no economic grounds for the ruling elite to change something, there will be no changes.** Any changes in the field of politics are the result of an awareness of mistakes and a desire to improve the effectiveness of the management system. So far, there is clearly no such desire in the highest echelons of power... There are no hints of a change in the liberal paradigm; the main vector of development of the Russian economy remains unchanged. And if there are no changes in economic sphere, then they are unlikely to be in politics either"[61].

[58] Delyagin M. Stop considering impotence as a foreign policy! Available at: https://zavtra.ru/blogs/povestka_dnya_22_hvatit_schitat_impotentciyu_vneshnej_politikoj?ysclid=lvc14ttlfx733325148

[59] Delyagin M. The miracle of Prime Minister Mishustin: Investments are growing faster than after Primakov. What's ahead? Available at: https://zavtra.ru/blogs/chudo_prem_era_mishustina_investitcii_rastut_bistree_chem_posle_primakova_chto_vperedi?ysclid=lvc15py1o9147800141

[60] Delyagin M. What should be done to banks and factories controlled by the enemy? Available at: https://zavtra.ru/blogs/povestka_dnya_23_chto_delat_s_vragami_naroda_i_s_bankami_i_zavodami_kotorie_kontroliruet_vrag?ysclid=lvc16mgqm6758130589

[61] The Center for Research on Political Culture of Russia held an expert discussion on the results of the presidential election. Available at: https://kprf.ru/activity/elections/225253.html?ysclid=lugn8iew3a892753371

The program was developed by the Higher School of Public Administration at the Russian Academy of National Economy and Public Administration (RANEPA). Its purpose is to "train high-skilled, competent managers from among the participants of the SMO for subsequent work in state and municipal authorities, as well as state-owned companies"[62]. And this, according to RANEPA rector A. Komissarov, will take "about two years"[63].

Information from the official website of the educational program "Time of Heroes":

"Registration of participants in the selection for the educational program "Time of Heroes" ended on April 8, 2024. **More than 44 thousand fighters and veterans of the special military operation** will take part in the selection.

Applications were received from representatives of all age groups. **The largest share falls on the group of participants aged 35 to 40 years – 23.14%; 20.17% of applications were received from participants aged 30 to 35 years. These age groups make up almost half of the participants in the selection"**[64].

However, according to some experts, it will take much longer to achieve real changes in the management level: "Who knows, maybe in 10–15 years these fighters and officers will be mayors, governors»[65]. Moreover, there are fears that the liberal part of the public administration system that has developed over the decades will not give new, patriotic managers the opportunity to prove themselves at all: the system will either assimilate them or reject them.

"...with all due respect to the participants of the SMO, they are only part of the general patriotic Russian society, which has been strenuously suppressed in recent decades by liberals in power, **who are very adept at this process**. A reliable umbrella of "protection" for patriots going to power has not yet been created. Therefore, **the existing system rejects most of these people or rebuilds their behavior to fit its vicious old ideological matrix..."**[66]

Thus, today, at the beginning of a new political cycle and V.V. Putin's fifth presidential term, we are forced to state the inconsistency of the situation: **hope, but also the uncertainty of the prospects for internal development.**

So far, the President, "responsible for everything in the country"[67], has not given an answer to the main question: "What kind of state are we building?": a liberal one, with the preservation of "crony capitalism, focused on embedding into the Western "civilizational" world, or a nationally oriented, sovereign social state based on traditional values and the opinion of the majority of the population?

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[62] Official website of the "Time of Heroes" program. Available at: https://xn--b1aachba0csne6n.xn--p1ai/news

[63] The duration of the training program "Time of Heroes" will be about two years. Available at: https://объясняем.рф/articles/news/srok-obucheniya-po-programme-vremya-geroev-sostavit-okolo-dvukh-let/?ysclid=lv5agepkf0193119432

[64] Almost half of the applications for participation in the selection for the "Time of Heroes" program are from people aged 30 to 40 years. Available at: https://xn--b1aachba0csne6n.xn--p1ai/news/tpost/br0x3u4z81-pochti-polovina-zayavok-na-uchastie-v-ot

[65] Time of Heroes. How the Russian elite will be formed from now on. *Regnum*. April 29, 2024. Available at: https://regnum.ru/opinion/3870717?ysclid=lv5axk4yqm719888159 (opinion of G. Mirzayan, political scientist, associate professor of the Financial University under the Government of the Russian Federation).

[66] Kassin O. On the "political oncology" of the modern "elite" and measures for its treatment. Available at: https://zavtra.ru/blogs/o_politicheskoj_onkologii_sovremennoj_eliti_i_merah_eyo_lecheniya?ysclid=lumf3jtu5x135750817

[67] Vladimir Putin's address to Russians during the inauguration on May 1, 2000. Available at: https://www.mn.ru/blogs/blog_reference/80928

"The number of billionaires from Russia in the Forbes ranking increased in 2024 to a record 125 people, which is 15 more people than in 2023. The combined wealth of Russian billionaires increased from 505 billion USD in 2023 to 577 billion USD[68]".

"The Russian economy is characterized by abnormally high income inequality and over-concentration of wealth. More than half of the country's total assets belong to several hundred families... The number of Russian dollar billionaires has increased by almost 40% during the special military operation (SMO). And their wealth has increased by 63% over the period of the SMO, according to the compilers of the Forbes rating. The number of billionaires in Russia could be even higher, but 10 of them renounced their Russian citizenship.

Despite the increase in numbers, the group of super-rich Russians remains extremely small. **Only less than 0.0001% of the adult population of the Russian Federation – or about 500 super-rich families own 40% of all financial assets of our country today...**

After the start of the special military operation, the public perception of the main contradictions has changed dramatically. In particular, **the negative attitudes of the population toward those who are called oligarchs have reached a maximum. More than a third (36%) of Russians said in 2023 that oligarchs were hindering national development"**[69].

"The welfare state, as defined by the author of this term, the German historian, philosopher and economist of the 19th century Lorenz von Stein, is obliged to promote the economic and social progress **of all its citizens**, because ultimately the development of one is a condition for the development of the other... The function of the state is to maintain **absolute equality of rights for all different social classes**, for an individual through its power"[70].

However, today Russia is still characterized by an "abnormally high level of income inequality" and "over-concentration of wealth". During the period of the SMO, the number of dollar billionaires in the country increased by 40%, and their wealth increased by 63%.

According to the results of sociological research, the contradiction between the poor and the rich is "the most acute" for the majority of citizens; this fact correlates with the same high level of need for social justice in society: in almost all major population groups (especially among low-income groups and people with secondary education), more than 50% of people say that that "modern Russian society is organized unfairly" and that the contradiction "between the poor and the rich" is the most acute for the country today (*Tab. 3*).

[68] 125 billionaires of Russia. Forbes Rating – 2024. Available at: https://www.forbes.ru/milliardery/510650-125-milliarderov-rossii-rejting-forbes-2024

[69] The super-rich Russians suffer from inequality in the same way as the general population. Available at: https://www.ng.ru/economics/2024-04-11/4_8992_inequality.html?ysclid=lv3n2iw56i350395280

[70] Roik V.D. Conceptual foundations of the formation of a social state in Russia: Issues of income and social budgeting. Online publication "Information and analytical portal "VIPERSON". October 20, 2010. Available at: http://viperson.ru/

Table 3. Assessment of the most acute social contradictions and the degree of justice of the structure of modern Russian society (VolRC RAS data as of December 2023), % of respondents

Population group	Proportion of those who believe that the most acute contradictions today exist between the rich and the poor*	Proportion of those who believe that modern Russian society is organized unfairly**
Sex		
Men	52.4	56.9
Women	54.7	52.5
Age		
Under 30	56.1	54.7
30–55	50.1	54.9
Over 55	57.2	53.9
Education		
Secondary and incomplete secondary	59.5	60.2
Secondary vocational	56.2	53.1
Higher and incomplete higher	44.7	51.4
Income group		
Bottom 20%	61.4	55.6
Middle 60%	51.1	54.6
Top 20%	52.9	49.3
Territory		
Vologda	51.0	54.8
Cherepovets	48.1	59.5
Districts	58.4	51.4
Region	**53.7**	**54.5**

* Wording of the question: "The contradictions between which groups of Russian society, in your opinion, are the most acute today?".
** Wording of the question: "Do you think modern Russian society as a whole is organized fairly or unfairly?"

At the same time, we should note that the most important steps taken by the President over the past almost 25 years (the 1999 article "Russia at the Turn of the Millennium", the 2007 Munich speech, accession of Crimea and Sevastopol to the Russian Federation in 2014, amendments to the Constitution in 2020, protection of Donbass, beginning of the SMO in 2022) prove that he aims to follow the path of building Russia as a sovereign national welfare state.

One way or another, it can only be stated that while the goals of the SMO have not been achieved and while the existing Russian elites have a preponderance of the old (liberal) generation

"Degradation of the modern world is most noticeable in the degradation of its elites... The spiritual world, the hierarchical world, the cultural world, a world in which the concepts of honor, dignity, and duty have not yet lost their meaning. **And of course, to build such a world, we need a new elite:** cultural, intellectual, creative, but even more so the military elite, the military aristocracy, which becomes the white bone of the military empire. The normal aristocratic elite of traditional society. For every real empire begins with the military elite"[71].

[71] Mozhegov V. Russia is a military empire, and it needs a military elite. Available at: https://zavtra.ru/blogs/rossiya_-_voinskaya_imperiya_i_ej_nuzhna_voinskaya_elita?ysclid=lumebkg22o16212706

compared to the new (patriotic) one, there remain the risks of failing to achieve the goals and objectives for the next six years, as well as targets for the longer term.

Without these two conditions, the path toward achieving full national sovereignty, which Russia embarked on at the beginning of Vladimir Putin's first presidential term, will not be completed, which means that the President cannot hand the country over to his successor. At the same time, taking into account the current geopolitical situation and the civilizational conflict between Russia and the Collective West, the question should be put more strictly: **without achieving the goals of the SMO and nationalizing the elites, Russia has no future, because only under these conditions can full national sovereignty be achieved, and returning to the "bosom" of the West (which promised to "tear the Russian economy to pieces" to dismember the country itself in order to inflict a "strategic defeat" on Russia, from which our country will no longer be able to recover) will simply be impossible**.

In conclusion, we note one more point, which inspires hope and which seems to us very important and aimed at the future that will come after the end of the special military operation: in the election on March 17, 2024, Vladimir Putin received a very high, one might say, the maximum level of support from Russian society. It will be extremely difficult, and maybe even impossible, to maintain this level; and it is quite natural, since sooner or later the goals of the SMO will be achieved, the level of international tension (primarily around our country) will decrease, and the factor such as "consolidating around the flag" will give way to the most mundane, everyday needs of citizens in solving social problems, improving the quality of life, etc...

We hope that this period will not become a "stumbling block" in relations between society and the state, so that Russians' trust in the authorities and in the course of national development implemented by Vladimir Putin were dictated not only by the unprecedented nature of threats to national security, but first of all by the real satisfaction of the majority of the country's citizens with the activities of the entire public administration system: all its representatives at all levels of public authority – federal, regional, municipal... This is, of course, an ideal and most likely unattainable formula, but as the President says, **"without ambitious goals we will never achieve anything"[72].**

[72] Vladimir Putin's annual news conference, December 20, 2018: Available at: http://www.kremlin.ru/events/president/news/59455/videos

APPENDIX

Data of the Central Election Commission of the Russian Federation on the turnout and support for Vladimir Putin in the presidential elections of 2018 and 2024

RF constituent entity	RF presidential election (March 18, 2018)				RF presidential election (March 17, 2024)				Dynamics (+/-), 2024 to 2018			
	Turnout		For V.V. Putin		Turnout		For V.V. Putin		Turnout		For V.V. Putin	
	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%
Russian Federation	73.62	67.54	56.43	76.69	87.58	77.49	76.28	87.28	+13.96	+9.95	+19.85	+10.59
North Caucasus Federal District	4.85	86.28	4.21	86.92	5.41	91.13	4.97	91.80	+0.56	+4.85	+0.76	+4.88
Chechen Republic	0.65	91.54	0.59	91.44	0.79	97.05	0.78	98.99	+0.14	+5.51	+0.19	+7.55
Kabardino-Balkarian Republic	0.49	91.80	0.45	93.38	0.52	95.87	0.49	94.21	+0.03	+4.07	+0.04	+0.83
Republic of Dagestan	1.43	87.47	1.30	90.76	1.55	90.82	1.43	92.12	+0.12	+3.35	+0.13	+1.36
Karachayevo-Circassian Republic	0.26	87.40	0.22	87.64	0.27	90.03	0.24	90.07	+0.01	+2.63	+0.02	+2.43
Republic of Ingushetia	0.18	81.95	0.15	83.17	0.22	87.43	0.19	89.61	+0.04	+5.48	+0.04	+6.44
Republic of North Ossetia – Alania	0.46	89.98	0.38	81.51	0.47	91.79	0.42	89.01	+0.01	+1.81	+0.04	+7.50
Stavropol Territory	1.39	73.84	1.12	80.55	1.60	84.95	1.42	88.56	+0.21	+11.11	+0.30	+8.01
Southern Federal District	8.59	69.76	7.01	82.50	14.90	84.95	13.68	91.06	+6.31	+15.19	+6.67	+8.56
Donetsk People's Republic	–	–	–	–	1.79	88.25	1.71	95.23	–	–	–	–
Lugansk People's Republic	–	–	–	–	1.54	87.12	1.44	94.12	–	–	–	–
Republic of Crimea	1.08	71.55	0.99	92.15	1.35	89.75	1.26	93.60	+0.27	+18.20	+0.27	+1.45
Zaporozhye Region	–	–	–	–	0.46	85.49	0.42	92.83	–	–	–	–
City of Sevastopol	0.24	71.43	0.22	90.19	0.29	81.78	0.27	92.60	+0.05	+10.35	+0.05	+2.41
Krasnodar Territory	3.15	77.86	2.56	81.35	4.01	90.59	3.71	92.59	+0.86	+12.73	+1.15	+11.24
Rostov Region	2.08	64.77	1.64	78.97	2.57	81.27	2.32	90.81	+0.49	+16.5	+0.68	+11.84
Republic of Adygea	0.25	74.31	0.20	81.17	0.29	84.76	0.26	90.18	+0.04	+10.45	+0.06	+9.01

RF constituent entity	RF presidential election (March 18, 2018)				RF presidential election (March 17, 2024)				Dynamics (+/-), 2024 to 2018			
	Turnout		For V.V. Putin		Turnout		For V.V. Putin		Turnout		For V.V. Putin	
	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%
Kherson Region	–	–	–	–	0.40	83.86	0.36	88.12	–	–	–	–
Volgograd Region	1.20	68.13	0.93	77.55	1.44	81.82	1.27	88.00	+0.24	+13.69	+0.34	+10.45
Astrakhan Region	0.44	60.42	0.34	76.95	0.59	84.20	0.52	87.45	+0.15	+23.78	+0.18	+10.50
Republic of Kalmykia	0.14	69.64	0.11	81.66	0.16	80.50	0.14	87.17	+0.02	+10.86	+0.03	+5.51
Far Eastern Federal District	3.89	66.82	2.63	69.70	4.24	75.89	3.67	87.09	+0.35	+9.07	+1.04	+17.39
Jewish Autonomous Region	0.08	60.24	0.05	67.48	0.11	91.75	0.10	92.35	+0.03	+31.51	+0.05	+24.87
Chukotka Autonomous Area	0.03	82.28	0.02	82.31	0.03	91.03	0.03	90.49	+0.00	+8.75	+0.01	+8.18
Primorye Territory	0.90	61.11	0.59	65.26	1.07	75.06	0.95	88.34	+0.17	+13.95	+0.36	+23.08
Republic of Buryatia	0.45	75.19	0.33	73.72	0.50	73.71	0.44	87.96	+0.05	-1.48	+0.11	+14.24
Republic of Sakha (Yakutia)	0.46	70.99	0.29	64.38	0.45	71.57	0.40	87.79	-0.01	+0.58	+0.11	+23.41
Trans-Baikal Territory	0.46	57.98	0.33	72.03	0.49	65.40	0.43	87.71	+0.03	+7.42	+0.10	+15.68
Amur Region	0.39	62.14	0.26	67.04	0.44	73.69	0.38	86.97	+0.05	+11.55	+0.12	+19.93
Sakhalin Region	0.23	61.21	0.15	66.92	0.29	78.92	0.25	86.37	+0.06	+17.71	+0.10	+19.45
Kamchatka Territory	0.16	67.74	0.11	69.44	0.17	73.56	0.15	85.03	+0.01	+5.82	+0.04	+15.59
Magadan Region	0.07	71.91	0.05	72.30	0.08	75.42	0.07	84.89	+0.01	+3.51	+0.02	+12.59
Khabarovsk Territory	0.65	64.22	0.43	65.78	0.61	64.69	0.49	80.06	-0.04	+0.47	+0.06	+14.28
Volga Federal District	15.87	64.24	12.27	76.93	17.34	76.75	15.13	86.51	+1.47	+12.51	+2.86	+9.58
Saratov Region	1.26	66.49	0.99	78.33	1.37	76.50	1.25	91.66	+0.11	+10.01	+0.26	+13.33
Republic of Bashkortostan	2.30	75.44	1.78	77.69	2.47	83.72	2.24	90.90	+0.17	+8.28	+0.46	+13.21
Penza Region	0.78	73.74	0.63	79.98	0.83	82.92	0.75	89.97	+0.05	+9.18	+0.12	+9.99
Republic of Mordovia	0.48	77.85	0.41	85.35	0.48	84.96	0.43	89.57	0.00	+7.11	+0.02	+4.22

RF constituent entity	RF presidential election (March 18, 2018)				RF presidential election (March 17, 2024)				Dynamics (+/-), 2024 to 2018			
	Turnout		For V.V. Putin		Turnout		For V.V. Putin		Turnout		For V.V. Putin	
	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%
Republic of Tatarstan	2.26	7.42	1.85	82.09	2.48	84.61	2.20	88.74	+0.22	+77.19	+0.35	+6.65
Orenburg Region	1.00	66.08	0.73	72.97	1.12	75.18	0.97	87.05	+0.12	+9.10	+0.24	+14.08
Samara Region	1.63	66.90	1.23	75.82	1.88	78.86	1.63	86.76	+0.25	+11.96	+0.40	+10.94
Nizhny Novgorod Region	1.73	65.98	1.33	77.27	2.03	81.63	1.75	86.40	+0.30	+15.65	+0.42	+9.13
Chuvash Republic	0.70	76.22	0.54	77.29	0.67	74.13	0.57	85.49	-0.03	-2.09	+0.03	+8.20
Perm Territory	1.32	66.51	0.99	75.35	1.59	80.90	1.35	84.65	+0.27	+14.39	+0.36	+9.30
Republic of Mari El	0.36	66.43	0.26	73.99	0.36	68.91	0.30	84.24	0.00	+2.48	+0.04	+10.25
Ulyanovsk Region	0.64	64.33	0.48	74.27	0.68	73.20	0.57	83.85	+0.04	+8.87	+0.09	+9.58
Republic of Udmurtia	0.75	63.27	0.57	76.23	0.72	62.54	0.59	81.83	-0.03	-0.73	+0.02	+5.60
Kirov Region	0.66	62.72	0.47	70.41	0.65	66.48	0.52	80.08	-0.01	+3.76	+0.05	+9.67
Siberian Federal District	8.38	66.91	6.17	73.88	8.93	73.21	7.72	86.46	+0.55	+6.3	+1.55	+12.58
Kemerovo Region	1.67	83.22	1.42	85.42	1.81	96.40	1.73	95.72	+0.14	+13.18	+0.31	+10.30
Republic of Tyva	0.16	93.66	0.15	91.98	0.19	95.58	0.18	95.37	+0.03	+1.92	+0.03	+3.39
Republic of Altai	0.10	64.77	0.07	70.62	0.11	71.28	0.10	86.49	+0.01	+6.51	+0.03	+15.87
Republic of Khakassia	0.25	65.86	0.17	69.16	0.29	74.37	0.24	85.28	+0.04	+8.51	+0.07	+16.12
Altai Territory	1.19	65.39	0.77	64.66	1.05	59.89	0.89	84.88	-0.14	-5.50	+0.12	+20.22
Krasnoyarsk Territory	1.27	60.33	0.94	74.28	1.45	77.26	1.22	84.12	+0.18	+16.93	+0.28	+9.84
Irkutsk Region	1.05	55.69	0.76	73.06	1.15	63.17	0.96	83.89	+0.10	+7.48	+0.20	+10.83
Novosibirsk Region	1.30	60.40	0.93	71.06	1.39	63.18	1.17	83.88	+0.09	+2.78	+0.24	+12.82
Omsk Region	0.93	60.48	0.62	67.31	1.03	70.84	0.85	82.77	+0.10	+10.36	+0.23	+15.46
Tomsk Region	0.46	59.27	0.33	71.23	0.46	60.11	0.38	82.15	+0.00	+0.84	+0.05	+10.92

RF constituent entity	RF presidential election (March 18, 2018)				RF presidential election (March 17, 2024)				Dynamics (+/-), 2024 to 2018			
	Turnout		For V.V. Putin		Turnout		For V.V. Putin		Turnout		For V.V. Putin	
	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%
Ural Federal District	6.24	71.84	4.71	77.07	7.21	82.13	6.09	85.88	+0.97	+10.29	+1.38	+8.81
Yamal-Nenets Autonomous Area	0.34	91.90	0.29	85.54	0.35	94.11	0.32	91.75	+0.01	+2.21	+0.03	+6.21
Khanty-Mansi Autonomous Area – Yugra	0.79	69.71	0.60	76.20	0.99	87.13	0.86	86.71	+0.20	+17.42	+0.26	+10.51
Kurgan Region	0.43	61.73	0.32	73.30	0.49	77.23	0.42	85.63	+0.06	+15.50	+0.10	+12.33
Tyumen Region	0.84	78.92	0.67	79.75	1.00	84.28	0.84	84.76	+0.16	+5.36	+0.17	+5.01
Chelyabinsk Region	1.75	66.41	1.28	73.00	2.03	79.02	1.71	84.32	+0.28	+12.61	+0.43	+11.32
Sverdlovsk Region	2.09	62.34	1.56	74.60	2.35	71.00	1.93	82.10	+0.26	+8.66	+0.37	+7.50
Central Federal District	18.69	66.16	14.03	76.18	21.61	75.84	18.55	85.79	+2.92	+9.68	+4.52	+9.61
Belgorod Region	0.89	73.24	0.71	79.71	1.06	87.00	0.95	90.66	+0.17	+13.76	+0.24	+10.95
Bryansk Region	0.78	79.70	0.64	81.60	0.82	87.28	0.74	89.97	+0.04	+7.58	+0.10	+8.37
Voronezh Region	1.21	64.56	0.95	78.88	1.42	77.51	1.25	88.83	+0.21	+12.95	+0.30	+9.95
Kursk Region	0.60	64.48	0.48	81.01	0.67	75.24	0.59	88.51	+0.07	+10.76	+0.11	+7.50
Ryazan Region	0.60	65.13	0.46	76.34	0.66	75.77	0.58	87.93	+0.06	+10.64	+0.12	+11.59
Tula Region	0.82	68.65	0.65	79.20	0.87	77.05	0.76	87.29	+0.05	+8.40	+0.11	+8.09
Lipetsk Region	0.67	72.16	0.54	80.83	0.69	77.49	0.60	86.99	+0.02	+5.33	+0.06	+6.16
Ivanovo Region	0.47	58.55	0.34	71.37	0.61	81.25	0.53	86.88	+0.14	+22.70	+0.19	+15.51
Moscow Region	3.71	63.59	2.76	74.49	4.80	77.01	4.13	86.50	+1.09	+13.42	+1.37	+12.01
Tambov Region	0.61	72.04	0.49	81.81	0.61	77.72	0.52	85.59	+0.00	+5.68	+0.03	+3.78
Smolensk Region	0.47	61.26	0.35	73.49	0.54	74.91	0.46	85.26	+0.07	+13.65	+0.11	+11.77
City of Moscow	4.52	59.93	3.20	70.87	5.41	66.73	4.58	85.13	+0.89	+6.80	+1.38	+14.26
Vladimir Region	0.74	65.01	0.55	73.65	0.75	69.26	0.63	84.93	+0.01	+4.25	+0.08	+11.28
Tver Region	0.62	57.58	0.46	74.55	0.72	72.20	0.61	84.38	+0.10	+14.62	+0.15	+9.83

RF constituent entity	RF presidential election (March 18, 2018)				RF presidential election (March 17, 2024)				Dynamics (+/-), 2024 to 2018			
	Turnout		For V.V. Putin		Turnout		For V.V. Putin		Turnout		For V.V. Putin	
	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%	abs. million people	%
Kaluga Region	0.54	68.16	0.41	76.16	0.53	68.25	0.44	83.79	-0.01	+0.09	+0.03	+7.63
Yaroslavl Region	0.66	64.12	0.47	71.84	0.65	72.56	0.52	80.84	-0.01	+8.44	+0.05	+9.00
Kostroma Region	0.32	60.51	0.22	68.71	0.34	69.17	0.27	80.52	+0.02	+8.66	+0.05	+11.81
Orel Region	0.46	72.17	0.35	76.77	0.46	78.69	0.37	80.23	0.00	+6.52	+0.02	+3.46
Northwestern Federal District	6.63	62.59	4.97	74.34	7.53	69.14	6.19	81.96	+0.90	+6.55	+1.22	+7.62
Leningrad Region	0.89	66.88	0.70	79.01	1.16	80.63	1.00	86.36	+0.27	+13.75	+0.30	+7.35
Kaliningrad Region	0.50	62.18	0.38	76.34	0.60	70.74	0.51	85.44	+0.10	+8.56	+0.13	+9.10
Pskov Region	0.34	65.33	0.26	75.05	0.34	68.59	0.29	84.70	0.00	+3.26	+0.03	+9.65
Murmansk Region	0.40	66.35	0.30	76.37	0.38	71.24	0.31	83.21	-0.02	+4.89	+0.01	+6.84
Novgorod Region	0.29	57.30	0.21	72.65	0.32	66.58	0.26	82.06	+0.03	+9.28	+0.05	+9.41
City of Saint Petersburg	2.32	63.87	1.74	75.01	2.86	74.38	2.32	81.65	+0.54	+10.51	+0.58	+6.64
Komi Republic	0.41	60.39	0.29	71.44	0.36	58.52	0.29	80.49	-0.05	-1.87	0.00	+9.05
Vologda Region	0.63	66.20	0.45	72.41	0.65	73.53	0.52	79.74	+0.02	+7.33	+0.07	+7.33
Republic of Karelia	0.30	57.19	0.22	73.04	0.29	60.08	0.23	79.53	-0.01	+2.89	+0.01	+6.49
Arkhangelsk Region	0.54	59.19	0.41	75.27	0.55	65.59	0.44	79.25	+0.01	+6.40	+0.03	+3.98
Nenets Autonomous Area	0.03	63.61	0.02	71.15	0.03	70.70	0.02	79.08	0.00	+7.09	0.00	+7.93
City of Baikonur (Republic of Kazakhstan)	0.01	66.27	0.01	78.35	0.01	59.93	0.01	84.25	0.00	-6.34	0.00	+5.90
Territory outside the Russian Federation	0.47	98.06	0.40	85.02	0.38	99.32	0.28	72.30	-0.09	+1.26	-0.12	-12.72

Federal districts, as well as constituent entities of the Russian Federation within federal districts, are ranked in descending order of the share of votes cast for Vladimir Putin in the te 2024 presidential election.
Source: information on elections and referendums. CEC of the Russian Federation. Available at: http://www.izbirkom.ru/region/izbirkom

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DOI: 10.15838/esc.2024.2.92.2
UDC 321, LBC 66

Elite Economics and Political Instability

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Abstract. The article puts forward a new version of elite theory based on the use of a macroeconomic production function depending on the number of the elites and the masses. At the same time, the production function of the elites is complemented with the distribution function, which determines the income structure of social groups and the level of inequality. Combining the two sides of the activity of the elites allows us to design a simple typology of political situations in the country and highlight the regime of revolutionary situation. A formal analysis of the model of production activity of the elites has shown that the phenomenon of over-accumulation of the ruling class has a noticeable destructive impact on economic growth only after a severe drop in its functioning effectiveness. The very deterioration of the quality of the political elite allows an unjustified increase in its size to manifest itself. We consider generalizations of elite model in relation to the case of the middle class and show the invariance of the previously obtained conclusions. We provide an interpretation of the macro-theory of the elites for the mega-level, when studying the world economic system as a combination of the center, periphery and semi-periphery. We consider four dimensions of the elite, with system paradigms being a new element within these dimensions. The influence of external historical events on the worldview of the elites and their actions is revealed using the examples of the transformation of the Roman Republic into the Roman Empire, the collapse of the USSR and the beginning of the fall of the U.S. hegemony. For the center – periphery system, we test the production model of the elites with the help of statistical data from the World Bank; we build econometric dependencies that show a decrease in the effectiveness of the United States in managing global production.

Key words: elites, state, political stability, economic growth, center–periphery model.

For citation: Balatsky E.V. (2024). Elite economics and political instability. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 43–63. DOI: 10.15838/esc.2024.2.92.2

Acknowledgment

The article was prepared within the state assignment of the RF Government to the Financial University for 2024 on the topic "Socio-economic development in the era of fundamental transformation of systems".

Introduction

The 21st century witnessed an increase in the number of attempts to build global social theories that could explain not only the rise, but also the collapse of civilizations. Modern history has accumulated a huge amount of knowledge about how individual States and entire empires arose, developed and collapsed. Despite the differences in their geography, scale, technological level and social models, the very alternation of boom and bust remained unchanged. In the era of capitalism, this process became even more pronounced when the primacy of one center of world capital was replaced by the hegemony of another, but the very process of transferring the role of global leader did not change. It is not surprising that such an organizational invariance of the geopolitical space urgently requires a system-wide explanation and thus generates different theories of social development. However, recently such theoretical concepts have begun to drift toward some kind of fundamental elite theory, which could explain the whole range of diverse phenomena based on the interaction of two large population groups – the elites and the masses.

We should point out that the shift of interest toward public administration is a significant phenomenon. In this sense, the fundamental problem of the rise and collapse of States and civilizations is becoming increasingly interdisciplinary or, more precisely, multidisciplinary. In addition, elite theory allows us to take an important step in the study of social processes – to combine the objective and subjective determinants of geopolitical achievements and failures in the history of humankind.

The fact of the West/Non-West confrontation, accompanied by active geopolitical turbulence, adds relevance to the role of elites in the modern world. Today there are several States whose fate is literally controversial. These are Armenia, Ukraine, Guyana, Kosovo, and Palestine. The future of the United States and almost all European countries is now in great doubt as well. Among other things, military confrontation is increasing with its possible escalation into a nuclear apocalypse. In a number of the mentioned cases, the ruling elites do not seek to resolve the situation, but continue to fuel and aggravate it.

The article aims to reveal the content of key elements of the general elite theory and provide their partial formalization, which helps to better understand the logic of social evolution. The main emphasis is on building a kind of theoretical synthesis of existing elite theories, which would allow us to dissect many phenomena of life and death of States and entire civilizations from a single and understandable position. The novelty of the approach consists in building the most aggregated production function, depending on elites and masses, which provides the key to describing economic growth and the functional failures it entails. Methodologically, our approach follows general macroeconomic principles used in describing economic dynamics.

Fundamental ideas of elite theory

Today, there is an almost endless literature on the issues regarding elites and their place in the state system; thus, we will consider only the most significant ideas in this area that have appeared recently and are directly related to subsequent constructions; we do not intend to make a full-fledged review of elite theories.

Perhaps the first and most mature judgments regarding the historical dynamics and the role of elites belong to Arnold Toynbee, who noted such

an important property as the *asymmetry of the processes of creation and disintegration of States* (civilizations). Here is one of his shrewd remarks: "…when we make an empirical comparative study of the paths which the dead civilizations have respectively travelled from breakdown to dissolution, we do here seem to find a certain measure of Spenglerian uniformity" (Toynbee, 2011, p. 20). Toynbee further elaborates on this thesis: "And this, after all, is not surprising. Since breakdown means loss of control, this in turn means the lapse of freedom into automatism, and, whereas free acts are infinitely variable and utterly unpredictable, automatic processes are apt to be uniform and regular" (Toynbee, 2011, pp. 20–21).

Having considered the property of asymmetry, Toynbee very accurately reveals the dialectic of disintegration in terms of elites and masses: "Briefly stated, the regular pattern of social disintegration is a schism of the disintegrating society into a recalcitrant proletariat and a less and less effectively dominant minority. The process of disintegration does not proceed evenly; it jolts along in alternating spasms of rout, rally, and rout" (Toynbee, 2011, p. 21). Thus, the collapse of the State occurs through the *disintegration of society into two increasingly less interconnected groups* – the elite (the dominant minority) and the masses (the recalcitrant majority). Toynbee emphasizes the fact that at the stage of the dissolution of the State, the elites lose their former influence due to the decline in their *authority*, which in turn is caused by a sharp decrease in the effectiveness of public administration, which means a decrease in the *effectiveness and competence* of elites themselves. Today, we can safely generalize the described process in case a State is created that arises through an effective and mutually beneficial pairing of elites and masses due to the fact that elites are constructing a new social order (management system) that suits both social groups and thereby receives consensus legitimization.

Despite the apparent simplicity and evidence of Toynbee's ideas, it is almost impossible to build an adequate theory of the State without relying on them.

The next stage in understanding the problem under consideration is the differentiation of elites and masses. Here it is necessary to highlight the *political approach* of Gaetano Mosca, according to which elite includes persons with real power or influence on political processes (Mosca, 1939). This understanding of the two social groups allows us to move on to a *cybernetic* interpretation of the State, when the ruling class (elite) is associated with the control subsystem and the population (masses) – with the managed subsystem. This methodological move makes it possible to apply the cybernetic law of necessary diversity to the State; the law was formulated by William Ross Ashby, and it states that the normal functioning of any system requires its control subsystem to be no less complex (diverse) than the managed subsystem (Ashby, 2021). This thesis automatically puts forward a strict requirement for elites and the system of public administration they have created: if this system is primitive and one-sided, and its key posts are occupied by people who are not well-prepared intellectually and morally, then the entire State is in danger of collapse.

The above can be continued and supplemented by the *meritocratic approach* to the definition of elites, dating back to Vilfredo Pareto; according to his views, this group includes people with higher intelligence, talent, abilities and competence compared to the average indicators of society (Pareto, 2009).

However, both political and meritocratic approaches to the definition of elite inevitably correlate with its financial situation, its *income*. On the one hand, an individual's political influence forms a closed cycle with their wealth; on the other hand, the acquisition of various advantages requires huge costs and a special lifestyle. This understanding

of elite brings it closer to the concept of the *leisure class* introduced and explained by Thorstein Veblen (Veblen, 2021). Looking into the quantitative aspect of individual wealth, which corresponds to a person who claims to be part of the elite, Thomas Piketty outlined both the threshold level of income required for this and the size of the corresponding social group (Piketty, 2016). Conducting a detailed analysis of French and British society of the 19th century based on the literary works of Honoré de Balzac and Jane Austen, Piketty states that the threshold of annual income for joining the elite should have been 20–30 times higher than the average income in society, and the size of such a leisure class was 0.5% of the total population; moreover, the life of Balzac's and Austin's characters who lived below the specified threshold was hard and humiliating (Piketty, 2016, p. 410); thus, the specified threshold could rise up to 50 times, and the size of elite could be reduced to 0.1% of the population (Piketty, 2016, p. 411). Despite some conditionality of such estimates, they can be taken as a starting point, assuming the maximum size of elite is 0.5–1.0% of the population, and their incomes are 20–35 times higher than the national average.

The next milestone in the development of elite theory includes two major works by Daron Acemoğlu and James Robinson, in which the issue of interaction between the masses and the elites has risen to a new level. In their first bestseller, they proposed a *theory of inclusive institutions*, emphasizing the need for openness of the elites and the existence of social channels for the best representatives of the masses to penetrate into it (Acemoğlu, Robinson, 2015). According to the authors, market mechanisms for selecting the best representatives of the masses and culling the worst representatives of the elite make it possible to update the managerial elite and maintain it in an efficient condition, which in turn is the basis for creating and maintaining successful political regimes and States. In other words, inclusive institutions support social elevators through which the elites and the masses carry out a constant mutual exchange of personnel; otherwise, when *extractive institutions* prevail in society, blocking the access of the masses to the highest echelons of power, the State is unable to support long-term economic growth and technological progress. We should mention that Douglas North and his colleagues had previously come up with a very similar concept, having considered two institutional ways of organizing society – *limited (privileged) access* to resources and *open (free) access* order (North et al., 2011; North et al., 2012).

In their second bestseller, Acemoğlu and Robinson reveal the anatomy of the formation of a political system under the influence of the struggle of two social groups – elites and masses (Acemoğlu, Robinson, 2021). The strength, organization and cohesion of each social group come out in the first place, forming in the appropriate coordinates the so-called *narrow corridor*, within which the emergence and existence of *political equilibrium* in the form of a Shackled Leviathan is possible, when the government machine controlled by the elites and the society formed by the masses are equivalent and control each other. Thus, the authors raise the issue of the dependence of the elites (the State) on the masses (society), focusing on the controlled formation of both groups.

The book by Daron Acemoğlu and Simon Johnson examines the history of technology development up to recent times and concludes that large-scale digitalization and the use of artificial intelligence systems contribute to the expansion of the rich class, marginalization of representatives of the masses and the ever increasing distance between these groups (Acemoğlu, Johnson, 2023). Thus, the authors record a dangerous tendency toward a long-term violation of the reasonable coupling of elites and masses.

A series of works by Peter Turchin and colleagues can be considered a breakthrough in elite theory. In one of the early empirical works by Peter Turchin and Sergey Nefedov, certain universal patterns in the dynamics of elites and masses were revealed, which are confirmed by historical cycles lasting hundreds of years on the example of many countries (Turchin, Nefedov, 2009). An important result of this study was the empirical establishment of *elite overproduction concept*, according to which overpopulation leads to the impoverishment of the common people, and the overproduction of the elite leads to the relative impoverishment of its significant part. Moreover, historical data show that elite overproduction is lagging in comparison with the general overpopulation. In a later work, P. Turchin considered a series of models reproducing various aspects of elite life. In particular, based on the work of Ibn Khaldun, he paid special attention to the phenomenon of asabiyya, which is understood as the collective solidarity of a social group (elite), giving it the ability to work collectively (Turchin, 2020, p. 93). Turchin's set of models demonstrates the coupling of the dynamics of elites, commoners and State, which is identified with budget revenues/expenditures. In such models, the effect of elite overproduction acts as an endogenous driving force, which cannot but attract attention to such constructions.

In his latest book, P. Turchin reviewed many vivid stylized examples from the history of different countries at different times, and also made an attempt to forecast future *political instability* in the United States (Turchin, 2023). At the same time, he expanded the ruling class to 10% of the population with a core of 1% in order to give a wider coverage of the phenomena that generate instability. Thus, the theory of elite overproduction was strengthened not only by the model framework, but also by meaningful explanations of the internal mechanisms of social movements, and the possibility of practical use of model calculations was also shown.

Another landmark work related to elite theory belongs to Ronald Findlay and John Wilson, who built an elegant two-sector model of national production (Findlay, Wilson, 1984). The Findlay – Wilson model considers the aggregated production function as a product of the one-factor production function of the private sector, which creates goods and services, and the one-factor law enforcement (management) function of the public sector, which supports state institutions. Since labor and capital in this model are fixed and the population is distributed between two sectors, this automatically leads to the existence of an optimal proportion of civil servants and, consequently, the public sector. In the Findlay – Wilson model, civil servants by default play the role of the elite responsible for the existing order in the country, but this understanding of the elite is too broad. Nevertheless, taking into account this reservation, the mentioned model can serve as a basis for describing the interaction between elites and masses.

The ideas considered above are quite enough to try to build a consistent generalized elite theory. This will be done below.

Basic model of the general elite theory

To understand the role of elites, let us consider two sides of society's life –creation and distribution of a macro-product. The production process can be described in an extremely general way by the following production function:

$$Y = AU(E)X(P) = AE^{\alpha}P^{\beta}, \qquad (1)$$

where E – number of elite; P – number of masses; $U(E)$ – control function; $X(P)$ – potential production capabilities of the national economy; A, α and β – function parameters.

In (1) it is assumed that the population (masses) participates in the creation of GDP in accordance with the available technological capabilities $X(P)$, and the elites ensure management of the State and, in particular, the economy in accordance

with function *U(E)*. For simplicity, we use power functions, the multiplication of which provides the total activity of the economic system, i.e. the actual GDP *Y*, in the form of a standard Cobb – Douglas function. Function (1) is supplemented by a balance constraint on the distribution of the population:

$$N = E + P, \quad (2)$$

where N – total population of the country[1].

Then a simple dynamic equation follows from model (1)–(2):

$$\frac{dY}{dt} = \left(\frac{\alpha}{\zeta} - \frac{\beta}{1-\zeta}\right)\frac{dE}{dt} + \frac{\beta}{1-\zeta}\frac{dN}{dt}, \quad (3)$$

where ζ – proportion of the elite class in the population: $\zeta = E/N$.

It is easy to see that model (1)–(2) formally completely coincides with the Findlay – Wilson model (Findlay, Wilson, 1984). In this case, it is assumed that the management of the State is determined by a small group – the ruling elite, which sets the rules of the game (institutions) and thereby forms a certain social order and vector of development. For further analysis, equation (3) is of particular interest; it connects the dynamics of national production with the growth of a privileged social group – the elite. If we proceed from the natural assumption that $\alpha > 0$ and $\beta > 0$, then equation (3) implies a condition for fruitful growth of the elite, i.e. when the growth of the number of this group stimulates economic growth: $\zeta < \zeta^*$, where

$$\zeta^* = \frac{\alpha}{\alpha + \beta}. \quad (4)$$

Consequently, the maximum size of the elite class is limited only by its effectiveness, i.e. its management ability. If the elite maintains a sufficiently high quality of economic management, then the size of its group, strictly speaking, is not limited; otherwise, restriction (4) becomes active, and exceeding the critical mark of the size of the elite leads to restraining economic growth. This conclusion automatically follows from the fact that the value ζ is extremely small (about 1%). Therefore, if the Cobb – Douglas function (1) is linearly homogeneous ($\alpha + \beta = 1$), then the size of the elite group is limited only by its own effectiveness: $\zeta < \alpha$. This, in turn, means that such a restriction for the expansion of the elite group implies an extremely small value of elasticity of the elites compared to elasticity of the masses: $\alpha << \beta$. In other words, the destructive growth of the elite occurs only when its effectiveness is almost nullified: $\alpha \to 0$.

This fact seems to be extremely important. It proves that the transfer of personnel to the elite is not able to slow down economic growth; this turns out to be possible only when the elites not only begin to manage society less effectively, but also cross a certain threshold of ineffectiveness and thereby cease to cope with managerial functions altogether. During this period, the elites are reborn into a class of *social parasites* who receive unreasonably large benefits and at the same time do not perform any constructive functions. In addition, equation (3) implies that with a growing population, even such a managerial failure of the elites is not able to disrupt the regime of economic growth and cause a production recession – the positive effect of mass growth will absorb the negative effect of elite growth. This analysis leads us to an understanding of two necessary conditions for the collapse of the State as such: the suspension of population growth ($dN / dt \approx 0$) and, as a result, the suspension of the growth of the labor force and employment, which will lead to the exhaustion of the extensive factor

[1] Model (1)–(2) focuses on the creative managerial function of the elites purely for the economy. The ideological, cultural orientations and achievements of the elites are not taken into account here, interactions with other countries and their elites are not considered, as well as the very possibility of unleashing a war is ignored. However, this is quite a natural simplification, which can be removed by complicating the control function U(E).

of economic growth[2]; a catastrophic drop in the effectiveness of the elites ($\alpha \to 0$ or $\alpha < 0$), which leads to a violation of the established social order and an increase in social chaos.

This suggests that, from a formal point of view, the onset of a period of instability requires a radical restructuring of the governing regime with a catastrophic decrease in elite elasticity. In this case, there is a kind of "gap" in production function (1), which can be expressed as follows:

$$Y = AE^{\alpha-\Delta\alpha}P^{\beta}, \quad (5)$$

where $\Delta\alpha > 0$ – certain exogenous negative shift in elite elasticity.

In this case, we get a threshold value for a drop in elite effectiveness at a given size ζ: further growth of the elites begins to restrain economic growth when the critical value of the drop in their effectiveness $\Delta\alpha^*$ ($\Delta\alpha > \Delta\alpha^*$) is exceeded:

$$\Delta\alpha^* = \alpha - \beta\left(\frac{\zeta}{1-\zeta}\right). \quad (6)$$

In model (1)–(2) such shifts in effectiveness are exogenous, whereas in reality they are endogenous and determined by their own laws and mechanisms. This issue will be covered in more detail below, but now it is important to point out that the size (quantity) and effectiveness (quality) of the elite are inextricably linked and it is their active conjugation and multiplication can lead to a radical restructuring of the state development regime and an increase in political instability.

Model (1)–(2) reveals the production line of a macro-product; but in order to get a complete picture it is necessary to reflect the line of its distribution, which is carried out after the fact between the elites and the masses:

$$Y = DE + WP, \quad (7)$$

where D – average income of the elites; W – average income of the masses.

If we introduce an indicator of income inequality between the elites and the masses $G = D/W$ and take into account balance ratio (2), then equation (7) is transformed as follows:

$$Y = WN[1 + \zeta(G - 1)]. \quad (8)$$

If, for convenience, we introduce indicators of the lower limit of poverty W^*, the parameter of *biological tolerance* of the masses $q = W/W^*$, the upper limit of inequality G^* and *social intolerance* of the masses to inequality $g = G/G^*$, then equation (8) will be as follows:

$$Y = qNW^*[1 + \zeta(gG^* - 1)]. \quad (9)$$

Equation (9) shows in the simplest and clearest possible form the distributional effects in elite theory. For example, if GDP (Y) falls under the influence of the deteriorating work of the elites, then this fall, all other things being equal, will lead to a decrease in biological tolerance and an increase in social intolerance of the masses ($q \to 1$ and $g \to 1$, respectively, at normal values of $q > 1$ and $g < 1$). Such processes contribute to the growth of revolutionary sentiments and the likelihood of large-scale internal conflicts in the country. Thus, the combination of the parameters of the scale and effectiveness of the elites (ζ and α) and the biological and social tolerance of the masses (q and g) form the space of possible conflict (revolutionary) movements in society. Thus, the two initial impulses necessary for the collapse of the state (suspension of population growth and catastrophic decline in elite effectiveness) are complemented by sufficient conditions in the form of dissatisfaction of the masses with their welfare and manifestations of outright social injustice.

[2] These constructions do not distinguish between the population and the employed population, which in some cases may be fundamental. If necessary, this circumstance can be carefully taken into account; however, to preserve the simplicity of the scheme, we will not do this. In reality, demographic growth of may be accompanied by a contraction in employment, which can have even more grave implications.

Typology of social orders and the theory of revolution

The proposed analytical scheme allows us to put forward a fairly simple and elegant typology of social orders that arise within the State as a result of a combination of functional parameters of two classes – the masses and the elites. Without losing the degree of generality, this typology can be presented in *Table 1.*

The first type of regime – managerial crisis – is associated with the loss of managerial skills by the elite. This case is frequent and corresponds to all known economic crises, when flaws in government regulation lead to failures in the economy. At the same time, there are no system-wide problems at the state level, and the problems that have arisen are being solved one way or another. As a rule, such periods are accompanied by a change of government and cabinet of ministers. If the loss of manageability of the economy goes hand in hand with elite overproduction, then the situation turns into a political crisis, when the question arises about the legality of preserving the ruling class. At this point there are signs that the ruling social group has turned into a parasitic class. In such cases there is a change of political power – the supreme leader (president) and their administration. If such a situation is not resolved in time, but is also supplemented by excessive remuneration of the insolvent part of society – the ruling elite – thereby causing public discontent among the population, then the formed regime indicates the emergence of a socio-political crisis. In fact, the population (masses) already perceives the ruling class as a social parasite that wrongfully appropriates too many benefits. Such situations are accompanied by resignation of the government and the supreme leader against the background of mass popular demonstrations and protests. Finally, if such a situation is not resolved, but is also complemented by absolute impoverishment of the masses, then a regime of *revolutionary situation* arises, which can have any implications – from violent overthrow of power to civil war and complete collapse of the State.

The latter regime not only corresponds to Vladimir Lenin's teaching about the revolutionary situation, but also generalizes it. Thus, in his 1920 work, Lenin famously characterized the revolutionary situation when the "lower classes" (the masses) do not want to live the old way, and the "upper classes" (elites) cannot govern the old way (Lenin, 2022). Table 1 reveals Lenin's provision through four parameters. The second part of Lenin's formula is concretized by the decline in the effectiveness of the elites with the simultaneous expansion of their size, and the first part – by the growing discontent of the masses with excessive income inequality and their categorical unwillingness to drag out a further miserable existence.

All four parameters have a clear interpretation and can be verified and digitized with varying accuracy. For example, parameters α and ζ require the construction of an appropriate production function (1) for a given historical time period. The

Table 1. Types of political situation in the State

Political situation	Model characteristics			
	Elite parameters		Mass parameters	
	α	ζ	g	q
Managerial crisis	$\alpha \to 0, \alpha < 0$	$\zeta < \alpha$	$g << 1$	$q >> 1$
Political crisis	$\alpha \to 0, \alpha < 0$	$\zeta > \alpha$	$g << 1$	$q >> 1$
Socio-political crisis	$\alpha \to 0, \alpha < 0$	$\zeta > \alpha$	$g \to 1, g \leq 1$	$q >> 1$
Revolutionary situation	$\alpha \to 0, \alpha < 0$	$\zeta > \alpha$	$g \to 1, g \leq 1$	$q \to 1, q \geq 1$
Source: own compilation.				

critical level of poverty can be quite accurately determined for each country, which makes it possible to determine the level of current biological tolerance of the masses. With regard to social intolerance, we can use Piketty's rough estimate for elite incomes – $G^* = 50$. Thus, the theoretical framework of the constructed scheme is subject to reasonable verification.

We emphasize that the systematization of political regimes in Table 1 allows us not only to carry out a kind of theoretical synthesis of elite theories, but also to operationalize formal constructions using understandable categories and economic indicators. This is the main significance of the proposed analytical scheme.

Generalizations and modifications of the basic model

The above constructions are the simplest of all possible. In this regard, several claims can be made against them. The most obvious of these are the following two.

The first one is the possibility of considering not two, but several classes or social groups. For example, a natural generalization of model (1) could be a three-factor model that also includes the middle class. Then a logical question arises as to whether the conclusions of the model will not change for such a more extensive scheme.

The second claim lies in the initially nonlinear nature of model (1). In this regard, it is natural to ask whether the identified properties of the model will be preserved with the transition to linear dependencies.

Let us answer the two questions.

First, let us generalize the basic model in the case of inclusion of a third social group – the middle class. Then function (1) will be as follows:

$$Y = AE^{\alpha}M^{\gamma}P^{\beta}, \qquad (10)$$

where M – size of the middle class; γ – elasticity of the middle class; the other designations remain as they have been deciphered above.

Balance ratio (2) for the population is summarized as follows:

$$N = E + M + P. \qquad (11$$

If we enter parameter λ as the share of the middle class in the total population, i.e. $\lambda = M/N$, then the dynamization of equation (10) gives the ratio:

$$\frac{dY}{dt} = \left(\frac{\alpha}{\zeta} - \frac{\beta}{1-\zeta-\lambda}\right)\frac{dE}{dt} + \left(\frac{\gamma}{\lambda} - \frac{\beta}{1-\zeta-\lambda}\right)\frac{dM}{dt} + \frac{\beta}{1-\zeta-\lambda}\frac{dN}{dt}. \qquad (12)$$

The simplest analysis shows that the impact of elite expansion on economic growth turns out to be the same as in model (1), but restriction (4) on the size of the elite is replaced by two simultaneous restrictions: $\zeta < \zeta^*$ and $\zeta < \zeta^{**}$, where

$$\zeta^* = \frac{\alpha(1-\lambda)}{\alpha+\beta}, \qquad (13)$$

$$\zeta^{**} = 1 - \lambda(1+\beta/\gamma). \qquad (14)$$

Formula (13) is a refinement of formula (4), and formula (14) can be perceived as an additional restriction for a fixed proportion of middle class λ. It is easy to see that threshold value (13) will almost always be an active constraint, and barrier (14) will, as a rule, be redundant for analyzing the size of the elite.

Thus, consideration of several population groups does not lead to qualitative changes in the previous conclusions.

We should note that models (1)–(2) and (10)–(11) can be used in relation to the global system. For example, according to Immanuel Wallerstein's concept, there are three groups of countries in the world system: core, periphery and semi-periphery (Wallerstein, 2006). Core countries can be interpreted as a kind of elite of the world economic system, semi-periphery countries – as the middle class, and periphery countries –

as the masses. Naturally, the starting position regarding which countries should be included in a particular system group is important here. We can assume that the core, as a governing elite, can be represented by only one country acting as the center of the current cycle of capital accumulation. Today, this role is performed by the United States. The world economic system can also be considered in a simplified form – within the framework of a two-factor model elites – masses or center – periphery; the empirical content of this scheme will be given below.

The second claim regarding the nonlinear form of the initial dependencies can be removed by considering the linear control and production functions in the initial dependence (1). Then model (1) will be as follows:

$$Y = A(\alpha E + a)(\beta P + b), \qquad (15)$$

where A, α, β, a and b – parameters of the introduced linear dependencies.

Combining equation (15) with formula (2) and making the simplest calculations, we obtain a quadratic dependence of GDP on the number of the elite, which has maximum point at the value:

$$E^* = (N + b/\beta - a/\alpha)/2, \qquad (16)$$

which corresponds to the threshold value of elite share:

$$\zeta^* = \frac{1}{2}\left(1 + \frac{b/\beta - a/\alpha}{N}\right). \qquad (17)$$

Thus, even the linear dependencies in function (15), assuming the conjugation of productive and managerial labor, give the same meaningful conclusions that were made earlier.

We can consider an even simpler case when the output is described by a linear function taking into account its two components:

$$Y = A + \alpha E + \beta P, \qquad (18)$$

where A, α and β – linear dependence parameters.

Then the dynamization of equation (18) will give the ratio:

$$\dot{Y} = (\alpha - \beta)\dot{E} + \beta\dot{N}. \qquad (19)$$

It is easy to see that equation (19) is a special case of equation (3) without taking into account the population structure of the two social groups. In other words, elite effectiveness still plays a major role in the dynamics of economic growth, but the limit on the scale of this group disappears. Thus, for the nonlinear case, the effectiveness and the accumulated size of the elite are important, and for the linear regime, only its effectiveness is important.

The above generalizations and modifications of model (1)–(2) demonstrate the invariance of the main conclusions obtained on its basis. This adds the necessary generality to the completed theoretical constructions.

Discussion of the results and new interpretations

The formal schemes we have constructed require application to the reality and explanation of the processes that are embedded in the presented models. To do this, let us turn to Turchin's works as they are the most meaningful ones regarding the role of elites in the preservation and disintegration of States. At the same time, the picture drawn in Turchin's works will be slightly corrected and supplemented in accordance with the above constructions.

According to Turchin's theory, the mechanism of powerful political conflicts and the collapse of statehood is based on the process of elite overproduction (Turchin, Nefedov, 2009; Turchin, 2020; Turchin, 2023). Along with the growth of this social group that possesses huge individual incomes, there is not only an inflow of people into this group, but also an inflow of national wealth. It means that the share of wealth attributable to the masses is decreasing, which, all other things being equal, leads to their impoverishment. This result serves as the basis for the political activity of the masses, their involvement in the struggle of the elites

and the subsequent social unrest. At the same time, the erosion of the elite layer itself is taking place – the so-called asabiyya, i.e. intra-group solidarity, is being destroyed. Elite expansion leads to a shortage of funds redistributed in its favor to ensure the "quota" of wealth for each of its members. This process eventually contributes to the localization of individual groups (clans) within it, with a gradual increase in competition for power and wealth between them. It is these rich and powerful groups lacking wealth and power that act as the main driver of the political struggle. These groups begin to fight for the support of their plans by the disadvantaged masses and carry out either a political coup or a revolution with a change in the principles of political government; in the case of a prolonged absence of a clear winner in a political conflict, there is a possibility of complete destruction of the former social order without building a new one, followed by the collapse of the State in one form or another.

Although the described mechanism as a whole correctly reflects the process of development of political conflicts, it still needs some clarification. The fact is that in Turchin's models, the elites themselves play a very limited role. Thus, the models assume that commoners are producers of goods, and elites are ordinary exploiters who appropriate a part of the wealth produced (Turchin, 2020, p. 297). Even including the State in his scheme in the form of a state budget, Turchin proceeds from the fact that elites act as a kind of *intermediary* between the masses and the State, transferring part of the benefits collected in the form of taxes to the budget. If the elites are getting poorer, they prevent the growth of taxes and replenishment of the treasury; there are also cases when the elite uses budget funds for their own needs (Turchin, 2020, p. 300). Thus, the deterioration of the position of the elites almost automatically generates a deterioration in the state budget, which is equivalent to a weakening of the State and its functions to maintain social order. However, such a scheme is clearly a simplification.

The fact is that the elites are by no means simple intermediaries between the abstract state machine and the productive population (masses). In addition, they carry out a *creative* mission to organize social production, regulate economic activity, promote international relations, maintain established norms in business and everyday life, etc. It is this aspect of their activities that is reflected in the managerial function $U(E)$ in formula (1). In other words, the elites provide their specific contribution to the creation of the country's collective macro-product, which is reflected by elasticity α in model (1). In this interpretation, the elites are also a *producing* class, although their very activities are mainly *organizational*. But then it is quite obvious that the very failure or inadequate fulfillment by the elites of their organizational and managerial mission leads to the disruption of the effective functioning of the economy, failures in production, and system-wide recession. At the same time, the condition of the budget itself may not be associated with their redistributive function. For example, budget replenishment will continue to occur in accordance with the established tax burden in the economy, but the decreasing economic activity of the system will not allow government spending to be reproduced in the same amount, which will lead to a budget deficit with all the ensuing negative consequences. While the settlement of this problem largely depends on the managerial competence of the elites, i.e. on their productive function.

We can provide another additional argument about the impossibility of an independent collapse of public administration effectiveness due to the growth of the elite class. If there are two classes in the country (elite and masses), each of which has its own effectiveness level, then the flow of individuals from one to the other will negatively affect the system only if this flow is carried out from

a highly productive group to a low-productive one. Consequently, the very growth of the elite will have a negative impact on the entire social life only after it *has already lost* its former managerial effectiveness compared to the effectiveness of the masses. Moreover, formulas (5) and (6) show that the group efficiency of the elite should not just decrease, but decrease strongly enough to disrupt reproductive processes in the country. Only after that will the process of elite growth become destructive and restrain economic development, which in turn is the main trigger for the rise of political conflicts. Otherwise, when the elites successfully cope with the mission of governing the country, their growth may cause some social tension due to the overflow of public wealth in their favor, but this is unlikely to lead to large-scale political clashes that can cause the collapse of political power.

Thus, an important clarification arising from the previous arguments is that the *initial impulse* for the erosion of political power is provided by the loss of the ability of this power to effectively manage society and address pressing issues. The natural consequence of this process is the weakening of the elite's ability to govern itself and restrain itself. In such periods of time, their uncontrolled growth begins due to the dubious enrichment of commoners and the arrival of people "from the outside" to important government posts. A noticeable decline in the elites' management ability, superimposed on the growth of their absolute and relative size, triggers a subsequent mechanism of weakening the economic potential of society with a deterioration in the position of both classes – masses and elites. This process leads to the destruction of the asabiyya of the ruling class and its fragmentation into competing political groupings. A prolonged economic crisis generates the logic of distributing the created macro-product by its spontaneous "splitting" into social groups in accordance with formula (9); sooner or later, the thresholds of social and biological tolerance of the population are reached, after which active destruction of the old social order begins.

Thus, an extremely attractive Turchin's model is preserved with some additions and clarifications. At the same time, the general picture of elite erosion and the development of political conflicts have a more significant explanatory potential.

The picture presented above brings new questions to the fore. The fact is that in our scheme, the initial impulse of social dynamics – a noticeable drop in elite effectiveness – turns out to be an exogenous factor that cannot be explained in the proposed scheme. Then there arises a logical question about what causes such a decline in the capacity of the political elite. We will try and give an answer to this question below.

Typology of political groups, elites and governance

We have already made an overview of the attributes of the elite that distinguish it from the masses. However, in addition to possessing power, wealth and personal qualities, representatives of the elite should have another attribute, which we will call a *system-oriented paradigm*. This is understood as an individual's worldview concerning the importance of the social system in their life and activities. In this regard, we can talk about two types of system-oriented paradigm. According to the first one, which we will call *holistic*, an individual finds the common (society as a whole) more important than the private (own personal affairs and interests); according to the second paradigm, which we will call *individualistic*, an individual finds the private more important than the common.

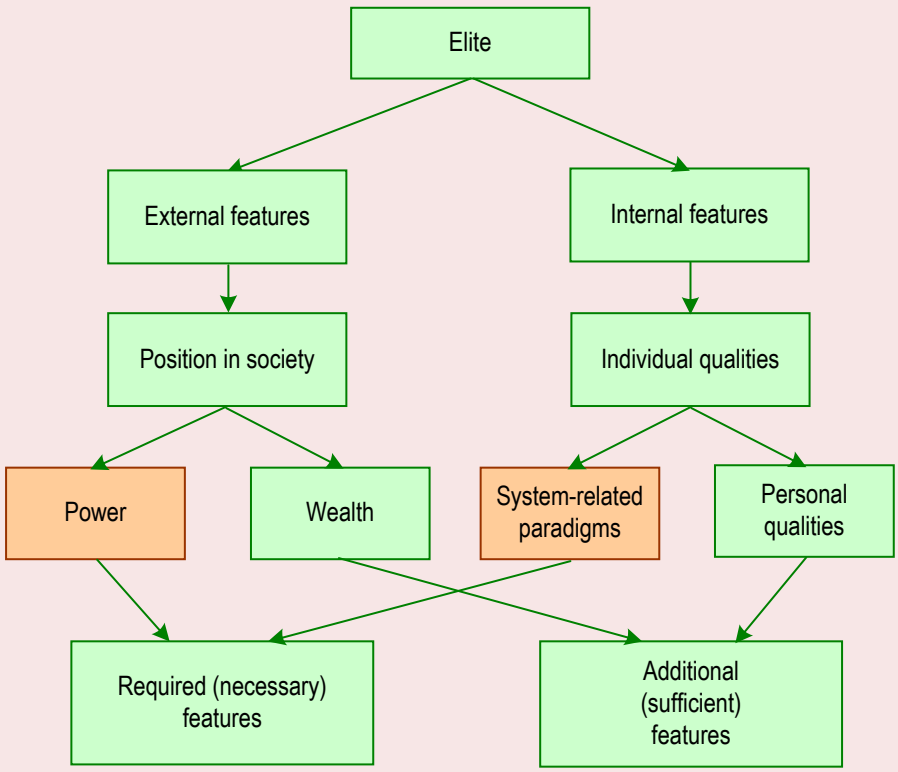
Strictly speaking, the deep meaning of the elite consists in the fact that its representatives, being responsible for the current condition and development of society, are guided in their decisions by the common interests and needs of the State – even contrary to their own desires and

interests. This position corresponds to the doctrine of *serving* something great – the State, the nation, God, etc. Unlike the elite, representatives of the masses can afford to put private (personal, family, career, etc.) interests above common (state-related) ones. At this point, the population is divided into two fundamentally different social groups, and the attitude toward the State as a kind of social integrity divides the elites and the masses into qualitatively disparate classes.

Let us recall that Aristotle also believed that "... man is by nature a political animal. And he who by nature and not by mere accident is without a state, is either above humanity, or below it" (Aristotle, 1984, p. 378). In other words, according to Aristotle, every normal person should have a developed political consciousness, but even Aristotle did not demand the *ability to sacrifice* from all citizens in relation to the State. This quality is undoubtedly the lot of the elite. It is the ability to sacrifice personal interests to the national ones that distinguishes the elite from the masses. It can be said that the holistic system-oriented paradigm of a representative of the elite is nothing more than a refined, crystallized and partially hypertrophied responsibility for what is happening in the country.

This makes it possible to expand the traditional understanding of elites to another dimension *(Figure)*. Here we should note that system-related paradigms, strictly speaking, do not duplicate traditional requirements for personal qualities, nor are they directly related to ethical standards. For example, a representative of the masses has the right to put their affairs above those of the State, because he/she is responsible to his/her loved ones (family, friends, colleagues, etc.), but does

Four dimensions of the elite



Source: own compilation.

not affect the situation in the State, and therefore is not responsible for it. Consequently, his/her individualistic system-related paradigm does not harm anyone and has nothing to do with ethics and morality. However, if this paradigm is not imputed to the masses and does not carry an immoral potential, then it cannot be directly applied to the elites either. Conversely, if a representative of the elite has all the positive personal qualities (professionalism, competence, honesty, modesty, etc.), but does not share a holistic system-related paradigm, then his/her actions in governing the State will most likely be ineffective or questionable. Accordingly, in order for the elites to be truly effective, the factors such as possessing power and having a holistic system-related paradigm are of key importance; otherwise, there is a high risk of destruction of statehood as such. The presence of wealth and high personal qualities is an additional condition for elite productivity.

This allows us to put forward a qualitative typology of political groups that are somehow embedded in the political process *(Tab. 2)*. This classification is based on the principle of the presence of defining features. Depending on their combination, different political subgroups can be distinguished, including those that do not fully belong to elite category. In this context, it is extremely interesting how the loss of one or another feature leads to the transformation of the classical elite into its modifications and antipodes. For example, if the elite loses positive personal qualities and a holistic system-related paradigm, then it turns into an oligarchy pursuing its own narrow interests. If the wealth factor falls out of the full set of features, then the political elite turns into a narrow layer of intellectual elite, capable of influencing political processes, but not receiving material support for its privileged position.

The main result of the previous constructions is the understanding of the fact that the most acute problem that arises for the State is *elite degeneration*, i.e., *assimilation of elites to masses*, when elites discard the holistic system-related paradigm and begin to pursue their selfish personal interests. In such cases, the public administration system loses its effectiveness, and the country begins to move toward destruction. If such a process acquires a sufficient scale and lasts for quite a long time, then the probability of a negative outcome increases to a critical value and may well be realized. We recall that the tradition of considering the process of *degeneration* and *degradation* of elite groups and their individual representatives dates back to biological interpretations of population dynamics (Ashin, 2010, p. 125). However, in our case, it makes sense to talk about a broader consideration of these processes, including under the influence of various social movements and circumstances.

Table 2. Qualitative typology of political groups

Presence of the feature				Political groups
Power	Wealth	Personal qualities	Holistic system-related paradigm	
+	+	+	+	Classical elite
+	+	+	–	Ruling class
+	+	–	–	Oligarchy
+	–	–	+	Classical bureaucracy
+	–	+	+	Intellectual (bureaucratic) elite
–	+	+	+	Business elite
–	–	+	+	Intellectuals
–	+	–	–	Leisure class

Source: own compilation.

In connection with the above, we will focus on the *inversion of the system-related paradigm* of the elites. The fact is that in addition to the quite understandable processes of degeneration and degradation of elite representatives, there is a wide range of social phenomena that objectively lead to this inversion of paradigms. As a stylized example of this kind of event, let us consider the period of transition from the Roman Republic to the Roman Empire.

Let us recall that the historical transition from a republican form of government to an imperial one is the content of the so-called Cicero paradox. According to the modern interpretation, republic is a *mixed* institution that provides a balance between three such *pure* institutions of power as monarchy, aristocracy and democracy; despite this, such a perfect institution lost its advantages and by the beginning of our era degenerated into a rather primitive imperial form of government with signs of tyranny (Balatsky, 2023). Apparently, the explanation for this transformation lies in the gradual degeneration of the Roman elite, which was based on the loss of a holistic system-related paradigm.

Indeed, the historical period under consideration was marked by large-scale civil wars, when the country's leading generals began a systematic struggle for absolute power contrary to the interests of the State. At the same time, it would be extremely rash to say that these generals demonstrated insignificant personal qualities. On the contrary, such names as Gaius Marius, Lucius Cornelius Cinna, Lucius Cornelius Sulla, Lucius Licinius Lucullus, Gnaeus Pompeius Magnus, Marcus Licinius Crassus and Gaius Julius Caesar speak volumes. They were exceptionally gifted, intelligent, educated, talented and by no means immoral people. Nevertheless, their attempts to seize sole power in Rome eventually led to the overthrow of the republic. We can reasonably assume that during the period under consideration there was a massive inversion of the system-related paradigm of the elites. Adrienne Mayor gives us the key to understanding the causes of this phenomenon: Rome's large-scale conquest campaigns led to the formation of huge troops and the strengthening of the influence of their military leaders; huge booty in successful wars instantly enriched the generals, gave them fame and made them popular among the masses; remoteness from the decision-making center led to the granting of additional political powers to military leaders, including the establishment of taxes and contributions, followed by additional enrichment at their expense; negotiating with foreign rulers increased their diplomatic status and allowed them to form international alliances; etc. (Mayor, 2010). This expansion of the powers of Roman generals contributed at first to the *identification* of their interests with those of the Roman Republic, and subsequently to the *primacy* of their private interests over the interests of the State.

However, one more important point should be mentioned in the considered example. By itself, the degeneration of the elites of the Roman Republic toward the predominance of selfish motives and the desire for sole power could not lead to the fall of the old form of government. For example, recent research suggests that the assassination of Caesar at a senate meeting was inevitable: it was not the first attempt, and it was a short-range conspiracy, whereas there was a parallel conspiracy of a larger radius, and possibly a third even more extensive circle of conspirators (Bobrovnikova, 2006). Thus, Caesar was doomed, which in itself proved the psychological unpreparedness of the elites for monarchical rule. Nevertheless, the subsequent accession of Gaius Octavianus Augustus did not cause such a protest. What is the reason for this?

The answer is as follows. The unprecedented expansion of the borders of the Roman Republic led to the loss of former effectiveness by the former

government: the elective procedure of consuls "supplied" more and more new actors to the political arena; the return of enriched triumphants to the city led to an increase in the number of elite representatives capable of activating large masses of the population; the need for generals to coordinate their actions with the conservative senate reduced the promptness of political solutions; a large number of revolts of slaves, Italian and other tribes required extremely harsh and even cruel decisions; conquests in different directions required long-term policy, coordination of actions and unity of command. In such conditions, the republican form of government gave systematic failures, which reduced the effectiveness of public administration. The elected consuls turned into political temporary workers, and the senate into a bureaucratic assembly, which did not allow for quick and productive solutions to emerging problems. The inability of the democratic government to solve the acute problems of the State manifested itself in the elevation of Lucius Cornelius Sulla to the post of dictator of Rome in 82 BC; this served as a kind of rehearsal for the future imperial rule. Thus, the fall of the Roman Republic was preceded by a sharp decrease in the effectiveness of state power, which gave rise to subsequent events.

In the given example, we have shown that the collapse of the Roman Republic went through several stages: military and economic expansion with its new challenges and problems; decline in the effectiveness of the rule of the old elite; expansion of the elite layer, disappearance of group asabiyya, fragmentation of the elite and the increasing competition of political groupings; identification of private and state interests by the elites with the subsequent primacy of private tasks; a series of political crises exacerbating the administrative problems of the government; victory of a new political group (Octavian Augustus and his supporters), formation of a new elite and establishment of a new political order (empire). An important feature of this example is that the inversion of the system-related paradigms of the elites occurred not through the degradation of its individual subjects, but due to the emergence of objective inconsistencies in the system of power itself and challenges from the public administration system.

Another and in many ways more revealing and simple example of the metamorphosis of the elite in terms of the loss of a holistic system-related paradigm can be found in the collapse of the Soviet Union. The mechanism of degradation of the Soviet elite due to the emergence of military-strategic parity and the curtailment of inclusive institutions in the country has already been considered in detail in the literature (Balatsky, Pliskevich, 2017). The result of such a policy, in the absence of obvious external challenges, was the preservation of the elite with a gradual deterioration in its productivity – both the personal qualities of managers and their system-related paradigms. The period before the collapse of the former statehood was marked by unprecedented ineffectiveness of management decisions and disorganization of the entire economic life in the country. However, in this case we should emphasize that the degradation of the Soviet elite did not occur independently or spontaneously, but under the influence of certain circumstances. The main provision, which follows from the above examples, is that in each case it is necessary to look for its own causes and factors that lead to the deterioration in elite quality. This rule significantly complements and deepens modern ideas about the erosion of institutions due to a qualitative change in their "filling" – the social system (Balatsky, 2023).

Empirical applications of elite theory

All of the above was based on qualitative analysis, but the theory does not receive sufficient credibility without empirical material. In this regard, let us consider a specific, but telling example related to the existence of the world elite represented by the United States.

To do this, we will use World Bank data to construct function (1) for the 1960–2022 time period[3]. Then model (1) will be constructed in logarithmic form for three historical segments: 1960–1975, 1976–2000 and 2001–2022, respectively:

$$lnY = \underset{(-6.84)}{-36.50} + \underset{(2.84)}{2.20}lnE + \underset{(2.59)}{1.13}lnP, \quad (20)$$

$R^2 = 0.996$; $n = 16$; $F = 1819.1$.

$$lnY = \underset{(-5.75)}{-13.28} + \underset{(2.24)}{0.93}lnE + \underset{(4.47)}{1.18}lnP, \quad (21)$$

$R^2 = 0.995$; $n = 25$; $F = 2028.3$.

$$lnY = \underset{(-4.22)}{-24.43} + \underset{(0.58)}{0.63}lnE + \underset{(2.78)}{1.94}lnP, \quad (22)$$

$R^2 = 0.992$; $n = 22$; $F = 1256.3$,

where Y – volume of global GDP; E – U.S. population; P – world population excluding U.S. population; n – number of observations; F – value of F-statistics; R^2 – coefficient of determination.

Constructed models (20)–(22) are satisfactory for the qualitative analysis of the phenomena under consideration.

Models (20)–(22) assume that the world economic system is divided into two unequal parts – the elite represented by the world hegemon (USA) and the periphery (other countries). Then the entire global GDP created is the result of the governing efforts of the elite (American population) and the masses (the rest of the world's population). Each participant makes its own contribution according to elasticities α and β. For convenience, the results of econometric calculations are presented in *Table 3*. Its analysis allows us to draw some important conclusions.

First, in retrospect, there is a clear downward drift of α parameter. Consequently, the effectiveness of the world's ruling elite represented by the United States was gradually decreasing, while the return of the periphery (β) showed an equally obvious opposite trend: it was increasing. Thus, we observe the process of gradual castling of the importance of the center and the periphery in the world economic system.

Second, the beginning of the 21st century was marked by a decrease in the effectiveness of the world hegemon and the loss of stable communication in conjunction with the periphery. Since the elasticity parameter of the United States became insignificant during this period, it can be argued that the global leader has already lost its systemic organizational basis. From a formal point of view, during this period, the original center–periphery model began to collapse.

Of course, the conclusions we have made cannot be overemphasized, but model calculations indicate exactly this course of events and urge us, at least, to pay attention to the nature of the center–periphery interaction.

Table 3. Effectiveness of American elite in different historical periods

	Parameters of model (1)		Condition for elite effectiveness	
	α	β	Presence	Form
1960–1975	2.201	1.133	+	$\alpha > \beta$; $\beta > 0$
1976–2005	0.939	1.177	+	$\alpha < \beta$; $\beta > 0$
2006–2022	0.633	1.938	–	$\alpha < \beta$; $\beta > 0$; α is insignificant

[3] See: Data from database of The World Bank: World Development Indicators. Available at: https://databank.worldbank.org/source/world-development-indicators

Table 4. Relative parameters of the United States in the global economy

Year	Relative scale		Relative inequality
	Population (ζ), %	GDP (μ), %	GDP per capita (G), times
1960	6.0	31.6	7.28
1970	5.6	28.6	6.80
1980	5.1	26.8	6.79
1990	4.7	27.2	7.56
2000	4.6	28.4	8.23
2010	4.4	25.2	7.26
2022	4.2	23.3	6.93

Considering that in the 2001–2022 period parameter α turns out to be insignificant, from a formal point of view it means that there is no influence of the center (i.e. $\alpha = 0$), which raises doubts concerning the fruitfulness of the world order supported by the United States. Consequently, by the beginning of the 21st century, the United States has exhausted its managerial potential. The negative geopolitical events that followed confirm this.

The conclusion we have made is confirmed by the available empirical data *(Tab. 4)*. For example, during the period under consideration, the relative indicators of the U.S. scale decreased ($\mu = Y^*/Y$, where Y^* – U.S. GDP; Y – world GDP), whereas the indicator of world inequality ($G = (Y^*/E)/[(Y–Y^*)/P]$) showed ambiguous dynamics. So, in 1998, G index exceeded the mark 8 times for the first time in many years, and in 1999 it set a historical maximum of 8.27. Thus, it was during these years that the United States reached the highest mark in the redistribution of world GDP in its favor. An analysis of retrospective data for 1960–1975, when the effectiveness of the management of the world economic system by the United States was at its maximum, shows that the upper limit of inequality can be considered the mark when $G = 7.45$. Consequently, in 1999, the index of social intolerance of the masses toward inequality was $g = 1.11$, i.e. it exceeded the critical mark. This state of affairs suggests that by the beginning of the 21st century, an antagonistic confrontation between the center and the periphery had emerged in the world system and the question of the legitimacy of the established social order came to the fore.

In addition to all that has been said, these figures allow us to take another look at the concept of elite overproduction. For example, in the historical interval of 1960–2022, the relative size of the population of the hegemon country decreased; therefore, we cannot confirm elite overproduction in the world economy; even the relative enrichment of the ruling class as a whole decreased, despite some local bursts of its growth. However, the main thing is that against this background, the very effectiveness of the actions of the elites decreased, especially at the beginning of the new century. Consequently, the crisis of the previous model of geopolitical leadership is caused not so much by the growth of the size of the elite and not even by its "greed", but by the loss of its managerial effectiveness in organizing world production. It is this idea that is central to the elite theory we put forward.

The reasons for the decline in the effectiveness of the American elite are associated with the gradual erosion of the U.S. institutional system (Balatsky, 2023). The old doctrine of the primacy of competition, which the United States had always won before, gradually stopped working. China found itself in a better position in the old institutional paradigm of competition.

The old tough methods of solving international problems have also begun to fail in Russia, Iran and North Korea. In the early 21st century, asabiyya within the American state began collapsing; there emerged an antagonistic confrontation between two political parties and the business elites behind them. The most striking external manifestation of the loss of strategic unity of the United States can be the emigration policy, when president Donald Trump was building a wall on the border with Mexico, and the regional authorities prevented him from fulfilling his plan; after Joseph Biden came to power, the wall began to be destroyed, and local authorities started to erect barbed wire fences, thereby entering into conflict with federal authorities. Such a lack of unity under the rule of "political temporary workers" led to excessive penetration of migrants into the country and the impossibility of effective operation of the "melting pot of cultures", which previously coped well with a smaller volume of migrants. Similar processes when the situation was getting out of control were observed in many areas of public, business and political life of the country. Thus, the world economic system outgrew the old institutional and political paradigm of the American elite, as a result of which it began to disintegrate into separate clans with their own interests, which gradually became higher than the national ones. In other words, the process of transition from a holistic to an individualistic system-related paradigm took place in the minds of American elite, with all the related consequences. Of course, technological progress reinforces all these phenomena, and the violation of Ashby's law provokes the collapse of the former social order and the collapse of the State based on outdated management principles.

Continuing the empirical line of this section, we can assume that a new leader emerged in the world economic system at the beginning of this century; it is China, which has already replaced or is replacing the old leader. To test this hypothesis, we constructed an econometric dependence for the 2001–2022 period:

$$lnY = \underset{(-1.53)}{-27.74} + \underset{(0.68)}{1.02}lnE + \underset{(2.84)}{1.70}lnP, \quad (23)$$

$$R^2 = 0.992;\ n = 22;\ F = 1267.9,$$

where Y – global GDP; E – population of China; P – population of the world excluding population of China; the rest of the designations remain as they have been deciphered above.

However, the parameters of model (23) do not allow us to confirm our hypothesis. The model of China's interaction with the rest of the world is extremely unstable – two regressors in the equation are insignificant. It means that at the moment there is a situation in which there is no unambiguous leader State in the world that would effectively manage global geopolitical processes. Perhaps the situation will clear up over the next few years, but so far there remains a geopolitical uncertainty.

Thus, the application of the general elite theory to the world economic system gives quite reasonable results, which suggests the possibility of expanding the scope of applied research using it.

Conclusion

The conducted research adds to modern views on elites and their role in public administration. The main emphasis in the proposed theory is on the fact that elites have lost effective management ability. At the same time, a new view of the problem does not conflict with existing concepts, but rather organically complements them. In particular, in contrast to P. Turhin's elite overproduction theory, our version examines the quantitative and qualitative changes of the ruling class in a single complex, which eliminates some inaccuracies in the interpretation of historical events. Attention is drawn to the possibility of transferring our elite theory to the mega-level when the center–periphery world economic system is considered. Verification of theoretical constructions based on statistical

data allows us to assert not only its fundamental possibility, but also the fruitfulness of further research in this direction.

The results obtained give reason to believe that in the future, collecting necessary statistical data may allow us to move to a proactive forecasting of crisis periods in the activities of national elites with subsequent adjustments to the strategy of public administration. At the same time, it seems that a more thorough calibration of the theory in terms of the system variables used may be required. In this case, groups such as the employed, unemployed, pensioners, youth, etc. can be taken into account more effectively. This will lead to a more extensive dichotomy of political regimes, while increasing its realism.

We cannot but mention the issue of replicating applied calculations based on the presented model within a single country. This question is not trivial and has no simple answer. However, the following hypothetical basic option can be proposed: for different regions of Russia, we can construct functions of type (1), where employees of the regional management system appear as the elite, and the rest of the population as the masses; GRP can be the output variable. Such a comprehensive monitoring could make it possible to assess the validity of the existing number of administrative staff in the Russian regions. Of course, different variations of the basic scheme are possible, and they require specific adjustment of the variables used.

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Received February 14, 2024.

DOI: 10.15838/esc.2024.2.92.3
UDC 316, LBC 66.2

The Role of the Elites in the Evolutionary Process: Conceptual Framework and Modern Interpretations

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Abstract. The article considers the influence of the elites on the evolutionary process and the current global upheavals that have evolved into a confrontation between two megacivilizations (West and Non-West), which threatens humanity with extinction. The aim of the study is to try and answer the questions whether these processes were to be expected; whether they correspond to the general principles of social development or are a coincidence. The research on the elites in the context of a civilizational approach and combining it with the concept of democracy allowed D. Zolo to build an elite model of civilization development, linking three components: stages of civilization development, type of elite, and form of government. It has been established that as civilization develops (from its inception to its demise), the elite moves from power forces to its supranational form, and this movement is accompanied by the transformation of forms of government from anarchy to tyranny. It is shown that the period of the heyday of a civilization coincides with the period of the rule of national elites; as soon as the elite loses the quality of national power and becomes *supranational*, the civilization starts declining. The source of the evolutionary development of a civilization is the creative potential of the elite, the vital energy of which is found in the passionarity of the ethnic group, "triggered" by the action of the hypercompensation mechanism based on A. Toynbee's "Challenge-and-Response" principle, which may not work in the case of the rule of the supranational elite. An assessment of the current state of the Western elite has shown its supranational nature and the worsening process of degradation accompanying the decline of Western civilization. This corresponds to the paradox of lagging behind, according to which a civilization that is more advanced

For citation: Ekimova N.A. (2024). The role of the elites in the evolutionary process: Conceptual framework and modern interpretations. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 64–80.DOI: 10.15838/esc.2024.2.92.3

in terms of technological development finds itself in a state of spiritual crisis and disintegration earlier. From this point of view, the unfolding confrontation is a clash between the supranational elite and its national opponents, who defend the traditional values and interests of their own countries. The novelty of the research lies in the construction of an elite model of the development of civilization, and in the consideration of a structural model of an evolutionary leap in the case of the rule of supranational elites.

Key words: national elite, supranational elite, civilizations, elite degradation, democracy, passionarity.

Acknowledgment

The article was prepared within the state assignment of the RF Government to the Financial University for 2024 on the topic "Socio-economic development in the fundamental transformation of systems era". The author expresses gratitude to the anonymous reviewers for their comments and constructive suggestions.

Introduction

Russia's special military operation in Ukraine, which began in 2022, revealed the deep processes taking place in the world. One of them is degradation of the supranational elite represented by a group of people with great power, influence and privileges that exceed the borders of national States. Yesterday's "*best of the best*" have turned into political puppets brought up by a transnational system of power (the so-called *Deep State*) and focused not on the national interests, but on the interests of globalists and the destruction of the cultural codes of their countries by waging a mental war against their own people. In parallel, a global proxy war has been unleashed with traditional States, primarily with Russia, which, according to Vladimir Putin, is fighting "*not just for Russia's freedom but for the freedom of the whole world*"[1] during the special operation in Ukraine.

The reason for the degradation of the supranational elite can be found in the aggregate influence of a whole range of factors. Among them we can highlight the decline in the level of knowledge and quality of representatives of this elite, caused by globalization and universal availability of information; loss of trust on the part of the population due to the lack of adequate channels of communication and feedback between the elite and the people; reduction of social responsibility of the elite due to the prevalence of personal enrichment over the interests of society; inability of the elite to adapt to new challenges and meet the requirements of society, to respond quickly to the changes that are taking place.

The consequences of the ongoing transformation of the ruling elite are catastrophic for the whole world and have already acquired the scale of a global confrontation between two megacivilizations (West and Non-West), endangering the continued existence of all humankind. This clash becomes even more tragic, because the struggle is existential for each of the megacivilizations. For the USA and its satellites (Western megacivilization), defeat means the loss of hegemony, the interests of which are defended by the Western establishment; for the Non-Western part of the world, it means the loss of sovereignty and national identity, the formation of a neo-colonial world "*based on the rules*".

Against this background, the following questions arise: is everything that is happening a certain pattern that corresponds to the principles of social development, or is it a certain combination of

[1] Plenary session of the World Russian People's Council. Available at: http://www.kremlin.ru/events/president/transcripts/72863

circumstances that arises under the influence of certain factors at a specific historical moment in time; what is the role of elites in the ongoing global events? The aim of the study is to try and find an answer to the above questions; thus, we propose to study the role of elites in the historical process in the context of existing theoretical knowledge combined with the current reality. The novelty of our approach consists in building an elite model of civilization development, and in considering a structural model of an evolutionary leap for the case of the rule of supranational elites.

Literature review

Modern literature contains many studies devoted to historical, methodological and theoretical aspects of elite studies. A significant part of these works discuss the definition of the term "elite", the discrepancies in relation to which are caused by different approaches to the study of elites. Some researchers who study elites from the point of view of a value-based approach focus on their personal characteristics, defining elite as a carrier of certain personal qualities, such as intellectual and moral superiority over the majority, leadership, wealth, unique socio-psychological qualities, creative component, etc. (G. Mosca, J. Bodin, L. Freund, R. Willemse, L. Vasilieva, A. Naronskaya, etc.); whereas proponents of the structural and functional approach focus on the functional characteristics of leaders: the ability to professionally engage in public administration, make strategic decisions and control strategic resources of power (V. Pareto, R. Michels, A. Etzioni, L. Sanisteban, H. Lasswell, G. Ashin, O. Kryshtanovskaya, O. Gaman-Golutvina, etc.). The most complete analysis of the term "elite", the stages of its formation and modern interpretations is contained in the works (Ashin, 2010; Gaman-Golutvina, 2000; Gaman-Golutvina, 2016; Krivoruchenko et al., 2012; Ledyaev, 2008; Mokhov, 2008; Fazulov, Kirilov, 2019). The object of our research is ruling (political) elite, which we will define with the use of the formulation proposed by O. Kryshtanovskaya: "*the elite is the ruling group of society, which is the upper stratum of the political class. The elite stands at the top of the state pyramid, controlling the main strategic resources of the government, making decisions at the national level*" (Kryshtanovskaya, 2005).

Another group of works focuses on various approaches to elite theory. Thus, a whole series of publications by Russian professor V. Ledyaev considers classical and modern concepts of power (Ledyaev, 2009; Ledyaev, 2010; Ledyaev, 2012). A comparative analysis of the functional and functionalist concepts of elites was carried out in the work (Ryabchenko, 2021). The former defines elite as individuals who exert a strategic influence on social processes, whereas from the standpoint of the latter, elite is viewed through the prism of its contribution to the preservation of the social system.

A significant contribution to the study of the processes of elite genesis was made by such researchers as O. Gaman-Golutvina, A. Chirikova, A. Duka, V. Mokhov, G. Ashin. They analyzed the phenomenon of elites in foreign and domestic science and revised what has been done in etiology over the past few decades; they also contributed to the development of Russian science about elites in methodological and applied aspects.

In the framework of *cyclical* concepts of historical development, elite dynamics are studied from the perspective of "circulation of elites", the main provisions of which were set out in the works of V. Pareto and G. Mosca, who considered the development of elites as a cyclical process: elites that arose in the lower strata of society rise to the upper strata, flourish and gradually die off, and they are replaced by new elites, going through the same phases of development and decline as their predecessors[2] (Zartman, 2019; Mokhov, 2012).

[2] See:https://libeldoc.bsuir.by/handle/123456789/50323

Proponents of the *civilizational* approach explore the formation of elites in an inextricable relationship with the development of civilizations and consider spiritual and cultural factors to be the basis of their cyclical reproduction (Mokhov, 2014; Badova, 2017).

The *systems* approach explores the "elite – masses" dichotomy as a basis of the social structure of any society; if interconnections in this dichotomy are destroyed, this can cause destabilization of society and its disintegration (Naronskaya, 2019; Dekker, Willemse, 1996). At the same time, the greatest danger to society lies in intra-elite disintegration into opposing groups pursuing their own special goals. The lack of consensus between competing sub-elite groups regarding the place and role of each of them in the power hierarchy can lead to going beyond the intra-elite conflict and spreading to the masses, thereby contributing to increasing instability in society. Special attention is paid to the influence of elites on the country's political structure, when the democratic regime represents a kind of optimum relationship between the masses and the elites working in the interests of society and thereby increasing the activity of the population (Kochetkov, 2009; Popov, 2010; Gaxie, 2017). It is noted that "*in the modern world, domination is shifting to the global transnational elite*" (Kochetkov, 2009, p. 152). The role of transnational elites in the global conflict and their influence on the global political process is considered in the works (Ivanova, 2015; Kochetkov, 2017; Lane, 2023). The authors note that the turn of transnational elites from a neoliberal strategy to a neoconservative one, accompanied by increased military spending and rising incomes of the American military-industrial complex against the background of reduced social spending and changes in the principles of the global financial system due to the loss of the hegemony of financial capital, meets serious resistance from adherents of the old approach and causes large-scale unrest throughout the modern world economic system.

The democratic foundations of society were considered through the prism of the interaction of elites and masses in the concept of the economic origins of dictatorship and democracy proposed by D. Acemoglu and J. Robinson, who argue that the stability of the socio-economic system is determined by the long-term "effectiveness" of its political and economic institutions (Acemoglu, Robinson, 2006). The economic theory of elites has been developed in the works (Lavrov et al., 2018; Ilukhin, Ilukhina, 2018). The authors show that the increasing role of elites in the economic processes of the Russian economy leads to the emergence of new socio-economic institutions (for example, the institution of leadership), which, due to their influence on economic processes and trends, can aggravate population differentiation in terms of living standards.

The latter areas include the study of elites within the framework of *institutional* and *synergetic* approaches. The first is related to the ability of the power elite to establish "*rules of the game*", and the abandonment of such rules contributes to the weakening of the elite and its falling under the "pressure" of paradigms formed by new power structures (Duka, 2001). The processes of elite transformation within the framework of a synergetic approach are considered through the prism of increasing chaos in a closed system, requiring the elite to take actions that would reduce the entropy of the system and achieve maximum results for society. If the elite turns out to be unable to solve these problems, then new teams that most correspond to the established order come to power (Vasilieva, 2011).

Methodologically, this work continues a series of works on elite theory in the context of the civilizational approach. Let us look at it in more detail.

Civilizational approach to elite theory

Within the framework of the civilizational approach, the historical process is viewed through the prism of local civilizations in all their diversity and uniqueness. "*Human history is the history of civilizations. It is impossible to think of the development of humanity in any other terms*" (Huntington, 2003, p. 46). Each civilization develops cyclically, going through phases of origin, growth, prosperity, decline, and disintegration. At the same time, the driving force of development and the fundamental elements of any civilization, according to supporters of the civilizational approach, are spiritual and cultural factors, and the reasons for its disintegration are mainly associated with internal processes, the main among which is the degeneration of the ethnic group (Skolota, 2008).

The first representatives of the civilizational approach[3], when dwelling on the causes of the death of civilizations, considered the concept of "ethnos" in the broadest sense of the word, meaning the people as a whole. Thus, N. Danilevsky, who formulated the theory of cultural and historical types, compared the development of civilization with the development of any organism on earth, during which there is a gradual depletion of its forces, leading eventually to the decomposition and death of this organism. N. Danilevsky associated the "*rotting*" of civilization with the exhaustion of the creative active principle in the peoples, when "*they either calm down on what they have achieved ... and grow old in the apathy of complacency (like, for example, China); or reach unsolvable, from their point of view, antinomies, contradictions, proving that their ideal ... was incomplete, one-sided, erroneous ... – in this case, disappointment sets in and the peoples fall into an apathy of despair. This was the case in the Roman world, during the spread of Christianity*" (Danilevsky, 2008, p. 131).

The German historian and philosopher O. Spengler associated the death of civilizations with the aging of any organism on earth, including peoples. In his opinion, the life of the people is closely interconnected with the life of culture, since culture is an external manifestation of the soul, which, having exhausted its creative powers, enters the final phase of its existence – the phase of civilization, when "*a people represented by a variety of forms and fused with the land*" transforms into a "*nomad, parasite, inhabitant of a big city*" who is barren, irreligious, and detached from tradition; at this point there occur "*the most extreme and most artificial states that a higher type of person is capable of. They are the completion ... They are the end, without the right of appeal...*" (Spengler, 1993, p. 163).

The concepts put forward by N. Danilevsky and O. Spengler have no direct reference to elite as a source of creative inspiration and the development of civilization, but consider the people as a whole; nevertheless, the idea of elitism can be traced in their teachings, since both thinkers associate the development of a civilization with the creative potential of the people, which concentrated in individuals endowed with "*excellent qualities*", and the death of a civilization is associated with the massification and barbarization of society, the prevalence of "*entirely insignificant people*". The idea of elitism is most vividly represented in the concepts of P. Sorokin, N. Gumilev and A. Toynbee.

P. Sorokin, the author of works on social stratification, which is the differentiation of "*a certain given set of people (population) into classes in hierarchical rank*" and which is expressed "*in the existence of higher and lower strata*", placed all the responsibility for the transformations taking

[3] So far, the academic community has not come to a consensus regarding who should be considered the founder of the civilizational approach. Despite the fact that most researchers say it is the Russian scientist Nikolai Yakovlevich Danilevsky, there are other points of view that attribute the emergence of the foundations of civilizational theory to earlier periods (Granin, 2020). In this paper, we will adhere to the opinion of the majority, which recognizes N.Y. Danilevsky as the founder of the civilizational approach.

place in society on the upper stratum (elite). A strong and talented aristocracy is the mainstay of society and the engine of its development, but the "*degeneration of the power of the ruling classes*", which "*sooner or later becomes inevitable*", turns out to be the cause of upheavals and revolutions. According to P. Sorokin, one of the signs of such degeneration is the destruction of the "*mechanism of social distribution*", when the untalented and weak elite, using all means possible, does not let *"tadpoles" from the bottom to penetrate their environment*", thereby blocking the influx of talented "*nuggets*", accumulating "*incompetent rulers*" at the top of society and disturbing the social balance. "*History tolerates predatory, cruel, cynical governments, but for the time being, as long as they are strong... But history cannot stand powerless and "kind", senseless and parasitic, arrogant and untalented governments for a long time*" (Sorokin, 1992, p. 291). Thus, P. Sorokin, as well as his predecessors, sees the source of society's development in a talented creative minority, the degradation of which is the main cause of social upheavals, leading to the reformatting of society and to its complete destruction.

We cite many examples from the history of humankind that confirm our theory. These are the degeneration of power in Ancient Rome in the 2nd century BC, which led to the emergence of the movement of the Gracchi brothers; and the rule of the "*extremely incompetent, untalented warmonger*" John II in France on the eve of the revolution of the late 14th century; and the consistent decomposition of the aristocracy under the governments of Louis XIV, Louis XV and Louis XVI, which resulted in the revolution of 1789; and the transformation of the Russian aristocracy "*into a social parasite*" at the end of the 19th century, which eventually led to the end of the "*wart on Russia's body*" (Sorokin, 1992).

L. Gumilev's passionarity theory speaks about the source that allows the creative minority to realize its potential; L. Gumilev believed that the rise of passionarity – the vital energy of an ethnic group – ensures the activity and creative rise of talented people who collectively represent the elite in society. During periods of declining passionarity, the elite also degrades, as it begins to form from "*evil nobodies*" with reduced qualities. Passionarity is based on certain energy vibrations called *ethnic field, the fluctuations of which are caused by planetary* and cosmic processes (solar radiation, electromagnetic storms, seismic activity, etc.) (Gumilev, 2016).

L. Gumilev's concept is expanded by the theory of A. Toynbee, who believed that any historical event is an internal reaction of society to an existential challenge from the outside. The main principle postulating the development of civilization, in his opinion, is "*Challenge-and-Response*", the essence of which lies in the ability of society to respond to the challenges it faces. It is this principle that determines the movement of civilization at all stages of its existence: from genesis to death. If a society accepts a challenge and adequately responds to it, then it develops; ignoring a challenge or failing to respond to it threatens society with degradation up to its complete destruction (Toynbee, 2011).

"*Rare superhumans*", whose representative "*can only be described in one word: Personality*", are capable of adequately responding to the challenge, performing an act of creation and ensuring the growth of society. It is such Personalities who are able to "*overcome the inertia or open hostility of the social environment*", disrupt social balance and establish a new order. "*The very fact that the growth of civilizations is the work of creative personalities or creative minorities suggests that the uncreative majority will be left behind until the discoverers pull up the rearguards to their own level*" (Toynbee, 2010, p. 268). But the very Individuals who have lost the ability to create contribute to the disintegration of society. "*For ... one of the symptoms of social disintegration and the cause of social division is the degeneration of a minority that was previously able to*

lead thanks to its creative potentials, but now retains power only through brute force" (Toynbee, 2010, p. 464).

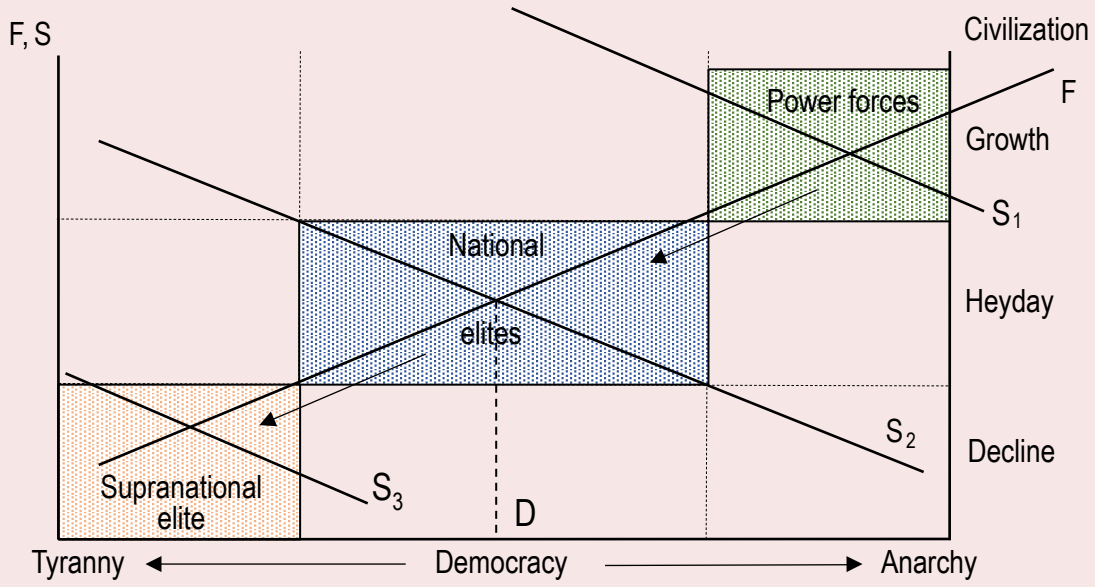
In addition to reducing the passionarity of the ethnic group, which affects the degeneration of the elite, modern scientists consider a serious factor in the degradation of the upper strata to be their loss of the quality of national power, which should mobilize both society and government to achieve national goals. The main criterion of the "*national elite*" is its ability to implement policies in the public interest aimed at strengthening the sovereignty of the country. At the same time, there are situations when the elite has not *yet* become national, being some kind of *power force* representing the interests of individual territorial societies; either it is *no longer* such, having incorporated into the "world elite" or having become a comprador elite (Mokhov, 2014).

Elite model of civilization development

The above conceptual approaches to the role of elite in the historical process make it possible to synthesize existing knowledge and assess the current geopolitical situation from the perspective of elite theory. Before doing this, let us turn to another modern concept that examines evolutionary processes from the point of view of the growing complexity of society and the resulting transformation of its democratic foundations. We are talking about D. Zolo's concept of democracy, according to which politics is the selective regulation of social risks, and democracy is a kind of compromise between security and freedom (Zolo, 2010).

The synthesis of D. Zolo's concept with the conceptual approaches to elite theory discussed above makes it possible to assess the role of elites not only in terms of civilization development phases, but also in accordance with the forms of government. The geometric interpretation of D. Zolo's concept presents democracy as a mechanism for finding a balance between freedom and security, similar to the universal mechanism for

Figure 1. Elite model of civilization development



Source: own compilation.

establishing economic equilibrium. Deviation from equilibrium toward increased security characterizes the movement toward tyranny; if equilibrium deviates toward the growth of freedoms, then there is movement toward anarchy (Balatsky, 2013). The imposition of the postulates of the civilizational approach to elite theory on this construction allows us to build an *elite model of civilization development* (*Fig. 1*) and draw the following conclusions.

First, the development of civilizations generally correlates with the development of political elite, when specific types of ruling elites dominate at different stages of civilizational evolution. Thus, at the stage of the origin and growth of civilizations, which is characterized by the transition from patriarchal family communities to proto-state associations with their administrative centers, governing bodies (councils of elders, assemblies), religious centers and military formations and their further transformation into states, power belongs to the *powerful forces* that manage their territorial entities, have property rights to communal lands and maintain independence despite the increasing power of the tsars (Borisov, 2021). The heyday of civilization, as a rule, coincides with the period of the rule of *national elites* that implement policies aimed at strengthening sovereignty and creating conditions for the development of the state and society, whose interests they represent. As soon as the elite loses the quality of national power, becoming *supranational*, there begins a decline of civilization, the final point of which is its death.

Second, as civilizations develop, political elite shifts from the ruling forces to supranational elite, and the forms of government move from anarchy toward tyranny, which, although they act as extreme forms of government associated with the genesis and death of civilizations, do not necessarily imply their indispensable implementation. Rather, they indicate a certain vector of movement from one extreme to the other. So, if at the dawn of any civilization it is characterized by the presence of a large number of disparate communities (analogous to anarchy), then by its decline any civilization is shifting toward a rigid dictatorship peculiar to the rule of a supranational elite, contrary to the generally accepted rhetoric about the democracy of its rule.

Third, in accordance with the laws of W. Ashby and E. Sedov, in the process of evolution, society become more complex, which in turn leads to an increase in social risks and a decrease in the level of public safety. Figure 1 shows this as a downward shift in the security curve ($S_1 > S_2 > S_3$), accompanied by a decrease in the level of democracy and a movement toward authoritarian regimes (Balatsky, 2013). The imposition of the civilizational approach to elite theory on this construction shows that establishing a balance between freedoms and security is a necessary, but insufficient condition for achieving democracy. Drifting around the conditional equilibrium point D, which means the predominance of democratic foundations in the social structure, is possible only when power is in the hands of a national elite focused on the interests of the State and its people, which, as was established above, globally coincides with the heyday of the civilization.

To confirm the above conclusions, let us turn to historical facts. For example, the history of *Roman civilization* is usually divided into the royal, republican, and imperial periods. The tsarist period, associated with the birth of Roman civilization and the formation of its statehood, is characterized by a gradual transition from disparate tribes (*Latins, Sabines, Etruscans*), in which there was no clearly defined power and in which the military-priestly nobility occupied the dominant position, to the Roman "civil community", consisting of 30 curiae of 10 clans each, power and public relations in which were based on the principles of "military democracy". During the republican period, which marked the heyday of Roman civilization, the principle of the supremacy of the Roman people

was enshrined in the legislative rights of the people's assemblies. Despite the fact that democracy was indirect, the political structure of the Roman Republic was quite democratic: the plebeians were equalized with the patricians in civil rights, the position of tribune was elective, there was a developed system of government institutions. The period of the Roman Empire is characterized by the collapse of republican institutions and the advent of the time of dictatorships, which ended with the collapse of Roman civilization in the 5th century AD[4].

Another example is *Sumerian civilization*. At the stage of its formation, the disparate villages of the southern Mesopotamia were united into city-states (*nomes*), each of which had its own elite, tsarist government, army and culture. By the beginning of the third millennium BC, there were more than a dozen and a half nomes. The struggle for hegemony that unfolded between them contributed to the establishment of a kind of confederation of city-states with a single supreme ruler. A bicameral parliament was created to resolve military issues. The upper house (senate) consisted of elders, and any male citizen capable of carrying a weapon could take part in the work of the lower house. Thus, in the heyday of the Sumerian state, there was a kind of democratic government that limited the power of the king and recognized the rights of the people's assembly. The conquest of Sumer by the Akkadian army and the establishment of the monarchy of Sargon I, who proclaimed himself the "*king of Sumer and Akkad*", marked the beginning of the decline of Sumerian civilization. It is noteworthy that, having lost its independence and being under the yoke of Akkadian kings, the original Sumerian state went through a period of recovery associated with the construction of an irrigation system, roads and ports. However, gradual extermination of the Sumerian population, disappearance of the Sumerian language, and spread of slavery eventually led to the collapse of the Sumerian state and complete disappearance of the Sumerian ethnic group (Kramer, 1965).

The elite model shown in Figure 1 has a number of limitations and assumptions that require additional research and understanding. First, the life of civilizations is much longer than the life of any elite, and throughout the life of a civilization, elites change many times under the influence of both internal and external factors. As a result, the cycle of elite change presented in the model in reality can occur repeatedly during the existence of civilizations, causing internal fluctuations associated with the formation (rise) and degradation (fall) of elites at each stage of civilization development. In this regard, the presented model is dynamic, since it demonstrates the *global vector* of movement of the political elite (from the ruling forces to the supranational elite) and the forms of the political structure of society it sets (from anarchy to tyranny) during the life cycle of the civilization (from its inception to its demise). However, in reality, the evolutionary process is an uneven movement, at each stage of which the elite can transform into any of the types under consideration, thereby causing fluctuations, the direction of which is determined not only by the ability of the ruling elites to withstand the challenge that has arisen, but also by the level of their passionarity.

Second, there are situations when it seems that there is a failure in the combination of national elite – civilization heyday / supranational elite – civilization decline. For example, the idea of building a socialist society in the past century was spread by the Soviet government far beyond the borders of the USSR; as a result, we ca argue that the Soviet elite went beyond national interests and represented a supranational elite. During the same period, the peak of activity of Soviet society also occurred. That is, we can say that the

[4] See: https://pnu.edu.ru/ru/faculties_old/full_time/isptic/iogip/study/studentsbooks/lectures3/igpzlecture1/

heyday coincides with the period of rule of the supranational elite, which contradicts the logic presented above. However, this is not entirely true, since it was previously noted that the main criterion for identifying a supranational elite is its *loss of the quality of national powe*r. The Soviet elite, even extending its influence beyond the borders of the country, remained nationally oriented and acted as a national force mobilizing both society and government to achieve internal interests. Moreover, the loss of the quality of national power by the Soviet elite caused disintegration of the great country.

Structural model of an evolutionary leap: the case of supranational elites

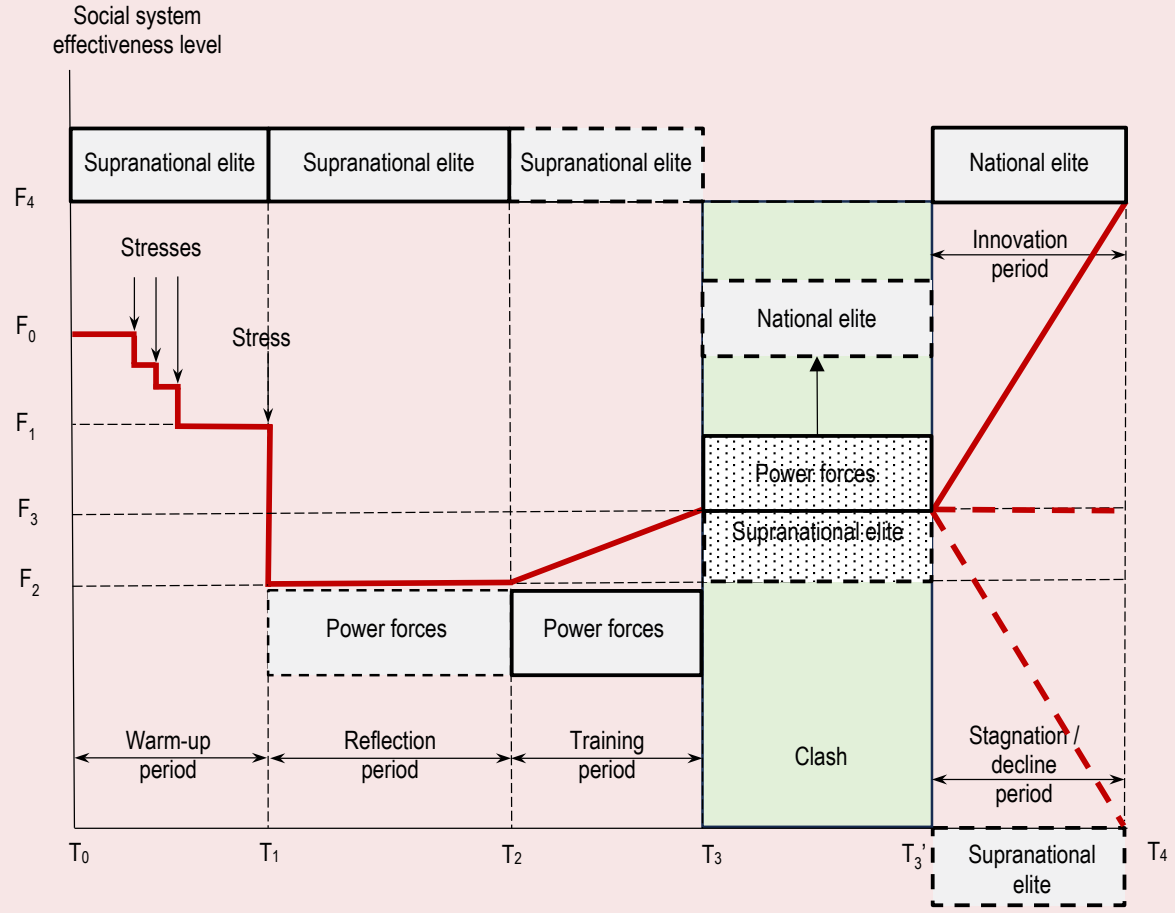
The mechanism of the birth of ethnic passionarity is revealed by the structural model of an evolutionary leap developed as a result of the integration of A. Toynbee's "Challenge-and-Response" concept and L. Gumilev's passionarity theory (Balatsky, 2022). According to this model, the whole process can be divided into several stages. At the first stage, called *warm-up period*, there certain external challenges (stresses) consistently emerge, which society painlessly ignores up to a certain point in time. However, the cascade of external challenges, stretched over time, eventually "overflows the cup" and leads to the second stage – *reflection period*. At this stage, an inventory effect occurs when the potential of the system is assessed and a vector of its possible further transformations is formed to eliminate the problems that have arisen. The third stage, *training period*, is characterized by the concentration of all the resources of society in vital areas (mobilization effect) and the formation of a new elite capable of implementing transformations and making the transition to *innovation stage*, ensuring the restructuring of the entire system based on new management and organizational structures. The combination of these stages, which in their essence are the mechanism of action of A. Toynbee's "Challenge-and-Response" principle, provides the effect of N. Taleb's hypercompensation, triggering the "explosion" of L. Gumilev's ethnic passionarity.

This model represents a general scheme of the birth of passionarity of an ethnic group, which can transform depending on the type of ruling elites who have taken on a cascade of external challenges. Let us consider the most meaningful and illustrative case when, during the warm-up period, a supranational elite is in power, unable to make decisions focused on the interests of its own State (*Fig. 2*).

A series of challenges coming from the outside during the warm-up period (T_0–T_1) violates the established foundations and creates a situation when, against the background of the ongoing rule of the supranational elite, whose interests extend beyond the borders of the country they govern, there emerge new, patriotic-minded power forces, for example, certain political parties focused on strengthening national sovereignty and internal development (T_1–T_2). The subsequent training period (T_2–T_3) is crucial, since it ends with a clash between a weakening supranational elite and strengthening power forces (T_3–T_3'). The outcome of this confrontation determines the further trajectory of social development (T_3–T_4). According to the classical model of an evolutionary leap, the combined impact of mobilization effects (at the T_2–T_3 stage) and restructuring effects (at the T_3–T_4 stage) causes hypercompensation effect, triggering an "explosion" of passionarity and providing an evolutionary breakthrough. However, such a trajectory is feasible in the case when, as a result of confrontation, the supranational elite/power forces gain the upper hand and the formation of a national elite takes place. When the supranational elite wins, there comes either a period of stagnation (at best) or a stage of decline.

The presented logic is quite clearly demonstrated by modern Germany, which, after its defeat in World War II, lost its sovereignty and fell under Anglo-

Figure 2. Structural model of an evolutionary leap for the case of supranational elites



Source: own compilation.

Saxon (American) influence. Despite the fact that the country was allowed to develop economically quite successfully, Germany's political dependence did not allow it to form a national elite focused on internal interests. The global events launched in 2022 served as the "shock shake" for Germany, which was supposed to launch the hypercompensation mechanism in accordance with the model under consideration. However, the presence of a supranational elite in power has led to the fact that external interests have proved to prevail over national ones. German Foreign Minister Annalena Berbock expressed this very clearly: "*If I promised the people of Ukraine that 'we will be with you as long as you need', I want to keep this promise. No matter what my German voters think, I want to keep my promise to the people of Ukraine*"[5].

The lack of independence of the German ruling elite and its inability to pursue an independent policy leads to disastrous consequences, which the elite in power is absolutely unable to deal with. Thus, the rejection of Russian energy resources, which are the basis for competitiveness of the German economy; explosions at the Nord Stream gas pipeline and the unwillingness of Germany's

[5] See: https://business-swiss.ch/2022/09/berbok-nevazhno-chto-dumajut-moi-nemeckie-izbirateli/

allies to investigate them; countless anti-Russian sanctions harming the country's economic agents – all this contributed to the fact that the German economy ceased to be the largest one, began to plunge into recession, and its GDP drop by the end of 2023 amounted to 0.3%[6]. German industrial production decreased by 1.5% in 2023. The country's energy-intensive industries and the chemical industry were most severely affected: their production index decreased by 20 and 24% respectively[7] from February 2022 to December 2023, according to the German statistics service *Destatis*. Against this background, German companies are reducing production and transferring it to other countries, among such companies are *Volkswagen AG* and *Mercedes-Benz*, the largest industrial gas producer *Linde, Delkeskamp* packaging plants, *Nelskamp* roofing tile plant, etc.; foreign giants such as French and American tire manufacturers *Michelin* and *Goodyear*, French manufacturer of seamless tubes *Vallourec*, South African pulp and paper group *Sappi*, Dutch zinc plant *Bludel* are leaving the country[8].

Despite the fact that the economic decline deals a blow to the welfare of Germans, the ruling elite of Germany continues its anti-national policy, arguing that it is impossible to "*match the suffering of Ukraine and social guarantees in Germany*", because "*this would be a mockery for the inhabitants of Ukraine*"[9] and the population of Germany must tolerate this state of affairs, since German Chancellor O. Scholz said: "*I took an oath [to support Ukraine], and for the sake of this oath I will work day and night*"[10].

The result of the policy is a catastrophic drop in public trust in the ruling elite. Thus, according to the results of a survey by the *Institute for New Social Answers* (INSA, Germany) conducted in January 2024, 72 and 76% of respondents were dissatisfied with the work of the German Chancellor and the federal government, respectively. At the same time, the rating of the Social Democratic Party of Germany (SPD) has dropped to a record 13%, and the combined indicator of support for the ruling "traffic light" coalition – the SPD, the Greens, and the Free Democratic Party of Germany (FDP) – is only 30%. This is happening against the background of the growing popularity of the far-right parties Alternative for Germany (AfD; 22%) and the Sahra Wagenknecht Alliance – Reason and Justice (BSW; 7%), which advocate policies in the interests of the German State[11]. AfD co-chair A. Weidel, commenting on the words of German Foreign Minister A. Berbock regarding the support for Ukraine contrary to the interests of her own voters, said: "*Someone who clearly spits on the interests of German voters must not hold a ministerial post. We need a diplomatic foreign minister who will defend the interests of German citizens and advocate for negotiations and peace between Russia and Ukraine*"; BSW leader S. Wagenknecht said: "*A foreign minister, who claims to represent the interests not of German voters, but of the voters of Ukraine, and who rejects negotiations on ending the war in the interests of the U.S. government, is not only a blatant mistake, but also a threat to our country*"[12].

Returning to the structural model of the evolutionary leap, we can say that Germany is now clearly in the training period, which in the upcoming 2025 federal election will result in a clash of elite groups. The outcome of this clash will determine the future of the country.

[6] See: https://russian.rt.com/business/article/1208792-germaniya-ekonomika-oslablenie

[7] See: https://expert.ru/news/promyshlennoe-proizvodstvo-germanii-upalo-nizhe-prognozov/; https://www.pravda.ru/news/economics/1947172-germanija_perekhodit_na_import_plastika_khimproizvodstvo/

[8] See: https://www.fondsk.ru/news/2023/12/04/germaniya-teryaet-svoyu-promyshlennost.html

[9] See: https://tass.ru/ekonomika/18281805

[10] See: https://ren.tv/news/v-mire/1119944-sholts-odobril-umenshenie-vyplat-maloimushchim-radi-biudzheta-na-oboronu

[11] See: https://iz.ru/1634059/2024-01-14/opros-vyiavil-nedovolstvo-rabotoi-kantclera-sholtca-u-bolee-70-nemtcev

[12] See: https://business-swiss.ch/2022/09/berbok-nevazhno-chto-dumajut-moi-nemeckie-izbirateli/

The destructive role of the supranational elite can be traced on the example of the USSR, when Western elite, which waged a cold war with the Soviet Union, was able to launch a program of destruction of the country through the rule of Mikhail Gorbachev and Boris Yeltsin, who betrayed the interests of their people. The policy aimed against national interests resulted in the disintegration of a great power, carried out by the authorities who ignored the results of the referendum on secession from the USSR, in which about 80% of the country's population voted for its preservation[13]. For almost a decade of the rule of Yeltsin, who actually took the oath of office to his overseas master in the US Congress in 1992, announcing the fall of the "*Communist idol*" who "*sowed social discord, hostility and unprecedented cruelty*" and "*inspired fear in the human community*", and calling on the Lord to bless America[14], the decline of the country and the formation of a supranational elite continued. Vladimir Putin's rise to power "confused" the plans of Western elites, who, according to former US President George W. Bush, expected that "*Russia would be more compliant. But then Putin changed dramatically*"[15]. The country entered the reflection period, when, along with the current oligarchy, a new force began to form, which entered into the struggle for national interests and which took almost two decades to become the very national force that launched the "explosion" of the passionarity of the Russian people, observed today in Russia.

Modern elite in the context of the evolutionary model of civilization development

The currently unfolding global confrontation, the catalyst of which was the beginning of Russia's special military operation in Ukraine in 2022, is the result of the evolutionary development of two megacivilizations (West and Non-West) and the growth of their civilizational identity, which took place over a long time, significantly exceeding a two-year period. The main characteristics of the two megacivilizations and the factors that led to their confrontation are described in detail in (Balatsky, 2022). The evolutionary model of civilization development formulated above allows us to supplement and clarify these characteristics, taking into account the assessment of the current state of the modern elite.

According to the division of the world into two megacivilizations by the value criterion proposed in the work (Balatsky, 2022), the United States and countries that are in the orbit of their interests (Canada, Australia, European countries, Singapore, South Korea, Japan, etc.) belong to Western civilization. In fact, we are talking about a coalition of unfriendly countries that have unleashed a hybrid war against Russia, which has become the personification of Non-West. In accordance with the evolutionary model of civilization development, it is easy to see that the countries of the West are united by another feature: almost all of them are States in which power is in the hands of a supranational elite. And, as we noted above, the loss of the quality of national power by the elite is an important sign of its degradation, which, within the framework of the civilizational approach, is considered as a feature of the disintegration of civilization; i.e. we can say that these are countries ruled by the elite at the stage of its degradation.

The catastrophic consequences of the process of degradation of the supranational elite are now more obvious than ever. The idea of "European unity" promoted by the supranational elite actually destroys national States, undermining their economies, energy security and sovereignty. Today, many European countries are experiencing an economic crisis, accompanied by an increase in unemployment and a decrease in the quality

[13] See: https://tvzvezda.ru/news/201612080822-kdk8.htm

[14] See: https://mediamera.ru/post/25615

[15] See: https://ren.tv/news/v-rossii/977084-vovan-i-leksus-pokazali-prank-s-bushem-na-forume-novye-gorizonty

of life, while the elite continues to indifferently increase their power and wealth and build their "bright future" on the ruins of nation-States and the principles of democracy. Against this background, the very idea of European unity is "bursting at the seams".

The degradation of the U.S. ruling elite results in a rapid rejection of democratic principles in favor of harsh authoritarian measures based on the principles of gerontocracy. Current events taking place in the United States seemed impossible a few years ago: destruction of the sacredness of the institution of presidency in order to eliminate a competitor in the election race; demolition of monuments to the country's founding fathers under the auspices of the fight against racism; failed migration policy that turns the country into a "haven" for crime; restriction of freedom of speech and persecution of journalists for wanting to interview leaders of other countries; complete disregard for the death of American citizen Gonzalo Lira in a Ukrainian prison; legalization of various mental disorders that put people with healthy minds on the verge of insanity, etc. However, the most striking thing today is rapid aging of the ruling elite, bordering on the loss of all reasonable limits. Today, the president of the United States is an "*elderly man with a bad memory*"[16], whose behavior causes outright bewilderment of the whole world; in 2023, 90-year-old Senator Dianne Feinstein, who had worked in the US Senate since 1992, died in office[17]; the Republican leader in the US Senate, 81-year-old Mitch McConnell, falls into prostration at his press conferences[18]; 83-year-old Nancy Pelosi, who announced her intention to be re-elected to Congress in 2024, provokes a conflict in the United States and China by flying to Taiwan and declaring commitment to the principle of "One China" and support for Taiwan's freedom at the same time[19]; 100-year-old Henry Kissinger also visited China, trying to mediate in the dialogue between the two countries[20]. The list can be continued indefinitely, but even these few examples clearly demonstrate the process of degradation of the Western elite.

Nevertheless, today's American elite, despite all the bravura speeches about its openness and democracy, is an example of a strictly hierarchical closed society, which is almost impossible to break into. Last but not least, this is due to the effective education system. Thus, the path to the political Olympus of both the American and world elite begins with the unification of the most prestigious universities, which is commonly called the Ivy League. Its leaders are Harvard University and Yale University, alma maters of thirteen American presidents. The age-old dispute between Democrats and Republicans is often compared to the confrontation between Harvard and Yale[21].

Despite the existing system of grants for education for gifted but poor talents, Ivy League universities remain the abode of obscenely rich youth from the most elite families united in secret university fraternities, such as, for example, Skull & Bones, Scroll and Key, and the Wolf's Head at Yale University. Commitment to the fraternity institution, which has long since turned into a kind of multinational corporation that takes care of its members, persists throughout life and is a guarantee of a successful career after graduation. Therefore, almost half of U.S. presidents, 42% of all U.S. senators, 30% of all supreme judges and 85% of the

[16] See: https://www.1tv.ru/news/2024-02-09/470533-amerikanskiy_spetsprokuror_nazval_dzho_baydena_pozhilym_chelovekom_s_plohoy_pamyatyu

[17] See: https://topwar.ru/227089-prestarelaja-imperija-v-ssha-skonchalas-senator-rekordsmen-kotoraja-i-v-90-let-ne-sobiralas-pokidat-dolzhnost.html

[18] See: https://ria.ru/20230830/makkonnell-1893276227.html#:~:text=Макконнелл%2C%20которому%2081%20год%2C%20замолчал,разгар%20пресс-конференции%20на%2019%20секунд

[19] See: https://ria.ru/20230908/nensi-1895098320.html

[20] See: https://www.vedomosti.ru/politics/articles/2023/07/20/986103-genri-kissindzher-priehal-v-kitai

[21] See: https://www.mk.ru/politics/2017/09/08/cherep-i-kosti-liga-plyushha-kak-v-universitetakh-mira-gotovyat-mirovuyu-elitu.html

heads of large companies were members of various fraternities[22]. At the same time, neither joining various fraternities nor graduating from prestigious universities guarantee a high level of education and competence of the modern elite (Balatsky, Ekimova, 2022).

These facts are a clear proof that Western civilization, having overcome the period of its heyday, confidently entered the stage of decline with its accompanying form of government (oligarchy) and supranational elite (see Fig. 1), whereas the Non-West, in accordance with the *paradox of lagging behind*, when a civilization that is more advanced in terms of technological development finds itself in a state of spiritual crisis and disintegration earlier, acts as a defender of traditional values and spirituality (Balatsky, 2022). It is difficult to predict how this confrontation will end, since the series of decisions taken today by the Western elite, according to Vladimir Putin, "... *really threatens a conflict with the use of nuclear weapons, and, consequently, the destruction of civilization*"[23].

Conclusion

Consideration of the role of elites within the framework of the civilizational approach closely links the development of a civilization with the development of elites, which at different stages of civilization development may exist in the form of a powerful force, national or supranational elite. Combining this approach with Zolo's democracy concept made it possible to build an elite model of civilization development by combining three factors: type of elite, form of government and stage of civilization development, and to show that as a civilization develops (from its inception to its demise), the elite moves from powerful forces to its supranational form, accompanied by a change in forms of government from anarchy to tyranny. The presented model is a theoretical construction that can later be used for empirical calculations for individual countries and civilizations.

The source of evolution at any stage of civilization development is the creative minority (elite), and the implementation of its potential is due to the action of the mechanism of an evolutionary leap based on the "Challenge-and-Response" principle and the passionarity of the ethnic group. Concentration of power in the hands of a supranational elite at the moment of launching the hypercompensation mechanism, which gives rise to the passionarity of the ethnic group, may not work and lead to the opposite effect. This is due to the fact that elite degeneration, an important feature of which is the loss of its national identity, leads to the decline of society. The extreme point may be the complete destruction and disappearance of a civilization.

The global confrontation between the West and Non-West that has unfolded in the world is actually a confrontation between supranational and national elites, degradation and development, a "*rules-based*" order and a world based on international law, which can be evil and good. The outcome of this confrontation remains to be known, but it will not change the vector of movement of civilization on a global scale.

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[22] See: https://russian7.ru/post/studencheskie-bratstva-ssha-kak-kuetsya/

[23] See: https://ria.ru/20240229/zapad-1930211871.html

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Received March 5, 2024.

DOI: 10.15838/esc.2024.2.92.4
UDC 332.12, LBC 65.9(2Rus)-98

Characterizing Export Specialization of Northwestern Federal District Regions within the Framework of the Economic Complexity Concept

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Abstract. The issue of achieving economic development, which is especially acute in the context of geopolitical turbulence, is of interest to government representatives and scientists, both Russian and foreign. One of the ways to resolve it is to make the economy more complex, and identify the most and least developed segments. The latter is implemented within the framework of the concept of economic complexity. The aim of the work is to study specifics of the export specialization of Northwestern Federal District regions. To achieve the goal, we address tasks such as determining the export specialization of the regions of the Northwest of Russia, identifying the commodity structure of the received specializations, and determining the micro-specializations of the regions within the district. Based on the statistical data of the federal customs administrations on foreign trade of the country's constituent entities, we calculate the index of identified comparative advantages. Through the assessment of the index values and the

For citation: Cheplinskite I.R., Lukin E.V. (2024). Characterizing export specialization of Northwestern Federal District regions within the framework of the economic complexity concept. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 81–95. DOI: 10.15838/esc.2024.2.92.4

contribution of goods to the total volume of exports of the regions, we determine the goods of the export specialization of Northwestern Federal District regions and reveal the main specialization of the district. Among the goods characterized by a small contribution to the total volume of exports of the regions, the search for promising micro-specializations is carried out in two ways. As part of the first method, among the goods exported by Northwestern Federal District regions, we highlight those in whose supplies Russia occupies a leading position in the world. The second way is to assess the markets of developing countries. Scientific novelty of the research lies in the definition of goods of export specialization of Northwestern Federal District regions using the tools of the concept of economic complexity. Information base of the study includes data from federal customs administrations, the financial company MSCI, foreign databases Trade Map and The Observatory of Economic Complexity, as well as Russian and foreign research in the field of industry specializations. The results of the study can be used by regional authorities in the development of strategic documents, to substantiate economic policy in the search for promising economic specializations and market niches.

Key words: export specialization, specialization industries, economic complexity, micro-specializations, Northwestern Federal District.

Acknowledgment

The research was supported by Russian Science Foundation grant 23-28-01862, https://rscf.ru/en/project/23-28-01862/.

Introduction

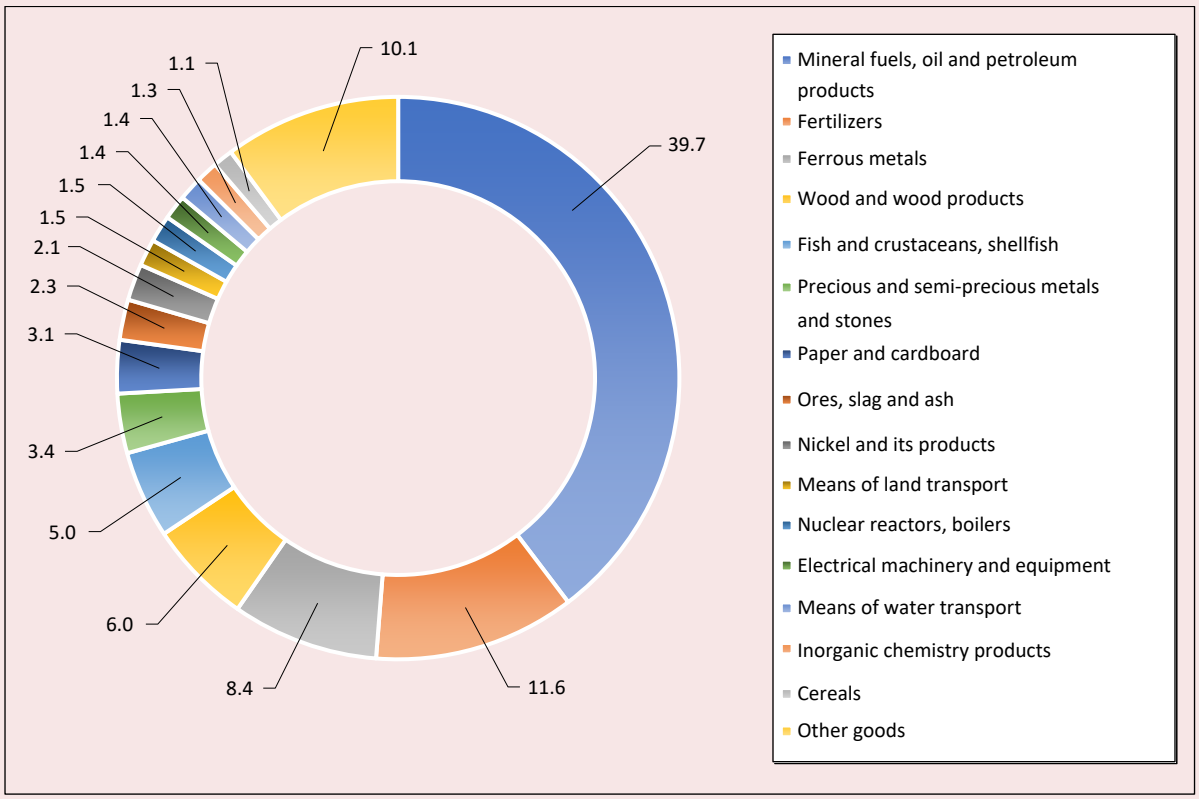
The issue of achieving economic growth does not lose its relevance. It has become especially acute in the context of geopolitical turbulence, aggravated by sanctions intensified since February 2022, which caused a slowdown in Russia's economic development. The studies aimed at finding ways to promote economic growth are highly relevant not only from the standpoint of theoretical economics, but also in the context of improving the quality of management decisions (Baranov, Skufina, 2018; Lukin, Uskova, 2018). However, this requires conducting research on many different aspects, including the specifics of national economies and economies of individual regions, their industry specialization, and identification of the most and least developed segments (Lyubimov et al., 2017).

Economic growth is promoted by export activities that affect the foreign economic situation of the country's market and contribute to economic development of territories. At the same time, non-primary exports are of great importance. With a low share of products from high-tech industries in the total volume of goods and services supplied abroad, it is difficult for the country to integrate into the global economic space and ensure effective domestic development (Gulin et al., 2018; Koptseva, Salimonenko, 2020).

The need to increase exports of non-primary products also arises in regions of the Northwestern Federal District (NWFD; *Figure*). As of 2021, in the structure of goods supplied by the NWFD abroad, the share of goods of low processing, which include oil and petroleum products, fertilizers, precious and semi-precious stones, ores, nickel, cereals, some of ferrous metal products[1], accounted for more than 50% of total exports.

[1] Classification of export goods. Russian Expert Center. Available at: https://www.exportcenter.ru/international_markets/classification/ (accessed: April 2, 2024).

Commodity structure of NWFD exports in 2021, % of the total



Source: own compilation based on Federal Customs Service data.

Data from a survey of heads of industrial enterprises in the Northwest of Russia conducted by RAS Vologda Research Center in 2023 (Shirokova, Lukin, 2023) show that 20% of respondents intend to increase the depth of processing of manufactured products, and only 20% of enterprises have reached the maximum processing depth. Due to restrictions on trade with unfriendly countries, industrial companies have faced a number of problems that limit their functioning. According to 85% of respondents, the most acute issues include difficulties in obtaining imported components and raw materials. Some enterprises (16%) have already launched the production of import-substituting goods; 13% plan to launch such production. However, one of the main measures to adapt to the new conditions was the search for new markets for manufactured goods both domestically (72%) and abroad (42%). The majority of respondents (65%) intend to continue producing the same goods as before, only with a change in the main consumer.

Under the current conditions, it is necessary to complicate the economy, but it requires finding out regional specializations, which is feasible through the concept of economic complexity, which evaluates the export baskets of countries and individual territories within them. Thus, the aim of our work is to study export specialization of Northwestern Federal District regions. Achieving the goal requires addressing the following tasks: identifying goods of export specialization of Northwestern Federal District regions; identifying the commodity structure of export specialization

of NWFD regions; identifying goods within the microspecialization of NWFD regions.

We regard regions as units of the administrative-territorial division of Russia. The object of the study is the economy of the Northwestern Federal District, the subject is export specialization of regions of the NWFD.

Theoretical background of the study

International and Russian practice contains many approaches to determining the economic specialization of individual territories based on the calculation of various indicators and appropriate techniques. The most widely used is the localization coefficient (Kopczewska et al., 2017; Fracasso, Marzetti, 2018), otherwise called the Hoover – Balassa coefficient or the Hoover specialization index (Hoover, 1936). With its help and with the use of such indicators as, for example, production output or the number of employees, it is possible to calculate the concentration of the industry in the region and assess its significance for the economy at the moment, as well as to study its development in dynamics (Kutsenko et al., 2019). The indicator of specialization is the index value, at which a unit (or, less often, an interval from 0.8 to 1.25) is taken as a threshold value (Kutsenko, Eferin, 2019).

Some studies use indicators such as coefficients of per capita production, interdistrict marketability (Barsukov et al., 2019), Herfindahl – Hirschman indices, specialization level (Belov, 2012), Gini concentration index (Devereux et al., 1999; Kolmakov et al., 2019), and a number of others. They are based on data on the volume of output or export of products, level of consumption, share of the region in national or industry production, etc. Like the localization coefficient, they indicate the presence of specialization in the industry in the region if the numerical value of the indicator exceeds a threshold – from 0.5 to 1 (Prokopyev, 2015).

Among the listed indicators, the coefficient of interdistrict marketability is based on data on the regions' foreign trade. It represents the ratio of the volume of goods exported from the region to the volume of its production. The use of the indicated coefficient is difficult due to the discrepancy between the commodity nomenclature and the general classifier of economic activities in statistical data on exports and shipments of regions as the main sources for its calculation. This requires searching for another indicator to identify promising economic specializations based on export data.

In addition to the limitations associated with finding the information necessary for calculations, the above indicators have another drawback. It lies in the fact that the resulting totals may lead to a reassessment of industry specialization or vice versa, which is typical for regions with large agglomerations producing a wide range of goods. To avoid inaccuracies, researchers introduce additional indicators, adjust existing ones or develop their own techniques for determining the region's specialization. Thus, in 2014, the European Cluster Observatory proposed a methodology for identifying branches of specialization, in which the latter were distributed according to their level of development in the region, and also divided into clusters (Ketels, Protsiv, 2014). This technique was tested by Russian researchers (Kutsenko et al., 2019; Simachev et al., 2014), and it went through certain adjustments, which, in order to minimize errors, make the conditions for classifying the industry as a specialization of the region more strict, which helped to exclude regions characterized by unilateral concentration or specialization (Kutsenko, Eferin, 2019).

Some studies are aimed not only at identifying the current branches of regions' specialization, but also at finding promising ones. So, an example is a technique developed by A.V. Kotov and co-authors under the order of the Ministry of Economic Development of the Russian Federation. It is based on the competence matrix of the region, using a number of calculated indicators characterizing the

effectiveness of the current specialization, assessing the innovative and scientific and technological potential of the territory (Kotov et al., 2019).

A team of researchers from Vologda Research Center of the Russian Academy of Sciences and Vologda State University designed their own methodology for identifying promising economic specializations of the Vologda Region (Rumyantsev et al., 2022). It is based on the abovementioned research by A.V. Kotov and co-authors and considers a number of components, including the effectiveness of the industry specialization that has developed in the region, market potential, innovation activity, as well as the availability of publications corresponding to economic activities. In addition, the authors take into account the need for technological sovereignty of the economy and aspects related to the transformation of existing value chains. They highlighted indicators that, after calculation, are assigned a point score in accordance with certain intervals. The final score is an integral assessment of the potential of a promising specialization.

The techniques for identifying promising specializations described above are based on a wide range of indicators, including those taking into account the innovative and scientific component of the regions' potential; however, our study assumes a narrower focus on the regions' foreign trade, which requires searching for other methods and choosing other indicators. In the context of identifying branches of specialization, the concept of economic complexity has been widely used, based on the index of identified comparative advantages and a number of other indicators, among which the ECI (Economic Complexity Index) occupies a central place (Hausmann, Klinger, 2006; Hidalgo, et al., 2007; Tacchella et al., 2012). It allows assessing the structure, scope and depth of the economy, taking into account the diversity and uniqueness of its sectors. The index is also used to forecast economic growth, identify areas for diversification and development of national economies (Kudrov, 2023).

Materials and research methods

To identify export specialization branches of NWFD regions, we used the RCA (Revealed comparative advantage) index (Balassa, 1965), calculated as follows:

$$RCA_{cp} = \left(EX_{cp} / \sum cEX_{cp}\right) / \left(\sum pEX_{cp} / \sum p \sum cEX_{cp}\right), \quad (1)$$

where EX_{cp} – exports of commodity p by country c;

$\sum cEX_{cp}$ – sum of total export of country c;

$\sum pEX_{cp}$ – global export of commodity p;

$\sum p \sum cEX_{cp}$ – total global export.

The formula described above is used to calculate comparative advantages at the country level. Our study examines the complexity at the level of individual regions, and therefore expression (1) requires some adjustments. So, we consider EX_{cp} as export of a particular commodity p by region c; $\sum cEX_{cp}$ – total export of region c; $\sum pEX_{cp}$ – export of commodity p by the whole country; $\sum p \sum cEX_{cp}$ – total export of the country. The numerator calculates the share of commodity p in the total export of region c, the denominator – the share of the same commodity in the structure of economic activity of the whole country. Thus, in this expression, the shares of commodity p in the total export of the region and the country are compared.

To establish the fact of the revealed comparative advantage in the export of commodity p, the calculated indices are checked for a restriction type condition from the bottom: if its value is greater than a certain value, then the region has advantages, if less, then there are none (Afanasiev, Kudrov, 2021). In the framework of the works we have reviewed, a unit was chosen for the threshold value in most cases, so we introduced the same value by analogy.

The information base of our study includes statistical data from the customs administrations of federal districts and the Kaliningrad Regional Customs, foreign databases containing information on the volume and structure of world export, such as Trade Map and The Observatory of Economic Complexity, data from the financial company MSCI in the field of emerging markets. Domestic and foreign research in the field of industry specializations was also used.

Body of the work

In the course of our work, we collected data on foreign trade of 85 constituent entities of Russia for 2021, obtained on the websites of customs administrations for federal districts. On this basis we calculated RCA indices for each constituent entity. With the established limitation of the index value at the unit level, we received the following number of goods in the export of which NWFD regions have the identified comparative advantages: Republic of Karelia – 60, Komi Republic – 25, Arkhangelsk Region (together with the Nenets Autonomous Area) – 60, Vologda Region – 55, Kaliningrad Region – 22, Leningrad Region – 200, Murmansk Region – 26, Novgorod Region – 101, Pskov Region – 194, Saint Petersburg – 351. Reducing their number requires introducing an additional restriction, namely the contribution of these goods to the total exports of each region. Thus, those items whose share in the total volume was at least 1% are classified as export specialization goods. The total number of commodity items is shown in *Table 1.*

The Pskov Region occupies a leading position in terms of the number of goods with the identified comparative advantages in its export. The Vologda Region and the Karelia Republic are also characterized by a large number of such goods, while their number for the Kaliningrad and Novgorod regions and Saint Petersburg is the smallest. The latter is distinguished by a large number of goods with a comparative advantage from different industries, but their share in the total supply is small.

As a result of the calculations, a list of goods in the export of which there is an identified comparative advantage was obtained for each region (*Tab. 2*).

The obtained values of the comparative advantage index range from several units (for example, 1.72 for oil and petroleum products in the Komi Republic or 3.58 for wheat and meslin in the Kaliningrad Region) to several hundred and thousands (1186.97 for ship derrick cranes in the Pskov Region). The lowest values are typical for goods that are widely distributed in the export baskets of regions not only in the Northwest of Russia, but also in the country as a whole; that is, they are traded by many constituent entities of the

Table 1. Number of goods in the export of which the regions of the Northwestern Federal District have the identified comparative advantages, units

NWFD constituent entity	Number of goods
Pskov Region	16
Karelia Republic	12
Vologda Region	12
Arkhangelsk Region (with the Nenets Autonomous Area)	11
Leningrad Region	11
Murmansk region	11
Komi Republic	10
Novgorod Region	6
Saint Petersburg	6
Kaliningrad Region	3
Source: own calculation based on Federal Customs Service data.	

Table 2. Export priorities of Northwestern Federal District regions in accordance with the index of identified comparative advantages, 2021

Specialization	RCA	Specialization	RCA
Karelia Republic			
Ores and concentrates, iron	33.91	Chipboard	24.52
Sawn timber	16.57	Frozen fish	5.93
Kraft paper and kraft cardboard	101.05	Unprocessed timber	11.12
Newsprint	66.99	Fillets of fish and other fish meat	16.22
Wood pulp	19.31	Nuclear reactors	7.30
Fuelwood production	41.26	Lumber in the form of profiled mouldings	44.36
Komi Republic			
Oil and petroleum products	1.72	Newsprint paper	50.50
Glued plywood	44.34	Wood pulp	12.36
Sawn timber	10.51	Carbon	366.28
Kraft paper and kraft cardboard	72.30	Linoleum	279.15
Uncoated paper and cardboard	75.99	Lumber in the form of profiled mouldings	39.94
Arkhangelsk Region (with the Nenets Autonomous Area)			
Sawn timber	26.30	Frozen fish	7.38
Diamonds, processed or unprocessed	234.76	Fuel wood	35.38
Uncoated paper and cardboard	84.87	Uncoated paper and cardboard	34.14
Kraft paper and kraft cardboard	55.79	Fillets of fish and other fish meat	15.98
Pulp production	31.49	Glued plywood	26.30
Crustaceans	7.80		
Vologda Region			
Hot rolled products made of iron and non-alloy steel	25.26	Semi-finished products made of iron or non-alloy steel	2.25
Complex chemical fertilizers	23.40	Front and mirror cast iron	5.15
Nitrogen fertilizers	10.49	Glued plywood	4.26
Clad rolled products made of iron and non-alloy steel	34.31	Cold rolled products made of iron and non-alloy steel	8.99
Iron ores and concentrates	7.34	Unprocessed timber	6.79
Sawn timber	3.43	Pipes made of ferrous metals	8.76
Kaliningrad Region			
Wheat and meslin	3.58	Light motor vehicles	5.33
Ferrous metal waste and scrap	9.12		
Leningrad Region			
Oil and petroleum products	3.14	Industrial tobacco	44.88
Complex chemical fertilizers	8.87	Ferroalloys	7.09
Tires and pneumatic rubber tires	20.03	Ammonia, anhydrous or in aqueous solution	54.96
Ferrous metal waste and scrap	4.94	Uncoated paper and cardboard	25.91
Petroleum gases and other gaseous hydrocarbons	17.03	Phosphinates (hypophosphites), phosphonates (phosphites) and phosphates	29.06
Sawn timber	2.31		
Murmansk Region			
Nickel matte	105.03	Fillets of fish and other fish meat	32.45
Crustaceans, in shell or without shell	35.89	Frozen fish, except for fish fillets	11.45
Raw nickel	103.40	Oil and petroleum products	2.40
Iron ores and concentrates	17.10	Cobalt matte	2.89
Aluminum ores and concentrates	104.97	Refined copper and raw copper alloys	104.59
Calcium phosphates	93.51		

End of Table 2

Specialization	RCA	Specialization	RCA
Novgorod Region			
Nitrogen fertilizers	49.54	Sawn timber	3.19
Complex chemical fertilizers	35.65	Chipboard	9.41
Glued plywood	11.40	Fuel wood	11.63
Pskov Region			
Waste and scrap of ferrous metals	61.11	Ship derrick cranes	1186.97
Sawn timber	13.30	Milk whey	1727.55
Pork, fresh, chilled or frozen	739.44	Ready-made or canned fish, caviar	75.89
Tissue paper	1643.65	Insulated wires	14.13
Fillets of fish and other fish meat	22.40	Petroleum gases and gaseous hydrocarbons	6.25
Fuel wood	26.35	Copper wire	3.42
Food by-products of animal origin	910.46	Lumber in the form of profiled mouldings	52.04
Unprocessed timber	10.38	Furniture and its parts	23.85
Saint Petersburg			
Oil and petroleum products	2.40	Ferrous metal waste and scrap	6.59
Crude oil and crude oil products	1.49	Cruise ships, sightseeing, ferries, cargo ships	9.37
Gold, unprocessed or semi-processed	16.39	Light motor vehicles	4.83
Source: own calculation based on Federal Customs Service data.			

Russian Federation. Goods with the highest values, on the contrary, are exported to a lesser extent or are not exported by other regions, which indicates the uniqueness and high importance of exports of these goods for the economy of such regions.

The list of export priorities we have obtained has common features and differences as compared to similar lists presented in other studies. Thus, the work (Lukin, 2023) contains a list of market specializations of the economy of NWFD regions for 2021; it was formed on the basis of the size of the specialization coefficient for various types of activities for each region of the district. The list in Table 1 differs from it by the fact that the number of export specializations includes more wood products, fish and crustaceans, products of the chemical and extractive industries, while freight and passenger transport, livestock products are represented more narrowly. The study (Rumyantsev, 2023) also identifies the current and prospective market specializations of the Northwest regions. In the current specializations for most constituent entities of the district, in comparison with the list we obtained, there are fewer types of economic activities related to fishing and processing of fish, crustaceans and shellfish, manufacturing of chemical industry products, including fertilizers; however, as in the previous case, the specialization includes more industries for the production of vehicles and various equipment. Promising specializations are also focused more on the manufacture of machinery and equipment, ferrous metal products, wood, chemical products, etc.

We evaluated the commodity structure of the products in the compiled list. The commodity groups are defined in accordance with Form 2-TS of the statistical reporting of the federal customs administrations (*Tab. 3*).

Based on the data presented in Table 3, we can say that the Leningrad and Pskov regions are characterized by the most diversified exports, goods with the identified advantage of which are combined into the maximum number of groups, namely five. The products of the four groups are represented in the Komi and Karelia republics, as well as in the Vologda Region. The Arkhangelsk and Novgorod regions are characterized by the least diversified exports (two commodity groups in each).

The most widely represented among the goods of export specialization of the Northwestern Federal

Table 3. Distribution of goods in the export of which NWFD regions have the identified comparative advantages by commodity groups, units

Commodity group	Karelia Republic	Komi Republic	Arkhangelsk Region	Vologda Region	Kaliningrad Region	Leningrad Region	Murmansk Region	Novgorod Region	Pskov Region	Saint Petersburg	Total
Food products and agricultural raw materials (except textiles)	2	-	3	-	1	1	3	-	5	-	15
Mineral products	1	-	-	1	-	-	3	-	-	-	5
Fuel and energy products	-	1	-	-	-	2	-	-	1	2	6
Chemical industry products, rubber	-	1	-	2	-	4	-	2	-	-	9
Wood and pulp and paper products	8	7	7	3	-	2	-	4	5	-	36
Textiles, textiles and footwear	-	1	-	-	-	-	-	-	-	-	1
Metals and products made from them	-	-	-	6	1	2	5	-	2	1	17
Machinery, equipment and vehicles	1	-	-	-	1	-	-	-	2	2	6
Source: own compilation.											

District are those that belong to the timber industry complex (TIC), they account for 36.7% of the total number of goods. The second position is occupied by the group of metal products (17.3%), the third is food and agricultural products (15.3%). Exports of textiles and mineral products by NWFD regions are the lowest: 1 and 5.1%, respectively. In addition, such a group as "raw leather, furs and products made from them" is completely absent.

Commodity items excluded from the list of goods of export specialization due to the small volume of their sales are also an object of research interest. Despite their small contribution to the total volume of regions' exports, they play an important role in the economy and have the potential for development. The most significant of them were identified as promising microspecializations. They were identified in two ways: by assessing all-Russian exports of goods, and by assessing the markets of developing countries friendly to Russia. In the framework of the first method we allocated those goods, in the export of which Russia occupies a leading position in the world. Using the information provided in the Trade Map database[2], through a comparison of commodity nomenclature, we identified those items, in the volume of supplies of which the share of the Russian Federation in 2021 was at least 1%. Then the resulting list was correlated with the list of goods exported by NWFD regions, which are characterized by an RCA index value of at least one. By excluding items already included in the list of goods with identified comparative advantages, we obtained a list of microspecializations of NWFD regions (*Tab. 4*).

The presented list is concise, because the number of goods is large. The items in this list were also combined into commodity groups similar to those indicated in Table 2, which make it possible to assess the structure of the obtained microspecializations (*Tab. 5*).

The most diversified structure is found in Saint Petersburg, where all ten commodity groups are represented. The second place is occupied by the Leningrad Region (seven groups), followed by the Vologda Region (six groups). The minimum is observed in the Pskov Region – only one commodity group. In general, in the Northwestern Federal District, the most widely represented goods are those related to TIC (29.2%), as well as to the group of food products (22.6%), the least represented goods are fuel and energy products (0.9%) and leather raw materials (2.8%).

[2] ITC. Trade Map. Available at: https://www.trademap.org/Index.aspx (accessed: February 7, 2024).

Table 4. Goods of export microspecializations of NWFD regions obtained as a result of the assessment of all-Russian exports

Region	Microspecializations
Karelia Republic	Tallow oil; explosives other than gunpowder; grain of cereals other than rice, grain germs of cereals; uncoated paper and cardboard
Komi Republic	Tallow oil; uncoated paper and cardboard; chipboard with oriented chips; fiberboard, fuelwood
Arkhangelsk Region	Tallow oil; lumber in the form of profiled mouldings
Vologda Region	Alloy steel wire; matches; iron wire; calcium and aluminum phosphates; carpentry and joinery; uncoated paper and cardboard; chipboard with oriented chips; lumber in the form of profiled mouldings; other rods; flat rolled; untreated lead; bread, flour and confectionery; bottles; fiberboard
Kaliningrad Region	Fur raw materials; fishing vessels and floating bases; fuel wood; leguminous vegetables
Leningrad Region	Wood pulp; extracts, essences and concentrates of coffee and tea; cotton wool and products made from it; bottles; wallpaper; linoleum; fuel wood; carbonates; untreated lead; uncoated paper and cardboard; harness of artificial threads; tall oil; parts of railway locomotives; lumber in the form of profiled mouldings; metal structures made of ferrous metals, etc.
Murmansk Region	Nickel powders and flakes; niobium, tantalum, vanadium or zirconium ores and concentrates; aluminum wire
Novgorod Region	Refractory ceramic building materials; sawn timber in the form of profiled mouldings; linoleum; cereals, coarse flour; uncoated paper and cardboard
Pskov Region	Ambergris, castoreum, civet and musk; rapeseed or colza seeds
Saint Petersburg	Hydraulic turbines, water wheels; fur and fur raw materials; matches; cotton wool and products made from it; tea; razors and blades for them; bodies for motor vehicles; sulfur; other industrially manufactured tobacco; carpentry and joinery; newsprint; shaving products, deodorants; copper wire; chipboard with oriented chips; steam turbines; glued plywood, etc.
Source: own compilation.	

Table 5. The number of microspecializations of NWFD regions obtained as a result of the assessment of all-Russian exports, by commodity group, units

Commodity group	Karelia Republic	Komi Republic	Arkhangelsk Region	Vologda Region	Kaliningrad Region	Leningrad Region	Murmansk Region	Novgorod Region	Pskov Region	Saint Petersburg	Total
Food products and agricultural raw materials (except textiles)	2	-	-	1	1	3	-	1	2	14	24
Mineral products	-	-	-	1	-	-	1	-	-	1	3
Fuel and energy products	-	-	-	-	-	-	-	-	-	1	1
Chemical industry products, rubber	2	1	1	1	-	3	-	-	-	7	15
Raw leather, furs and products made from them	-	-	-	-	1	-	-	-	-	1	2
Wood and pulp and paper products	1	4	1	5	1	8	-	2	-	9	31
Textiles, textiles and footwear	-	-	-	-	-	3	-	1	-	2	6
Metals and products made from them	-	-	-	5	-	1	2	-	-	5	13
Machinery, equipment and vehicles	-	-	-	-	1	1	-	-	-	3	5
Other products	-	-	-	1	-	3	-	1	-	1	6
Total	5	5	2	14	4	22	3	5	2	44	106
Source: own compilation.											

In the framework of the second method, we assessed the goods supplied to the markets of developing countries[3]. The choice of this category of trading partners is due to the high potential for the development of their economies, as well as the growing volume of their trade with Russia from year to year, including due to sanctions restrictions. NWFD regions are also increasing economic cooperation with developing countries, and the authorities express their intentions to maintain and strengthen established ties[4]. In this context, we studied trade with those countries that are among the developing countries based on the corresponding MSCI[5] index, as well as among friendly countries[6]. For each region of the Northwestern Federal District we have identified the goods exported to these countries in the largest volume. The commodity items not included in the previous two lists were included in the list of promising microspecializations (*Tab. 6, 7*).

Table 6. Goods of export microspecializations of NWFD regions obtained as a result of assessing the markets of developing countries

Region	Microspecializations
Karelia Republic	Frozen fruits and nuts; liquid dosing machines; processed slate; turpentine; veneer; rosin; aluminum products; low voltage protection equipment; air pumps; electric filament; audible alarm; rubber
Komi Republic	Cellulose; X-ray equipment
Arkhangelsk Region	Crude oil; profiled wood; scrap metal recycling vessels; electric transformers; valves; low pressure protection equipment; computers; steam turbines; motors; gearboxes; insulated wires; compasses; copper and iron products; raw bones
Vologda Region	Liquid crystal displays; computers; cellulose; veneer; refined copper; flour and pellets for animals; ice cream; various measuring instruments; accessories; vegetable parchment; fish oil; cars; tractors
Kaliningrad Region	Soybean oil; rapeseed oil; raw amber; frozen cattle meat; polymer containers; rapeseed seeds; copper alloys; pipes, tubes and hollow profiles; chains of ferrous metals; containers for compressed or liquefied gas; cutlery; soybean meal; sunflower meal; soy protein concentrate
Leningrad Region	Refined copper; flat rolled steel; iron products; veneer; sulfate chemical wood pulp; poultry meat; fittings; iron pipes; aluminum cans; kaolin cardboard; pumps for pumping liquids; engines; coal briquettes; binders for foundry; washing and filling machines; gas turbines, etc.
Murmansk Region	Scrap iron; semi-finished cast iron; fittings for iron pipes; passenger and cargo ships
Novgorod Region	Dental equipment; glass fibers; kraft paper; electric motors; aluminum products; cobalt; profiled wood; processed crustaceans; brooms; margarine; untreated plastic film
Pskov Region	Peat; electric soldering equipment; power supply equipment; semiconductor devices; brooms; plastic scrap; high-voltage protective equipment; milling stones; earthmoving equipment; iron chains; rubber pipes
Saint Petersburg	Refined copper; untreated aluminum; aluminum coating; wooden boxes; veneer; wooden kitchen utensils; uncoated paper; buckwheat; electric furnaces; electric soldering equipment; electric motors; bran; poultry meat; thermostats; synthetic rubber; liquid dosing machines; large construction machines; electric transformers; insulated wires, etc.
Source: own compilation.	

[3] The following countries were included in the sample: Middle East – Türkiye, Saudi Arabia, UAE, Qatar, Kuwait; Africa – Egypt, South Africa; Asia-Pacific region – China, India, Indonesia, Malaysia, Philippines, Taiwan, Thailand; Latin America – Brazil, Chile, Mexico, Colombia, Peru.

[4] During the quarter, Karelia's trade volume with India increased 8-fold. Available at: https://karel.aif.ru/money/details/za_kvartal_obyom_torgovli_karelii_s_indiey_vyros_v_vosem_raz (accessed: February 28, 2024); The Kaliningrad Region will establish closer economic and cultural ties with Brazil. Available at: https://kaliningrad.sm.news/news/20230912/448036/ (accessed: February 28, 2024); Exports of Vologda products to China increased 2.5-fold in the first half of 2023. Available at: https://tass.ru/ekonomika/18324849 (accessed: February 28, 2024).

[5] RF Government Resolution 430-r, dated March 5, 2022.

Table 7. Number of microspecializations of NWFD regions obtained as a result of assessing the markets of developing countries, by commodity group, units

Commodity group	Karelia Republic	Komi Republic	Arkhangelsk Region	Vologda Region	Kaliningrad Region	Leningrad Region	Murmansk Region	Novgorod Region	Pskov Region	Saint Petersburg	Total
Food products and agricultural raw materials (except textiles)	1	-	1	4	7	1	-	2	-	5	21
Mineral products	-	-	-	-	1	-	-	-	1	-	2
Fuel and energy products	-	-	1	-	-	1	-	1	-	-	3
Chemical industry products, rubber	3	-	-	-	1	3	-	1	2	7	17
Wood and pulp and paper products	1	1	1	2	-	3	-	2	-	4	14
Metals and products made from them	2	-	1	1	3	5	3	1	1	4	21
Machinery, equipment and vehicles	4	1	10	5	1	8	1	2	5	16	53
Other products	1	-	-	1	1	1	-	2	2	2	10
Total	12	2	14	13	14	22	4	11	11	38	141
Source: own compilation.											

The list formed in this way is characterized by the predominance of groups of goods with greater technical and technological complexity of manufacture, a high degree of processing. Thus, a significant share (37.6%) is occupied by goods belonging to the category of machinery and equipment, which is the maximum among all three lists compiled in the course of the research. The second and third places with the same number of goods are shared by metal products and food products (14.9% each). TIC is losing its leading position here, taking only the fifth place (9.9% of the total number of goods). The smallest shares still fall on mineral products (1.4%) and fuel and energy products (2.1%). Also, the commodity structure of the list obtained with the help of this method is characterized by the largest number of commodity groups for each region; that is, export microspecializations are the most diversified. Thus, there is an average of 5.1 product groups per subject, while in the framework of the first method of searching for microspecializations, the value is 4.1, and in export specializations – 3.8.

Conclusion

Thus, within the framework of the concept of economic complexity, we have identified the goods that make up the export specializations of NWFD regions. Using the RCA index of identified comparative advantages and by assessing the contribution of commodity items to the total volume of exports, we have compiled a list that included 98 items. The Pskov and Vologda regions and the Karelia Republic are characterized by the largest number of goods; the Kaliningrad Region and Saint Petersburg – the smallest. At the same time, the Leningrad and Pskov regions are characterized by the most diversified exports, while the Arkhangelsk and Novgorod regions – the least diversified exports. The main export specializations of the Northwestern Federal District regions are TIC products, metal products, as well as food and agricultural products.

The study revealed microspecializations of NWFD regions. By evaluating the most significant goods in the all-Russian export and studying the products supplied to the markets of developing

countries, we have compiled two lists. The largest number of commodity items in the lists is observed in Saint Petersburg and the Leningrad Region, the smallest – in the Murmansk Region and the Komi Republic. In the sectoral structure, in addition to the goods related to TIC and food products indicated in the main export specialization, the commodity positions of the group of machinery and equipment, chemical industry products and metal products are of great importance. High-value goods mainly belong to the group of machinery and equipment. Examples of specific products are transport and cargo ships, X-ray equipment, turbines, motors, protective equipment, air pumps, measuring instruments, household appliances, etc. Among the selected groups of goods in all the export specializations and microspecializations, mineral products, fuel and energy products, leather raw materials, furs and products made from them are the least common. This indicates the high potential for the supply of goods of deep processing by NWFD regions, the possibility of obtaining benefits from increasing their production volumes and supplies to the international market.

It is difficult to develop the export specializations we have identified, as well as to overcome the economic downturn in industries affected by the imposition of sanctions, if there is no proper support on the part of the state. It is advisable to take the following set of measures aimed at increasing export volumes:

– setting special tariffs for the export of goods, which we have designated, to friendly countries;

– preferential lending to organizations, as well as the issuance of state guarantees for regional exporters and foreign buyers of these goods;

– issuing licenses and granting organizations special export rights;

– development of international transport and logistics infrastructure;

– providing information and advisory assistance to entrepreneurs, especially small and medium-sized businesses, by special bodies such as business incubators;

– providing support in the promotion of regional producers, including through participation in international exhibitions and fairs;

– facilitating the integration of enterprises into interregional and global supply chains of export goods;

– forming a system of effective interaction between business representatives and public authorities, protecting the interests of entrepreneurship (Arkhipova, 2020; Uskova et al., 2020).

According to the data of the previously mentioned survey (Shirokova, Lukin, 2023), heads of industrial enterprises say that the most effective measures of state support are low-interest investment loans and reimbursement of part of the costs. In their opinion, the development of the manufacturing sector requires simplification of the taxation system, general reduction in the amount of taxes on producers, limiting the growth of prices for fuel, energy and transport services, reducing the level of bureaucratic burden, creating conditions for the growth of effective demand, etc.

The novelty of our research lies in fact that we determine goods of export specialization in NWFD regions with the help of the concept of economic complexity. Practical significance lies in the possibility of using its results by regional authorities in the development of strategic documents to substantiate economic policy in the search for promising economic specializations and market niches. The prospects for further research are related to the calculation of the indices of economic complexity for NWFD regions, and substantiation of directions for the transformation of export baskets.

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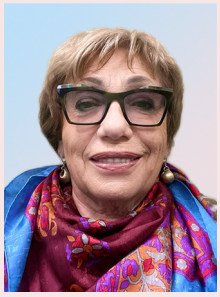
Received March 4, 2024.

DOI: 10.15838/esc.2024.2.92.5
UDC 332.12, LBC 65.9(2Rus)-98

Regions' Export Activity as an Object of State Support



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Abstract. The article reveals the forms of changing the system of state support for export activities at the meso-economic level. The forms are general (subject composition of participants in foreign trade relations, procedure for their state regulation and development) and specific (methods for providing support to exporting enterprises, ways to assess the implementation of these methods). We systematize measures of government support for export according to functional purposes, arrange them into a multi-level scheme, and identify bottlenecks in its implementation. We develop our own approach to assessing the institutional and organizational support of regions' foreign trade activities. We put forward a method for calculating the assessment of regulatory legal support for this activity, based on the establishment of criteria reflecting the effectiveness of forms of development of regions' export activities. We carry out a comparative assessment of each form of support, which makes it possible to identify key areas of formation of regulatory legal support for foreign economic activity that have a significant impact on export activities

For citation: Berkovich M.I., Zakrevskaya (Khakhina) E.S. (2024). Regions' export activity as an object of state support. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 96–112. DOI: 10.15838/esc.2024.2.92.5

in Russia's regions. The application of the proposed method for managing the system of government support for export will help to address the most critical issues in the field of international cooperation and foreign trade relations. The system will help to create conditions for the development of export-oriented industries and enterprises, ensure greater availability of financial resources for organizations at all levels and an increase in export volumes through the formation of new mechanisms to support them. The implementation of the proposed measures will stimulate the production of goods in general, which will contribute to an increase in the added value of the regional economy, an increase in the tax base, foreign trade turnover and the number of jobs, and create the most favorable conditions for the development of export activities in Russia's constituent entities.

Key words: foreign economic activity, legal and regulatory support, regional export center, government support for export, regional economy, institutional and organizational aspects.

Introduction

Foreign trade activity is an important component of a country's involvement in international economic relations. It has a significant impact on its socio-economic development. At the same time, special attention should be paid to the transformation of measures for supporting export activity under radically changed geopolitical conditions at all levels of socio-economic system as an integral part of the import substitution policy.

Research on the development stages of international economic relations has revealed that in the period before the special military operation, a powerful multilevel system of development support for export activity was formed, including Russia's entry into the World Trade Organization, development of large industrial parks in regions, creation of new integrated forms of international economic relations, etc.

Disruption of long-term foreign economic relations and significant sanction pressure triggered the restructuring of economic relations in the country, including export activity. Significant changes in foreign trade market conditions, constantly increasing importance to create and export potential required implementation of a support system at macro- and mesoeconomic levels. In this regard, study and systematization of the measures, their institutional and organizational provision are extremely relevant. Appropriate assessment of institutional and functional infrastructure of state support for export activity, its condition and development of financial and organizational support measures will allow optimizing these important processes.

Research identifies institutional and organizational as a set of means for export development, including regulatory support for promoting foreign trade relations, export support institutions, procedure for functioning and assessing the effectiveness of their activities.

The rapidity of ongoing changes has not allowed domestic economists to conduct research on important theoretical and practical issues related to support methods for export activity and the appropriate assessment of their effectiveness at the regional level. First, it is necessary to define the subjects of export relations, which include executive authorities and specialized subordinate institutions, exporting enterprises, credit, leasing, consulting and insurance organizations that form a part of the export support system.

In the applied aspect, a number of interrelated circumstances negatively affecting foreign trade relations at the regional level should be emphasized. These include:

– lack of regional normative acts regulating the system of state support of export activities;

– lack of sufficient authority to conclude legally significant contracts for international interaction (while the selection of potential partners is carried out taking into account the corridor of opportunities formed at the level of the federal center);

– poor development of regional institutional infrastructure for state support of export activity, strong dependence on the federal center;

– lack of a transparent system of state financing for regions to support export development, taking into account reasonable indicators of its effectiveness;

– lack of economic mechanisms to ensure a sustainable financial base for export development based on available domestic resources (combination of several financial sources, subsidization of different categories for exporters);

– urgent need for building relations with territorial divisions of new foreign partners, forming new logistics chains, searching for alternative sales markets, strengthening work in the domestic market, including reorientation to state procurement, changing the structure of regional foreign trade turnover.

Despite the fact that Russia's federal constituent entities lack sufficient authority and resources to conclude legally significant contracts for international cooperation and to implement their own export support measures, we observe attempts to establish bilateral relations with new market entrants, including foreign trade markets.

The preceding considerations demonstrate necessity for analysis of the system of state support for export activities in order to improve its efficiency at the regional level. This is the aim of research.

Literature review

Economic studies, devoted to international cooperation at the level of Russian regions, are conducted less frequently in comparison with scientific research at the macroeconomic level. Role of entities in foreign economic activity is limited by lack of resources and power. In this regard, foreign economic activity is not a primary focus in regulatory acts, reflecting socio-economic strategies of regional development. More attention is paid to creation of new markets, prospects of parallel import and impact of sanctions on foreign economic activity (Azieva, 2023, Babanov et al., 2023, Gasilovskii et al., 2022, Gorodnova, Domnikov, 2022, Kulagovskaya et al., 2022, Kulikova et al., 2023).

The article by A.E. Gasilovskii is particularly focused on difficulties, associated with unstable economic and political situation in the Russian Federation within the specified timeframe. This resulted in significant shifts in the structure of foreign trade turnover. The author presents a conclusion regarding the principal export and import directions, the largest trade partners of the Russian Federation in international arena, and also formulates current trends in the development of foreign economic sector, based on which possible prospects and problems of development of foreign economic activity in the Russian Federation are considered.

At the same time, works of some scientists reflect influence of state support on export. For instance, O. Cadotte et al. evaluated impact of FAMEX export promotion program in Tunisia on

the performance of beneficiary firms. The authors suggest that beneficiaries initially exhibit accelerated export growth and greater diversification between target markets and products. However, three years after later growth rates and export levels of beneficiaries do not differ significantly from non-beneficiary companies (Cadot et al., 2015). Works of other foreign authors also study in detail the issues of state support for export activities, primarily in free market economies (Kovner et al., 2020; Leonidou et al., 2007; Malca et al., 2019). At the same time, a number of scientists have focused on developing a model of direct and indirect impact of state support for export on performance of enterprises (Shamsuddoha, Yunus, 2006). The work of Mark J. Melitz is devoted to analysis of intra-industry effects of international trade, which demonstrates how cumulative productivity growth of an industry resulting from reallocation of funds contributes to welfare, thereby emphasizing benefits of international trade (Melitz, 2019). The behavior of firms at international trade shows is thoroughly examined in works of Rolf Seringhaus (Seringhaus, Rosson, 2001). In his research, Revindo concluded that small and medium-sized enterprises in developing countries have fewer opportunities to participate in export markets than their larger counterparts, despite various export assistance provisions by their governments (Revindo et al., 2019).

T. Wilkinson's work reflects international resource-based view of small and medium-sized enterprises by examining the effectiveness of export promotion services. In particular, the impact of government support for exports in the United States on the entry of small and medium-sized enterprises into international markets is investigated. The work proposes and proves a hypothesis about trade shows and distributor networking programs having a positive impact on satisfaction of small and medium-sized enterprises with their export performance (Wilkinson, Brouthers, 2006).

T.R. Urumov examines institutions of state support for export of small and medium-sized businesses in the United States and India. The research reveals that in the United States the primary means of support is export loans and guarantees, whereas India focuses on promotion of products on global markets (Urumov, 2017).

The findings of E. Catanzaro's research suggest that financial support is beneficial for enterprise performance in terms of foreign markets number but not in terms of economic indicators (Catanzaro et al., 2018).

The effectiveness of Russian state support system for export and its organizational and institutional provision has not been assessed by domestic economists. In scientific literature there is a greater focus on financial aspects of support system for foreign trade activity. A.Yu. Knobel' and A. Loshchenkova present econometric assessment of export support expenses impact on volume of regional export. They identify priority regions in terms of funding for export support. The authors conclude that regional export support, implemented in the Russian Federation within programs for small and medium-sized enterprises support, has an encouraging effect on volume of regional exports only in the short term. It is important to note the authors' opinion on efficiency of export support centers. They consider the work of export promotion centers in regions as ineffective, primarily due to low competence of their employees in export support matters (Knobel', Loshchenkova, 2018; Kuznetsov, Knobel', 2017).

In other works, devoted to analysis of export support measures in Russia, researchers primarily focus on effectiveness of financial support measures. For instance, the article by E.S. Sokolova and her co-authors examines issues related to development of system of state support for Russian export activity. The effectiveness of support measures was found to be reliant on Russian private business. The authors state that Russia has recently witnessed a positive growth in export support expenses. However, the amount of resources allocated for these purposes is significantly lower than in other developing countries. Additionally, there is a territorial limitation of support for exporting companies. The majority of allocated funds are directed toward exporting companies located in the Central Federal District (Sokolova et al., 2019).

Research methodology

This article presents our own approach to assessing and improving system of state support for export activity. This approach consists of three main stages and defines the objectives of research:

Analyzing institutional and infrastructural system of export support and its functionality: identifying, structuring and systematizing institutional and functional structure of support for Russian exporters at the macro- and meso-economic levels. At this stage key directions of export support in Russia are studied; subjects of state export support and their legal status are determined; functional structure of support for Russian exporters is systematized; means for implementing state policy to support export at meso-economic level are identified; measures of state export support are systematized by functional purpose and structured in a multilevel layout; bottlenecks in implementation of state support measures for export are identified.

Analyzing existing methods for effectiveness assessment of export support infrastructure at the regional level – studying the system and process of effectiveness in assessing export state support implementation, analyzing existing methodology for determining the result of regional export centers as key infrastructural links of the system of state support for foreign trade at the level of constituent entities of the Russian Federation. At this stage work directions of export potential development within the national project "International Cooperation and Export" are studied; export support measures within the Regional Export Standard 2.0 (RES) are systematized, methods for assessing their implementation are studied; bottlenecks in methods for assessing state support implementation for export are identified; the regulatory and legal framework for determining the total work results of regional export centers is considered, bottlenecks in their work are identified.

Assessing normative legal support of foreign economic activity to develop the most promising development directions. This assessment was conducted in points (with the use of weight coefficients), based on the expert evaluation.

Results

Research into the regulatory legal framework for export development revealed that the primary institutional mean at the federal level is the national project "International Cooperation and Export", developed by the Ministry of Industry and Trade of the Russian Federation according to Presidential Decree 204 "On national and strategic goals for the development of the Russian Federation for the period up to 2024", dated May 7, 2018. It consists of five federal projects: "Industrial Export", "Export of

Table 1. Structure of the national project "International Cooperation and Export"

№	Federal project	The amount of funding, billion rubles	Expected results
1	Industrial Export	420	Industrial export reaches 205 billion USD
2	Export of Agricultural Products	350	Export of agricultural products reaches 45 billion USD
3	Systemic Measures for Development of International Cooperation and Export	158	Number of exporting companies covered by export support measures reaches 12,000; Volume exports supported by Russian Export Center reached 25 billion USD
4	Logistics of International Trade	22	Construction and modernization of 24 checkpoints
5	Export of Services	6	Export of services reaches 100 billion USD
Source: own compilation, based on "International Cooperation and Export" project.			

Agricultural Products", "Logistics of International Trade", "Export of Services", "Systemic Measures for Development of International Cooperation and Export" (*Tab. 1*).

Table 1 illustrates that the federal project "Export of services" exhibits the highest budget efficiency, with an estimated export volume of 17 dollars for each invested ruble. In contrast, the "Export of agricultural products" project is the least efficient, with an expected effect of 13 cents for each invested ruble. This is due to the low profitability of agricultural products.

Infrastructural means for promoting export development are defined by regulatory acts, first of all, by Federal Law 164-FZ "On the principles of state regulation of foreign trade activities", dated December 8, 2003, and a number of subordinate acts of the Government of the Russian Federation. These legal acts detail and specify each method of support with reference to export support institutions, including four institutions at the macroeconomic level.

It is important to note that, despite the fact that Law 164-FZ has been existing for 20 years, its regulatory base has undergone significant revisions since March 2022 with development of its infrastructural component. In particular, functions and powers of export support institutions (Export Insurance Agency of Russia, state specialized Russian Export-Import Bank) were specified. In December 2022, the concept of non-resource non-energy export was adopted to provide state support. The Russian Government subsequently determines the list of product codes falling under non-resource non-energy export. Sanctions policy of unfriendly countries and the necessity of the Russian Government to response have triggered implementation of regulatory and legal framework to promote export activity.

Analysis of existing system of state policy in the field of export activity support and means for its implementation at meso-economic level allowed us to structure this system by functional purpose and by levels of export support (*Fig. 1*). In accordance with Article 46.1 of Law 164-FZ, functions of providing financial, insurance, guarantee and other support types for export and import are fulfilled by the following export support institutions:

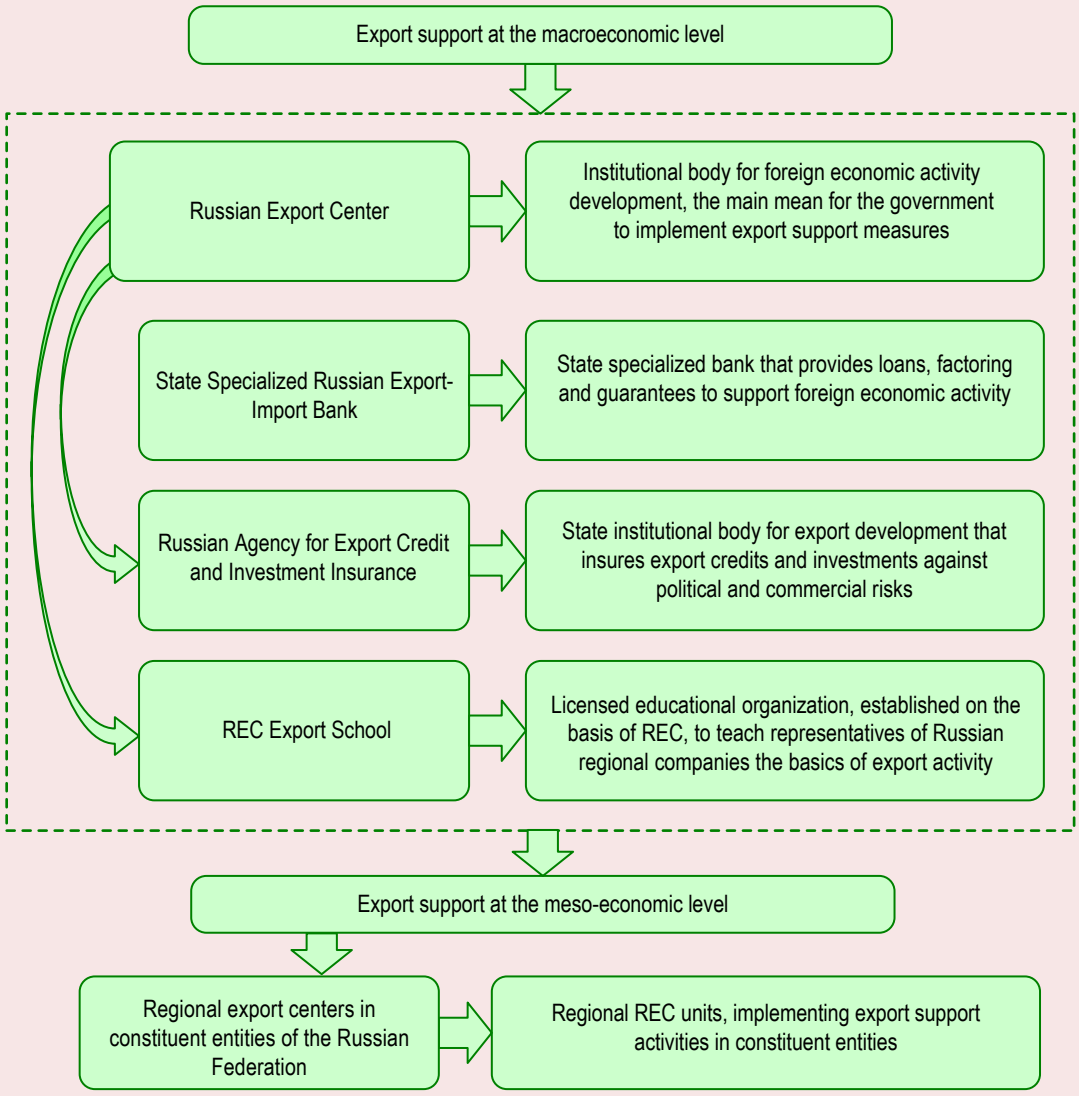
– Russian Export Center JSC;

– Russian Agency for Export Credit and Investment Insurance JSC;

– State Specialized Russian Export-Import Bank (JSC);

– subsidiaries of these institutions in accordance with the Federal Law, acts of the Government of the Russian Federation, decisions of the authorized management bodies of these organizations.

Figure 1. Multilevel layout of export activity supporters



Source: own compilation, based on Law 164-FZ.

Figure 1 shows that Russian Export Center JSC plays the key role in institutional infrastructure of exporters support. This state institution provides support for non-resource exporters, consolidates a group of companies that offer Russian exporters a wide range of financial and non-financial support measures. This is confirmed by regulatory legal framework.

At the same time, meso-economic level of export support is represented by a single organization – Regional Export Center, which is managed by the federal center, limiting exporters opportunities for financing or securing transactions, since it does not provide an alternative for implementing export programs, for example, through regional banks. According to the annual report of the Central Bank of Russia, the key area of activity is the expansion of correspondent network of Russian banks within the framework of foreign trade relations. In 2024, the majority of Russian banks

(88%) intend to develop products related to foreign exchange operations, foreign economic activities, and cross-border transfers. Therefore, financing foreign trade activity may become one of the main directions for regional banks and alternative financial sources will be created for enterprises at the meso-economic level.

Another bottleneck of the existing system is poorly developed municipal infrastructure in regions, which makes it difficult to implement export projects of enterprises in cities, etc., especially those located far from regional centers. To illustrate, in the Kostroma Region there is a single Regional Export Center that is not physically located within the region (JSC Galich mobile cranes plant, Galich, Kostroma Region; LLC Kronstar (the largest producer of wood panels in Russia), Sharya, Kostroma Region; JSC Gazprom trubinvest, Volgorechensk, Kostroma Region, etc.)

Similar situation was observed in other regions of the Central Federal District, where the largest revenue was gained by organizations located outside the regional center (Vladimir Region: LLC Mondelēz Rus, Pokrov; Ferrero Russia, Vorsha; LLC Trade House Ascona, Kovrov; Ivanovo Region: LLC Verkhnevolzhsky Service Metal Center (a large manufacturer of building metal structures), Novo-Talitsy; LLC Soyuz Avtodor, Gulikha; LLC EGGER Wood Products Shuya; Yaroslavl Region: LLC Medved, Danilov; UEC NPO Saturn PJSC, Rybinsk).

Lack of regional export center offices outside regional centers is further compounded by the relatively modest number of REC personnel. In particular, in the Central Federal District, with exception of Moscow and the Moscow Region, export development is the responsibility of three to six people (for example, in the Kostroma Region and in the Tambov Region there are three people, in the Ivanovo, the Kursk and the Bryansk Regions there are four people). This makes it difficult to take a proactive approach to promote regional export-oriented enterprises to foreign markets. The consequence of these REC problems lies in the creation of a predominantly formal approach for state economic policy in the field of foreign trade activity, based on the declarative nature in most cases.

State export support at the meso-economic level, especially in the new geopolitical situation, plays the key role in development of international economic relations and makes it possible to even out the result of sanctions pressure. In this context, analysis of export support directions and existing methodologies for assessing its results at the regional level, as well as use of these results to encourage entities of the Russian Federation to implement export support programs are becoming increasingly relevant.

For example, the national project "International Cooperation and Export" contains a large number of support types at the federal level and the only formal indicator for the regions is the introduction of a regional export standard. This is a set of 15 measures that will allow regions to implement an export strategy at the level of best practices. These measures are systematized in three blocks:

– creating a platform for export development in constituent entities of the Russian Federation;

– providing access to necessary measures to support export activity in constituent entities of the Russian Federation;

– creating mechanisms to promote region in foreign markets, promoting export activity in constituent entities of the Russian Federation.

Implementing these strategies allows regions to ensure development of export activity and

replication of best practices of foreign economic strategies at the meso-economic level. Regional export centers serve as the primary means through which authorities of Russia's constituent entities implement support measures within the regional export standard.

Study of the regional export standard as the primary element of institutional and organizational support for development of export activity allowed us to organize and various support measures and compare them with the methods of assessing their implementation (*Tab. 2*).

Table 2. Export support measures and methods for assessing their implementation

Support direction	Support measures	Methods for assessing implementation of regional export centers
1. Creating a platform for export development in constituent entities of the Russian Federation		
1.1 Fixing export development, including export of services, in the strategic planning documents of the region	Development of a Strategy to ensure favorable conditions for exports of goods, works and services development in the region until 2030 as a separate document or as part of the Strategy for the socio-economic development of constituent entity of Russia	Development and adoption of this document
1.2. Identifying executive authority of the constituent entity of the Russian Federation responsible for development of non-resource exports and exports of services	Identification or establishment of an executive authority to coordinate export support measures in region and to develop of non-resource exports and export of services	Establishment of an advisory body with responsibilities, fixed in the relevant legal and regulatory acts
1.3. Development and training of a regional management team	Creation of a management team, defining the role of each team member in export development in the region	Considered implemented in the first year, if the management team is formed and trained; in the second and third year – if at the end of the calendar year a report on implementation of measures for the professional development of the management team is provided, in the fourth year – if the qualification of the management team is confirmed
1.4 Development and implementation of regional export development program for constituent entities of the Russian Federation	Development and approval of regional export development program as a comprehensive plan for regional export development for the period up to 2024 with a forecast up to 2030, containing key objectives, indicators and measures, including export component	In the first year it is considered implemented if regional program is developed and approved and necessary funding is provided; in the second year and further – if target indicators are achieved and program activities are implemented by at least 80%
1.5 Introduction of an export council under the top official authority of a constituent entity of the Russian Federation	Council is an expert advisory coordination body that operates on a permanent basis. It comprises representatives of executive government bodies, REC, development institutions, business support infrastructure facilities, regional export support center, public organizations and business associations. It includes existing exporters who are planning to carry out export activities from various industries	In the first year it is considered implemented if the Export Council is established and at least two meetings are held; in the second year and further, if an Export Council is established and at least four meetings are held
1.6 Establishment and development of the Export Support Center	Establishment and regular operation of an export support center, taking into account recommendations, developed by REC, and e requirements, approved by the Ministry of Economic Development of the Russian Federation	It is considered implemented if an export support center has been established in region meets requirements of the Ministry of Economic Development of the Russian Federation and approved key performance indicators are fulfilled by 100%

End of Table 2

Support direction	Support measures	Methods for assessing implementation of regional export centers
1.7 Ensuring region's presence in foreign markets	Providing assistance in finding partners, enabling negotiations with foreign counterparties, promoting regional brand, assisting businesses in opening their own representative offices abroad and establishing joint ventures in another country	In the first year it is considered implemented if a plan is formed to ensure region's international presence in any of the formats, in the second year and further – if presence in priority export development countries is ensured
1.8 Creation and development of personnel training system in the sphere of foreign economic activity on the basis of regional higher educational institutions	Introductions of an action plan for the system of personnel training development in the sphere of foreign economic activity, including measures to assess and forecast the need for specialists in foreign economic activity and to calculate planned indicators for personnel training for the period up to 2030, based on needs of existing exporters, as well as forecasts of socio-economic development of region	In the first year it is considered implemented if a region has developed an action plan and a system for sending students to target programs in other regions, in the second year and further – if not less than the planned number of people are trained per year and not less than 30% of the number of trained people pass training at regional coordinator and/or at export support infrastructure and at regional exporting enterprises
1.9 Development and analysis of current and potential exporters base in region, export auditing	Carrying out systematic work to build a database of exporters, as well as potential exporters, and determine their willingness to export, identify support needs and growth barriers	Considered implemented if a database of exporters is formed, needs and barriers are analyzed, results of analysis are submitted to the relevant federal executive body
2. Providing access to necessary measures to support export activity in constituent entities of the Russian Federation		
2.1 Organization of teaching the basics of export activity for export-oriented businesses	Conducting informational and education events on export activity, including information on existing state support measures, creating an educational platform	Considered implemented if education and/or information consulting is conducted in region
2.2. Creation of a set of measures to expand business relations with potential foreign counterparties	Development and approval by Export Council of an international action plan with international business missions, ensuring participation of business delegations in visits of regional administration abroad, attracting foreign customers	Considered implemented if an action plan is approved at a meeting Export Council and its implementation level in region in the reporting year reached 80%
2.3 Development of export activity through e-commerce channels	Annual events to promote information on advantages of e-commerce, selecting promising companies to enter international e-trade platforms	Determined by the system of online monitoring of Regional Export Standard implementation (100%)
2.4 Implementation of improving programs and other comprehensive export development means	Development of a plan and an individual roadmap for entering foreign markets, a business plan for increasing export revenue, support and provision of support measures	Determined by the system of online monitoring of Regional Export Standard implementation (100% annually)
3. Creating mechanisms to promote region in foreign markets, promoting export activity in constituent entities of the Russian Federation		
3.1. Creation and development of mechanisms to promote export activity among working population	Conducting a large-scale campaign to promote export activity among working population, holding "Exporter of the Year" contest with advance payment or compensation costs for winners to participate in improving programs	Considered implemented if activities to promote exports among working population are carried out on an annual basis, a special section on the Internet is created and "Exporter of the Year" contest is held
3.2 Creation and development of mechanisms to promote products of regional companies abroad	Ensuring the presence of regional goods and services in trade missions of the Russian Federation abroad, broadcasting information about regional goods on foreign channels, assisting regional companies in integrating into production chains of large international companies	Considered implemented if activities to promote regional goods and services in foreign markets are carried out on annual basis
Source: own compilation, based on Regional Export Standard 2.0.		

In addition to the mentioned unified measures to support foreign economic activity, Regional Export Standard provides other measures to ensure conditions for export activity development in a constituent entity of the Russian Federation. These measures include development and implementation of proactive means to ensure favorable conditions for export activity development.

However, methods for assessing implementation of Regional Export Standard, presented in Table 2, in terms of methods for recording implementation of RES measures indicate that implementation is assessed solely on a formal basis (availability of documents, body, holding an event, etc.) without taking into account effectiveness of measures and significance of each specific measure to develop non-resource export at the meso-economic level. The comprehensive approach provides an opportunity for rational and effective use of financial and organizational resources, while ensuring the achievement of a high level of budgetary impact. In this context, it is necessary to develop a set of methods for managing a system of state support for export activity at the meso-economic level.

The implementation of Regional Export Standard 2.0 is a target indicator of the national project "International Cooperation and Export." This project is decomposed for all entities and included in regional projects that are part of the federal project. Consequently, there is a scientific interest in the system and the process of assessing its implementation in the regions of Russia.

As a part of export standard all Russian regions are developing their own regulatory legal framework of different content, which regulates the implementation of foreign economic activity. Its availability and efficiency are analyzed below on the example of 18 regions of the Central Federal District.

Regulatory legal acts and other regional documents have the same structure as Regional Export Standard. They comprise three main areas:

– providing the basis for export development in constituent entities of the Russian Federation;

– implementing necessary measures to support export activity in constituent entities of the Russian Federation;

– promoting regional brands in foreign markets, promoting export activity in constituent entities of the Russian Federation.

Assessment of normative legal support of foreign economic activity to identify the most promising directions for development of the normative-legal base of export activity was conducted in points. It is based on weighting coefficients. This assessment was carried out with the method of expert evaluations. Research involved leading specialists of region's executive authorities, engaged in the development of foreign economic policy, as well as executives of existing export-oriented enterprises and representatives of the scientific community (candidates and doctors of sciences (Economics)).

Eight experts were tasked to rate the influence degree that ten institutional support means for export development exert on region's foreign trade potential. The experts were tasked to assign ratings and to distribute the means from the largest to the smallest.

General expert assessment, based on the weighting coefficient, indicates that the most significant forms of normative legal support for export activities are:

– a resolution/decree, a plan to provide assistance in finding partners, enabling negotiations with foreign counterparties, promoting regional brands, assisting business entities in opening their

own representative offices abroad, establishing joint ventures in another country (0.186).

– development and approval of a regional export development program as a comprehensive export development plan for a constituent entity of the Russian Federation for the period until 2024 with a forecast until 2030, including key goals, indicators and activities of a constituent entity of the Russian Federation that include an export component (0.175);

– Export Council develops and approves a plan of international events for a constituent entity of the Russian Federation, including international business missions (0.167);

– legal instruments, regulating creation and development of mechanisms to promote export activity among economically active population and young people of a constituent entity of the Russian Federation (0.119);

– availability of a regulatory legal document, providing for systematic work on forming a base of exporters of goods and services (0.114);

– development of a Strategy to ensure favorable conditions for the development of goods, works and services export in a region until 2030 in the form of a separate document or as part of the Strategy of socio-economic development of a constituent entity of the Russian Federation (0.1).

At the same time, the least significant forms of normative legal support for export activity are:

– availability of a document, regulating activities of a Russian regional executive authority responsible for export development (0.069);

– creation of an Action Plan for professional development of a management team (0.036);

– approval of the Regulations on the Export Council under the top official of a constituent entity of the Russian Federation (0.022);

– availability of an Action Plan for the development of a personnel training system in the sphere of foreign economic activity (0.011).

Research calculated the coefficient of concordance W = 0.909. This indicates a high degree of consistency between the opinions of the experts. In accordance with the proposed method, ranking of the region's institutional support will be based on a weighting sum of ranks of export development methods, as tested on the example of the regions of the Central Federal District.

Results of rating assessment indicated that the level of institutional support for export activities is most advanced in the Kursk Region (0.641), Bryansk Region (0.628) and Belgorod Region (0.530). This is confirmed by real achievements.

The Strategy of Socio-Economic Development of the Kursk Region for the period up to 2030 identifies export development as a priority area of the region's development. It includes the majority of means to assist current and potential exporters within the main directions: organization and communication, education, informing and consulting. The Kursk Region is implementing regional projects in accordance with the national project "International Cooperation and Export." The following regional projects have been implemented in the Kursk Region: "Development of Exports of Products of the Kursk Region Agro-industrial Complex," "Export of Services," "Systemic Measures for the Development of International Cooperation and Exports," "Development of Medical Services Exports in the Kursk Region," which is a component of the national project "Healthcare". In 2023 representatives of small and medium-sized businesses signed 67 export contracts for a total of 8 million dollars with the assistance of the Export Support Center.

The Bryansk Region has approved and is implementing the Export Strategy of the Bryansk Region up to 2030 and the Regional Export Development Program of the Bryansk Region up to 2024. These strategies provide institutional means to expand geography and structure of non-resource and non-energy exports of the Bryansk Region, to increase the number of exporting companies and volume of export products. Additionally, an action plan for development of a personnel training system in the sphere of foreign economic activity in the Bryansk Region has been created. With the assistance of the Export Support Center, 34 international contracts were successfully signed. Over 37 million rubles were allocated to provide support for export enterprises.

The Belgorod Region has approved the Program for Development of the Belgorod Region's Export Potential for the period 2021–2024. This program provides a set of regulatory measures, including creation of an Export Council, register of exporters and development of roadmaps for introducing regional products to foreign markets. In 2023 the Belgorod Region Export Support Center provided assistance for 482 small and medium-sized businesses. A total of 43 export contracts were concluded, with nine of them being signed by companies, which were not previously engaged in export activity. The total value of export supported in 2023 was more than 15.7 million dollars.

At the same time, the existing approach for evaluating efficiency of export support centers is predominantly formal, manifesting in direct correlation between the final rating of an export support center and the planned indicators of its activity, namely the ratio of planned to actual indicators, regardless of the real effectiveness of state support measures implemented through this institutional entity.

The results of the 2022 study indicate that the Moscow Region continues to lead the top 10 regions in export support center efficiency, with no changes compared to the previous year. The Omsk Region has improved its ranking by one position compared to 2021, while the Smolensk Region has risen by 10 positions. The Kaluga Region has also seen an increase, advancing by three positions. The Republic of Bashkortostan lost 3 positions, the Krasnodar Territory gained 20 positions. The Sverdlovsk Region (-2 positions), the Samara Region (no change), the Ivanovo Region (+5 positions), and the Ryazan Region (+6 positions) complete the top ten most efficient regions.

Analysis of the results of regional export support centers work for the first quarter of 2023 revealed that over 6,700 small and medium-sized businesses received centers services; 765 companies concluded export contracts with a total value of 211 million dollars for supply of products to 66 countries.

This trend indicates that, despite the current political situation, businesses are actively adapting to new landscape of international markets. Export support centers play a significant role in this process.

Institutional and functional analysis revealed unsystematic character of state policy implementation in the field of foreign trade support, large number of bottlenecks in its implementation at the meso-economic level and lack of its orientation to the real result, namely the growth of foreign trade turnover within each constituent entity of the Russian Federation.

Correlation analysis of quantitative attributes with determining strength of relations between these indicators is chosen as a method of identifying relationship between effectiveness of regional export centers and implementation of the regional export standard.

The sample correlation coefficient was used as an indicator, which is calculated according to the formula:

$$r = (\overline{x \times y} - \bar{x} \times \bar{y})/S_x \times S_y,$$

where:

x – REC efficiency rate;

y – RES implementation rate;

S_x, S_y – average standard deviations x, y.

The set in question is defined by leading positions of ten regions, indicated with performance of regional export centers and by availability of comparable information on these regions, indicated with implementation of regional export standard (n = 10; *Tab. 3*). To assess the strength of the correlation relationship commonly accepted criteria are typically employed, according to which absolute values of $rxy < 0.3$ indicate a weak relationship, values of rxy from 0.3 to 0.7 indicate a relationship of medium strength, and values of $rxy > 0.7$ indicate a strong relationship.

The Pearson coefficient of -0.265, obtained on the basis of the data in Table 3, indicates a weak inverse relationship between effectiveness of regional export centers and implementation of the regional export standard in regions. The efficiency of regional export centers activity, assessed on the basis of planned indicators, does not sufficiently reflect the real efficiency of state support for exports, which requires reformatting the set of methods for managing of state support system for export activities at the meso-economic level. A promising direction is development of a method for distributing subsidies for development of state support system for export activity between regions, based on an assessment of condition and potential for development of foreign trade relations within them, taking into account effectiveness of export support provided, volume of regional exports, volume of supported exports and other criteria.

Conclusion

The research on institutional support for the development of export activity in the country and regions produced several general statements:

– transformation necessity of institutional and organizational measures of state support for export activity is a relevant topic;

Table 3. Assessment of relationship between implementation of regional export standard and effectiveness of regional export centers

Region	REC efficiency rate	RES implementation rate
Moscow Region	1	62
Omsk Region	2	1
Smolensk Region	3	43
Kaluga Region	4	8
Republic of Bashkortostan	5	4
Krasnodar Territory	6	9
Sverdlovsk Region	7	3
Samara Region	8	49
Ivanovo Region	9	25
Ryazan Region	10	5
Source: own compilation, based on REC data.		

– formal approach to assess the Regional Export Standard, biased method of calculating effectiveness of export support centers, unsystematic character of means of state export development policy in conditions of severe financial and resources limitations, need to reorganize a set of methods for managing the system of state support for export activity at the meso-economic level in terms of applying a targeted approach and taking into account the budget were noted;

– general management forms (entities engaged in foreign trade relations, their state regulation and development) and specific management forms (support for exporting enterprises, ways to assess the implementation of these methods at the meso-economic level) of state support system for export activity, based on analysis of existing mechanisms of international relations development are revealed; system of state support measures for export activity is structured according to their functional purpose in a multilevel layout, bottlenecks in its implementation are determined;

– method to manage system of state support for export activity in regions has been developed. Within its framework, a comprehensive assessment of institutional and organizational support for development of regional export activity has been proposed. It ranks ten different forms of support for foreign economic activity;

– weak inverse correlation between efficiency of regional export centers and implementation of regional export standards in regions has been revealed. This indicates lack of connection between institutional and organizational means of export development at the meso-economic level;

– necessity and relevance of developing a method for distributing subsidies for development of state support system for export activity among regions are stated. The development is based on assessment of condition and potential for development of foreign trade relations within them, taking into account effectiveness of provided export support, export volume of regional enterprises, volume of supported exports and other criteria.

Research results can be used by authorities of constituent entities of the Russian Federation to develop export activity and improve forms of its support by the state.

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Received March 12, 2024.

DOI: 10.15838/esc.2024.2.92.6
UDC 332.12, LBC 65.04

A Methodology for Determining the Spatial Potential of Agglomeration Effects: The Case of the Saint Petersburg Agglomeration

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Abstract. Modern methodological approaches and techniques for studying agglomeration effects are aimed at determining and evaluating the spatial potentials of development and interaction of territories of various hierarchical levels. But the possibilities of modern software that allows detecting intra-agglomeration spatial reserves – spatial potentials – on cartographic models are not taken into account. The work uses spatial-functional and synergetic (agglomeration) approaches, as well as potential method, statistical method and cartographic modeling. We reveal the theoretical basis for the formation of spatial potentials in the intra-agglomeration environment and propose a methodological approach to their determination based on agglomeration effects of demographic, settlement and economic structures of the Saint Petersburg agglomeration. According to the calculations obtained, we design cartographic models that correspond to the structures under consideration and reflect spatial potentials of agglomeration effects, which are represented by groups of five clusters. The levels of clusters of spatial potentials and their configurations are obtained with the help of the neural network software "Surfer Golden Software". We find that groups of clusters within the demographic and settlement potentials structure – gravitational, high-potential, medium-potential and low-potential – have smaller territorial impact areas in contrast to similar groups of clusters of economic structure. At the same time, a very low-potential cluster of demographic and settlement structure significantly exceeds the area of the similar cluster of economic structure and spreads beyond the cities located in the eastern and southeastern

For citation: Olifir D.I. (2024). A methodology for determining the spatial potential of agglomeration effects: The case of the Saint Petersburg agglomeration. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 113–128. DOI: 10.15838/esc.2024.2.92.6

parts of the Saint Petersburg agglomeration periphery. The areas for future research are related to the development of new methodological approaches and techniques aimed at searching for and modeling agglomeration effects and their spatial potentials in the functional structures of individual cities, urban agglomerations or regions (investment, innovation, environmental, transport, service, cultural and other structures). Another promising area consists in determining spatial potentials based on the agglomeration effects of individual large enterprises with the help of quantitative indicators reflecting their performance effectiveness; this direction is difficult to implement due to the lack of open statistical data.

Key words: urban agglomeration, Saint Petersburg agglomeration, intra-agglomeration environment, agglomeration effect, potential, demographic and settlement structure, economic structure, cluster.

Introduction

Representatives of regional economic science show a keen interest in the spatial aspect of the development of cities, urban agglomerations and regions. At the same time, particular urban agglomerations, having unique spatial properties of concentration, localization, polyfunctionality, competitiveness, innovativeness, communication, socio-business activity, multi-vector and dynamic development, form agglomeration effects that have a positive impact on the surrounding territories. Agglomeration effects are the fundamental basis for determining the spatial development potentials of territories based on the interrelations and interactions of the objects under consideration belonging to certain functional structures. Such studies are conducted at various territorial and hierarchical levels – from industrial agglomerations formed within individual cities or urban agglomerations to groups of neighboring regions.

Depending on the scale of the territorial-hierarchical level, agglomeration effects are divided into two types: localization and urbanization effects. The first type, as its name suggests, is based on localization of enterprises belonging to the same or interrelated (interdependent) type of economic activity (industry) in separate centers of space. Consequently, it is characterized by the level of separate cities, urban and industrial agglomerations. The second type, being a consequence of the first, is manifested due to the concentration of population and diversity of activities (specializations) primarily in urban agglomerations. In this case, urban agglomerations serve as sources of agglomeration effects at the interregional level, and their cores – at the regional level (within a particular region).

The relevance of the research problems lies in the fact that the largest urban agglomerations of monocentric type have reached a critical point of core polarization – concentration of population and economic activities, contributing to further "intensification of asymmetry of intra-agglomeration spatial structure" (Makarova, 2021). They require transition to a polycentric model of spatial intra-agglomeration development based on the identification of potential opportunities for peripheral territories to maximize the benefits of the agglomeration effect. This fact determines the need to develop a new methodological approach aimed at finding competitive opportunities and reserves of intra-agglomeration space that can be used in the practice of spatial and socio-economic development of urban agglomeration. Modern neural network capabilities of specialized computer software help to reveal spatial properties through the construction of cartographic models based on numerical values of certain indicators and taking into account their nonlinearity during data processing on the basis of common properties, which, unlike mechanical methods, is the most accurate and efficient.

The choice of the Saint Petersburg agglomeration as a territorial basis is conditioned by the fact that it is the second largest (after Moscow) agglomeration in Russia, in which, as the author's studies (Olifir, 2022; Olifir, 2023; Mezhevich, Olifir, 2023) have shown, the monocentric type is most pronounced. In this regard, the proposed methodological approach and its tools can be used in urban agglomerations of a similar type. The spatial structure of the Saint Petersburg agglomeration is represented by the core – Saint Petersburg within the boundaries of the RF constituent entities and the periphery – the districts of the Leningrad Region, the administrative centers of which are located at a distance within two hours of accessibility along the lines of highways from the central point of the core (Palace Square).

The research hypothesis is that the determined spatial potentials of agglomeration effects in the demographic, settlement and economic structures of the Saint Petersburg agglomeration will reveal the reserves of the studied intra-agglomeration space, which can be effectively used in the process of optimization and reduction of disparities between the core and periphery.

The aim of the paper is to develop theoretical foundations and methodological approaches aimed at determining spatial potentials on the basis of the existing organization and level of development of agglomeration effects of demographic, population and economic structures in the intra-agglomeration environment of the largest urban agglomeration of Russia – Saint Petersburg.

The research objectives are:

– to propose a methodological approach to determining spatial potentials on the basis of agglomeration effects of demographic, population and economic structures of urban agglomeration;

– to formulate a theoretical basis for the formation of spatial potentials in the intra-agglomeration environment;

– to build cartographic models reflecting spatial potentials of agglomeration effects of demographic, settlement and economic structures of the Saint Petersburg agglomeration and analyze the results obtained.

Literature review

Among the Russian regional economic studies of the previous five years, devoted to this topic, we should mention the work of S.N. Rastvortseva and L.T. Snitko, in which the corresponding econometric models of agglomeration effects were built according to the values (levels) of the specialization index of Russian regions in agriculture and services (35 constituent entities of the Russian Federation), extractive and manufacturing industries (24 constituent entities of the RF in each industry), which allowed identifying the potential of their impact on socio-economic development of regions (Rastvortseva, Snitko, 2020). The methodology of modeling the economic growth potentials of Russian regions, whose cities have a population of 1 million people or more, was proposed by N.A. Burakov and A.Ya. Rubinstein. It includes indicators characterizing innovation, investment and human potential, with the determination of a vector of normalized weights for each of them according to the Mankiw – Romer – Weil model, which served as a methodological basis for the structural analysis of the dynamics of economic development of 12 Russian regions under consideration (Burakov, Rubinstein, 2020). A.A. Pankratov, R.A. Musaev and S.V. Badina proposed an approach to assessing the potential of socio-economic environment for the formation of clusters in Russia's regions. Within its framework, the scientists identified six thematic blocks – sub-indices (economic development, technological development, R&D, small and medium-sized entrepreneurship, infrastructure, spatial development) with the corresponding normalized statistical indicators, the arithmetic

mean of which forms the value of the integral index, which allowed identifying the Russian regions with the greatest potential for the formation of clusters in them, as well as promising regions for the creation of new clusters (Pankratov et al., 2021). The model for assessing agglomeration effects on the example of the southern Siberia regions, based on the calculation of two regression equations – depending on the revenue of *i*-enterprise in *t*-year and depending on the profit of *i*-enterprise in *t*-year, is presented in the study by E.A. Kolomak and A.I. Sherubneva. The regression equations are based on such variables as assets of the enterprise, wages, age of the enterprise, industry affiliation (OKVED), form of ownership, distance from the *i*-enterprise to the regional center. The obtained results showed the significance of agglomeration effects for the regions in question: "The calculations showed an increase in average revenues and profits of enterprises as a result of reducing the distance and, accordingly, lowering barriers to entry to large markets of regional capitals" (Kolomak, Sherubneva, 2023).

In the framework of foreign research, R. Cellmer conducted a spatial mapping assessment of market potential in the Polish cities of Lodz, Poznan and Wroclaw based on population density and retail store density indicators (Cellmer, 2023). Y. Yang, F. Kaset and B. Derudder, in their analysis of regional economic and urban development strategies in China, concluded that cities, by borrowing dimensions from large urban agglomerations, contribute to regional economic growth (Yang et al., 2023). L. Chen et al. analyzed the impact of population density on economic growth in the urban agglomeration of the Guanzhong Plain (China) and determined that population density can significantly and sustainably contribute to the economic growth of peripheral areas and counties of the agglomeration. At the same time, population congestion near railway stations has a stronger impact on economic growth (Chen et al., 2023). The study by S. Zhang et al. shows how spatial and functional separation in urban agglomerations in China has a strong mitigating effect on negative externalities (Zhang et al., 2023). L. Lima et al. found correlations between the spatial configuration of a city and the location of stores in it, using 35 US cities as an example. The result proves that cities with higher values of contact weight (the number of shortest paths, weighted by the density of residents, in the network loaded with retail trade), demonstrate a greater volume of retail sales within smaller radii (up to 1,000 meters) (Lima et al., 2023).

One of the most common methods of econometrics, used both in Russian and foreign regional (spatial) economic studies, is the method of Moran's spatial autocorrelation. It is calculated using the global and/or local Moran's index, which helps to determine the disparities, links and mutual influences between the studied territorial entities of different administrative hierarchies. For instance, I.V. Naumov determined the directions of investment potential formation in Russian regions and identified four interrelated regional clusters (Naumov, 2019). A.V. Rybkin and V.L. Baburin present an assessment of the potential of agglomeration processes in the Irkutsk agglomeration. Considering agglomeration processes through the prerequisites for the emergence of agglomeration effects (localization and urbanization effects), the researchers estimate their parameters to determine the territorial clusters of the agglomeration in question (localization effect) through the Moran index and to identify the diversity of economic activities (urbanization effect) – through the Shannon index (Rybkin, Baburin, 2019). Yu.G. Lavrikova and A.V. Suvorova assessed the relationship between the development indicators "number of permanent population" and "shipped goods of own production, works and services performed by own forces" of neighboring (closely located) territories within the boundaries of four constituent entities of the

Russian Federation: the Chelyabinsk Region, the Krasnodar Territory, the Republic of Tatarstan and the Kemerovo Region (Lavrikova, Suvorova, 2020). M.N. Makarova identified the key points of attraction in the settlement system of municipalities of the Sverdlovsk Region, as well as direct and reverse spatial interrelations between them (Makarova, 2021). The article of A.V. Suvorova presents the assessment of interrelations between separate constituent entities of the Russian Federation. It reveals a direct relationship between the values of the population indicator in the RF regions located close to each other: "The change in the value of the considered indicator in the transition from region to region occurs gradually" (Suvorova, 2019).

In foreign publications, geographical clusters of high and low mortality rates were obtained using Moran's spatial autocorrelation method by J. Spijker et al. based on the data of standardized mortality rates in Colombia (Spijker et al., 2021). Spatial patterns in US states related to the state of the gender wage gap in construction occupations are presented by S.N. Manesh et al. (Manesh et al., 2020). Spatial clusters of divorce rates in Oman are identified in a study by Sh. Mansour, E.F. Saleh and T. Al-Awadi (Mansour et al., 2020). R. Encarnacion, D. Magnay and A.J. Castro, looking at the competitiveness of large metropolitan areas in the Philippines, identified a pattern of clustering of cities and municipalities with "complementarity" rather than competition between them (Encarnacion et al., 2023).

The literature review reveals a large number of methodological approaches and research techniques aimed at identifying and assessing spatial development and interaction potentials, including those based on agglomeration effects. The results of existing studies are represented, on the one hand, by mathematical models with estimation calculations between the dependent variable indicators; on the other hand, by groups of geographical clusters, identified according to the results of calculations with regard to administrative-territorial boundaries. At the same time, the research field lacks works devoted to the search (discovery) of intra-agglomeration spatial reserves (potentials), which can be positively used primarily in the peripheral territories of the largest urban agglomerations of monocentric type.

Research methods

The paper uses *spatial-functional and synergetic (agglomeration) approaches* to the study. The first approach takes into account the spatial intra-agglomeration organization of structures, including the shortest distances along the lines of road transport communications between all cities of the agglomeration for the demographic and settlement structure and between the administrative centers of the agglomeration for the economic structure. The second approach is aimed at determining the effect of return on the surrounding space due to the concentration of population in separate centers (cities) of agglomeration – demographic and settlement structure and the results of economic activity confined to the administrative centers of agglomeration – economic structure.

The presented study uses the following specialized scientific methods: method *of potentials, statistical and cartographic modeling.*

The *method of potentials* helps to determine the areal of spatial potential of agglomeration effects depending on the location of cities and distances in relation to other cities included in the agglomeration. It is borrowed from the physical laws of gravity by I. Newton and the interaction of point electric charges by S. Coulomb. The founder of its application in regional (spatial) economic research is considered to be astrophysicist J.Q. Stewart, who in 1941 proposed the law of spatial interaction between the population of two regions, the "demographic force" of attraction of which is expressed, by analogy with the gravitational constant, by the constant value of migration flow (k)

multiplied by the product of the population of the cities under study (N1 N2) inversely proportional to the square of the distance between them (d^2) (Stewart, 1941). The formula of demographic potential of J.Q. Stewart has a limitation in practical application due to the constant value of migration flow between the cities under consideration (k), which can be determined with significant estimation errors. Therefore, this formula was further modified, for example, in the works of Soviet economic geographers Yu.V. Medvedkov (Medvedkov, 1965) and O.A. Evteev (Evteev, 1969), in which the gravitational constant was absent. Subsequent modifications of the potential formula led to the determination of the demographic potential of the city in question, based on the indicator of the population in it, summarized by the ratio of the sums of the population of all cities included in the study and the distances between them (Huseyn-Zadeh et al., 1988):

$$\mathrm{Dp}i = \mathrm{P}i + \sum_{i=1}^{i=n} \frac{\mathrm{P}j}{\mathrm{D}ij}, \qquad (1)$$

where Dp*i* – demographic potential of the i-th city; P*i* – population in the *i*-th city, for which the potential is determined; P*j* – population in other studied *j*-cities; D*ij* – the shortest distance along the road lines from the *i*-th city, for which the potential is determined, to the other *j*-cities under consideration; *n* – total number of cities under consideration.

The statistical method includes the *method of the composite index*, which is the total arithmetic mean of private values of absolute indicators, the use of which allows determining the average effect (level) of development of economic structures in the administrative units of urban agglomeration. In this study, the development rate of economic structures will be determined using the *composite economic development index (EDI)*, which we proposed and tested in a previous study (Olifir, 2023):

$$\mathrm{EDI} = \frac{\mathrm{VIP} + \mathrm{PO} + \mathrm{RT} + \mathrm{VPS} + \mathrm{VIC}}{5}, \qquad (2)$$

where VIP – volume of shipped industrial products, million rubles; PO – profit of organizations (enterprises), million rubles; RT – retail trade turnover per capita, million rubles; VPS – volume of paid services per capita, million rubles; VIC – volume of investments in fixed capital by organizations, million rubles.

The economic development index is based on the absolute values of indicators of three spheres of economic activity: production (volume of shipped industrial products per capita; profit of organizations); consumer market (retail trade turnover per capita; volume of paid services per capita) and investments (volume of investments in fixed capital by organizations per capita).

To determine the spatial potential based on the agglomeration effect of economic structure, the obtained results of the economic development index calculations are carried out through the potential formula, which will be presented in the following form:

$$\mathrm{Ep}i = \mathrm{EDI}i + \sum_{i=1}^{i=n} \frac{\mathrm{EDI}j}{\mathrm{D}ij}, \qquad (3)$$

where Ep*i* – economic potential of the *i*-th administrative center; *EDIi* – economic development index in the *i*-th administrative center for which the potential is determined; EDI*j* – economic development index in other studied *j*-administrative centers; D*ij* – the shortest distance along the road lines from the *i*-th administrative center, for which the potential is determined, to other *j*-administrative centers under consideration; *n* – total number of surveyed administrative centers.

Unlike the demographic potential, which is calculated on the basis of the population in the cities included in the Saint Petersburg agglomeration, the calculation of the underlying economic potential of the composite economic development index

is carried out for Saint Petersburg (core) and municipal districts of the periphery (Leningrad Region), which is due to the lack of statistical data on the indicators that form its basis by city.

The statistical base of absolute indicators underlying the definition of potentials was formed by the data of the Department of the Federal State Statistics Service for Saint Petersburg and the Leningrad Region (Petrostat) and the Committee for Economic Development and Investment Activity of the Leningrad Region (the latter for the calculation of the economic development index in the municipal districts of the periphery).

The method of cartographic modeling is a means of information and a tool for cognition of reality, which allows displaying (visualizing) the properties of spatial regularities of intra-agglomeration development on the cartographic plane on the basis of quantitative values of indicators of the structures in question and their spatial reference to geographical coordinates. Modern computer software, based on neural networks, most accurately and efficiently builds cartographic models. Such software includes "Surfer Golden Software", which contains neural network interpolation functions that allow obtaining cartographic models of high quality and accuracy based on spatial numerical data. It will be used to carry out cartographic modeling of the results obtained by calculating the potentials of demographic, settlement and economic structures, and to build corresponding cartograms showing clusters of spatial potentials of different levels and configurational forms in the Saint Petersburg agglomeration. The construction of cartographic models is carried out in the following way: the level of development of agglomeration effect of the functional structure under consideration, determined by the value of the indicator Z, is tied to the geographical coordinates X and Y, i.e. non-spatial data are translated into spatial data. The Z value in the demographic and settlement structure is linked to the coordinates of agglomeration cities, while the Z value in the economic structure is linked to the coordinates of agglomeration administrative centers. Further transformative process of the software used interprets the obtained result within a closed system – the outer boundary of the urban agglomeration with the allocation of clusters of different levels and configurations.

Research results

In regional economic science, the classical "center – periphery" model appeared in 1966, when its author J. Friedmann published a paper entitled "Regional Development Policy: A Case Study of Venezuela" (Friedmann, 1966). The key point of his theory is that the differentiation of agglomeration space is generated by the concentration of population and types of economic activities (economic entities) in the central large city (core) and decreases from it in the periphery as the distance increases. At the same time, a close relationship is formed between the center (core) and the periphery. The presented position served as a fundamental basis for *the author's theoretical substantiation of the genesis of spatial potentials within a single urban agglomeration (intra-agglomeration environment)*.

We should note that the core and periphery form two intra-agglomeration *gravitational forces – centrifugal ("nuclear") and centripetal ("peripheral")*. The agglomeration core acts as an agglomeration (synergetic) source and "reactor" of intra-agglomeration development and is characterized by limited land resources, relatively high cost of land rent, saturation (concentration) of residential and infrastructure facilities of various functional purposes (business, social, commercial, cultural, industrial, etc.), dense and congested network of motor transport communications, high environmental load. The size, properties and level of spatial and socio-economic development of the agglomeration core contribute to its constant impact on the peripheral territories, i.e. the manifestation of the *centrifugal gravitational force*. At the same

time, the centrifugal force (gravity) has a direct dependence on the distance and development of the transport and communication network, decreasing in the direction from the core to the far periphery. *The centripetal gravitational force* is a consequence of the secondary manifestation of the centrifugal force and is characterized by the opposite vector of direction – from the peripheral areas to the agglomeration core. As a result, in the intra-agglomeration space we observe the simultaneous action of centrifugal and centripetal gravitational forces. Their combined action contributes to the manifestation of *spatial potential*[1].

In theoretical and methodological terms, spatial potential should be understood as the *hidden opportunities (reserves) of intra-agglomeration space, the effectiveness of which can be manifested due to the established centers of concentration of certain functional structures that act as sources of agglomeration effect*. The presented formulation shows that the source of spatial potential is agglomeration effects, which are considered by scientists, as a rule, from the position of the impact of the core on the peripheral territories, if they are agglomerations of monocentric type (Suvorova, 2019; Kolomak, Sherubneva, 2023), due to the above characteristics. Under certain conditions of organization of the intra-agglomeration space, the agglomeration effect can also be formed by separate local peripheral centers located at a relatively large distance from the core, i.e. in areas where the agglomeration effect of the core loses or begins to lose its influence. In addition, provided that two local peripheral centers are located at relatively small distances from each other, which are poorly affected by the agglomeration effect of the core, the agglomeration effect will form a larger local peripheral center (city). In other words, agglomeration effect is formed (formed) by agglomeration cities with higher population size. In particular, the larger the agglomeration core, the stronger its agglomeration effect and the higher the spatial potential of its impact on the surrounding peripheral areas. For example, city A forms the agglomeration core due to the high concentration of population and economic activities, which exceeds the similar values of peripheral cities B, C, D, E, etc. Although peripheral cities B, C, D, E can form their own sources of agglomeration effect and exert spatial potential impact, they will be "absorbed" by the agglomeration effect of the spatial potential coming from the agglomeration core. If, for example, we take a multi-core agglomeration consisting of two cores, or ignore the agglomeration effect of the core in a monocentric agglomeration, then in the first case we obtain, and in the second case we set the conditions according to which the cities of the agglomeration in question will be characterized by approximately the same level of development (agglomeration effect). In this case, spatial potentials coming from two and/or more sources of agglomeration effects (agglomeration cities) interact with each other and spread their influence on the surrounding space in the form of a homogeneous spatial potential. Thus, in the intra-agglomeration space, the size of cities has a key influence on the manifestation of the spatial potential of agglomeration effect, which is confirmed by the results of the studies (Olifir, 2022; Mezhevich, Olifir, 2023).

Taking into account the above-mentioned theoretical foundations of spatial potentials formation in the intra-agglomeration environment and according to the adopted methodological approach, we will carry out practical testing on the example of demographic, settlement and economic structures of the Saint Petersburg agglomeration.

Table 1 presents the results of the calculations of the agglomeration effect potential of the demographic and settlement structure in the cities of the Saint Petersburg agglomeration.

[1] It is possible to use the equivalent concept "spatial potential force field".

Table 1. Determination of agglomeration effect potential of demographic and settlement structure in the cities of Saint Petersburg agglomeration as of January 1, 2023

City of agglomeration	Population as of January 1, 2023, thousand people	Total shortest distance along the road lines between the city under consideration and the central point of the core, km	D*pi*
Saint Petersburg (core)	5600.1	746*	5601.01
Volosovo	11.6	1,395	16.09
Vsevolzhsk	78.8	989	85.07
Gatchuna	92.7	944	99.25
Kirovsk	27.1	915	33.93
Kommunar	25.8	874	32.95
Kudrovo	64.9	736	73.34
Lomonosov	39.1	1,052	45.03
Luban	4.4	1,388	8.92
Murino	104.6	927	111.26
Nikolskoe	21.9	793	29.79
Otradnoe	25.4	795	33.27
Sertolovo	70.9	1,066	76.72
Sosnovy Bor	64.1	1,652	67.86
Tosno	33	973	39.42
Shlissenburg	13.9	981	20.29

* We take the distance from the central point of the core (Palace Square) to the cities of the periphery.
Source: own compilation based on the data of the Department of the Federal State Statistics Service for Saint Petersburg and the Leningrad Region (Petrostat) and on the basis of the search and information cartographic service "Yandex Maps".

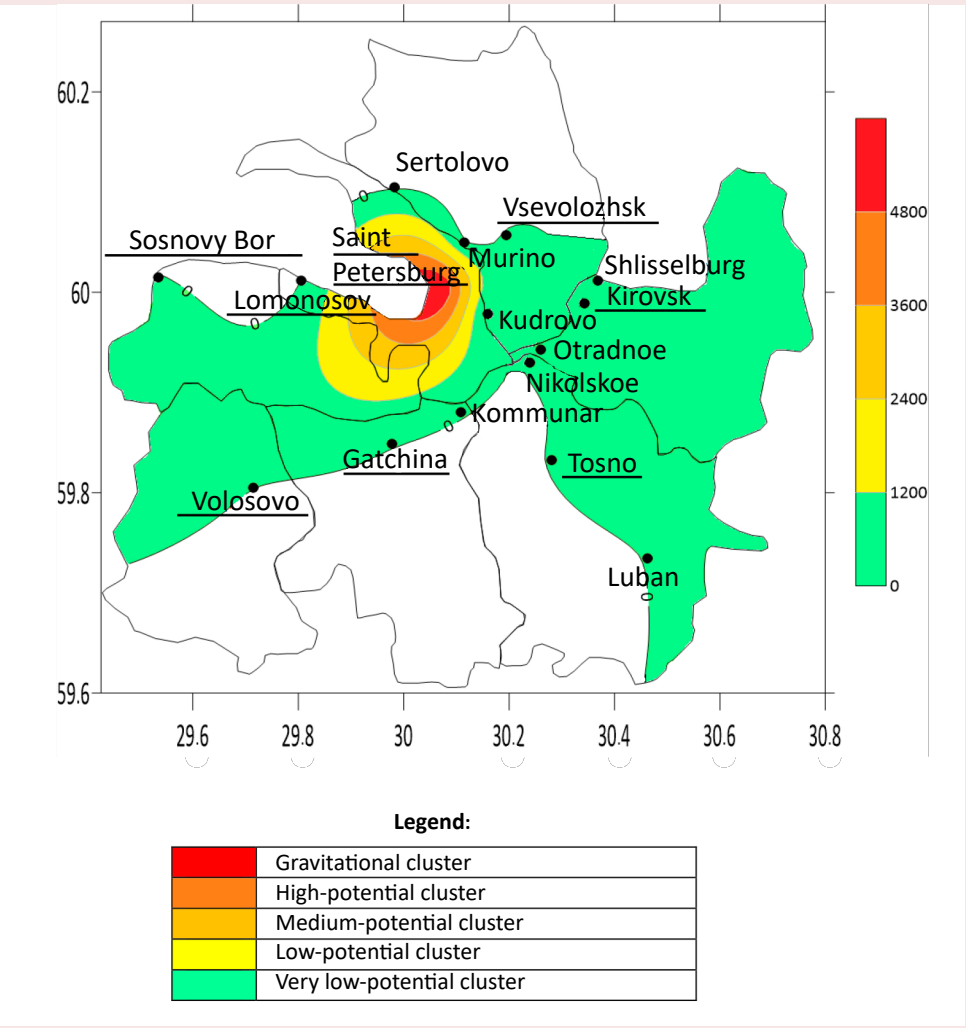
Based on the results obtained, we construct a cartographic model reflecting the distribution of spatial potentials of the agglomeration effect of the demographic and settlement structure of the Saint Petersburg agglomeration, the impact levels of which are represented by five groups of clusters obtained with the help of the neural network of the software used (*Fig. 1*).

As we can see, the central part of the core of the Saint Petersburg agglomeration forms a *gravity cluster*, which is surrounded by *high-potential, medium-potential* and *low-potential clusters*. Their spatial configurations are represented by ring shapes (limited by the "sea façade" from the west), which is due to the pronounced monocentricity of the Saint Petersburg agglomeration and the concentration of the largest part of the population. In the south-western direction, the ring configurations of medium-potential and low-potential clusters expand and go beyond the core boundary, covering the eastern and north-eastern parts of the peripheral Lomonosovsky district[2]. Within the *medium concentrated cluster*, in the eastern part of the Lomonosovsky district (adjacent to the south-west of the core), there is Anninskoye urban settlement and in the north-eastern part (adjacent to the south of the core) – Villozskoye urban settlement, where the population growth rates in 2023 compared to 2012 increased by 118.2 and 69.7% respectively[3]. The peripheral territory of the *low-potential cluster* has no urban settlements, but

[2] The city of Lomonosov is part of Saint Petersburg as a constituent entity of the Russian Federation (the agglomeration core), but it is also the administrative center of Lomonosovsky District of the Leningrad Region (the agglomeration periphery).

[3] Main indicators of demographic processes in Saint Petersburg and the Leningrad Region in 2011: Collection of articles. Petrostat. Saint Petersburg, 2012.; Number of resident population in the context of municipalities of the Leningrad Region as of January 1, 2023: Collection of articles. Petrostat. Office of the Federal State Statistics Service for Saint Petersburg and the Leningrad Region. Available at: https://78.rosstat.gov.ru/storage/mediabank/%D0%A7%D0%B8%D1%81%D0%BB.%D0%9B%D0%9E%20%D0%BD%D0%B0%2001.01.2023.pdf

Figure 1. Clusters of spatial potentials of agglomeration effect of demographic and settlement structure of the Saint Petersburg agglomeration



Source: own compilation on the basis of Surfer Golden Software.

within its boundaries there are rural settlements Nizinskoye, Gorbunkovskoye, Lagolovskoye and Ropshinskoye, the total population of which as of January 1, 2023 amounted to 20.9 thousand people[4]. This allows saying that the identified demographic and settlement potential of the territories of the designated clusters is generally used effectively.

The territories belonging to the *very low-potential cluster*, unlike the previous clusters, have lower indicators of the agglomeration effect potential of the demographic and settlement structure, which is due to the increasing distance of the cities located in it from the gravity cluster: "If agglomeration effects are the dominant factor, the highest values of economic and financial (as well as demographic – author's note) indicators should take place in the regional capital (agglomeration

[4] According to the data of the Department of the Federal State Statistics Service for Saint Petersburg and the Leningrad Region (Petrostat).

core – author's note) and in its immediate vicinity. The presented cluster has potential opportunities for the effective development of urban planning activities because within its boundaries there are significant areas of underdeveloped territories, as well as all the peripheral cities of the agglomeration, which are subject to the spatial potential of the agglomeration effect of the demographic and settlement structure. In practice, this potential is realized by developers in most of the cities included in this cluster (except for Luban). At the same time, the largest number of developers carry out their activities in the cities located near the administrative boundary of Saint Petersburg (agglomeration core), primarily in Murino, Kudrovo, Vsevolozhsk, Sertolovo, and Kommunar.

The remaining territories of the Saint Petersburg agglomeration are not affected by the agglomeration effect of potential impact, which is due to both the increasing distance and the absence of cities: the southern parts of the Volosovsky and Gatchinsky districts, the southwestern part of the Tosno district and the northern part of the Vsevolozhsky district. It is also worth noting that the positive potential is absent in the northern part of the Lomonosovsky district of the periphery, i.e. between the cities of Lomonosov and Sosnovy Bor, which is due to the relatively remote location of the latter from the agglomeration core and the formation of its own agglomeration effect, the spatial potential of which spreads its impact in the southern direction.

Table 2 presents the results of calculations regarding the agglomeration effect potential of the economic structure for the core and administrative (municipal) districts of the periphery of the Saint Petersburg agglomeration.

Table 2. Determination of the agglomeration effect potential of the economic structure for the core and administrative (municipal) districts of the periphery of the Saint Petersburg agglomeration in 2022

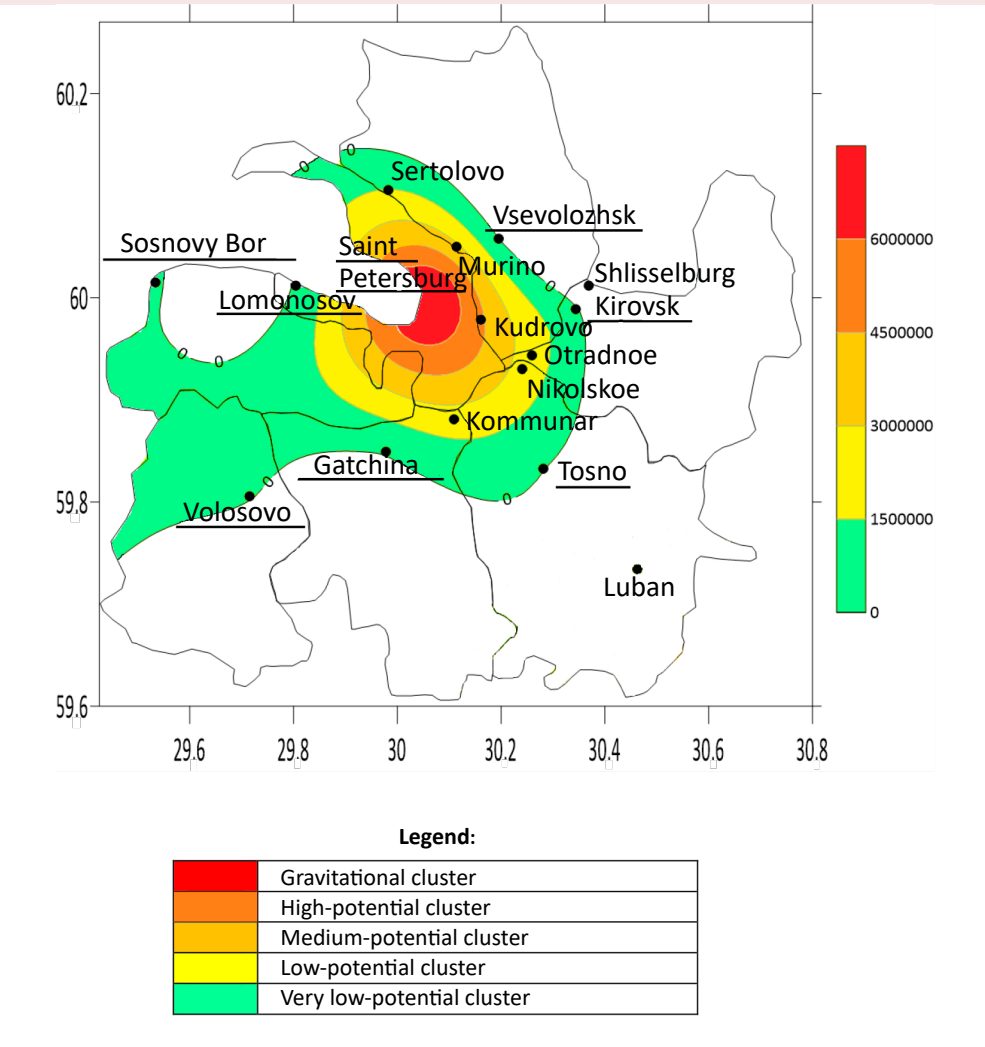
Administrative center of the agglomeration	VIP, million rubles	PO, million rubles	RT, million rubles	VPS, million rubles	VIC, million rubles	Total shortest distance along the road lines between the city under study and the central point of the core, km	EDI	Ep*i*
Saint Petersburg	3797500.0	31747400.0	1951200.0	693600.0	997500.0	416*	7308480.08	7309147.11
Volosovsky	10649.7	917.6	0.1032	0.0104	2575.6	586	2828.61	15769.11
Vsevolozhsky	281851.3	69295.6	0.3011	0.0279	50314.8	526	80292.41	94561.74
Gatchinsky	135239.9	55539.9	0.1603	0.0407	24087.0	441	42973.40	60077.69
Kirovsky	98730	18023.4	0.1538	0.0522	7 329.1	564	24816.54	38222.82
Lomonosovsky	269066.7	101850.3	0.2604	0.0067	19299.7	457	78043.40	94472.11
Tosnensky	75925.5	5015.8	0.203	0.0209	13922.3	543	18972.77	32908.30
Sosnovoborsky urban district	130797.8	3083.1	0.1923	0.017	13900.8	683	29556.37	40619.93

* We take the total shortest distance from the central point of the core (Palace Square) to the administrative centers of the periphery.
Symbols:
VIP – volume of shipped industrial products; PO – profit of organizations (enterprises); RT – retail trade turnover per capita; VPS – volume of paid services per capita; VIC – volume of investments in fixed assets by organizations; EDI – economic development index.
Source: own compilation based on the data of the Department of the Federal State Statistics Service for Saint Petersburg and the Leningrad Region (Petrostat), the Committee for Economic Development and Investment Activity of the Leningrad Region and on the basis of the search and information mapping service "Yandex Maps".

Figure 2 shows the cartographic model reflecting the distribution of spatial potentials of the agglomeration effect of the economic structure of the Saint Petersburg agglomeration.

In contrast to the demographic and settlement structure, the economic structure of the Saint Petersburg agglomeration has a more pronounced monocentrism. The first four groups of clusters: *gravitational, high-potential, medium-potential* and *low-potential clusters* are characterized by larger territorial areas of their potential impact. The *high-potential* and *medium-potential clusters* extend beyond the agglomeration core boundary, covering the peripheral towns of Kudrovo and Murino, respectively, as well as the extreme northeastern parts of the Lomonosovsky district bordering the core. The *medium-potential cluster* also includes a small eastern part of the Vsevolozhsky

Figure 2. Clusters of spatial potentials of agglomeration effect of economic structure of the Saint Petersburg agglomeration



Source: own compilation on the basis of Surfer Golden Software.

district (beyond Kudrovo) and very small parts of the Tosnensky and Kirovsky districts. The low-potential cluster stretches across the territory of the north-western part of the core, reaching the periphery to the town of Sertolovo, and then extends in a ring around the previous cluster, including the towns of Otradnoye, Nikolskoye and Kommunar, ending in the western part of the core, not reaching the town of Lomonosov. In economic terms, the peripheral territories of the above clusters have very close ties with the agglomeration core in terms of production, infrastructure, sales, migration and labor, i.e. they are actually a continuation of the agglomeration core.

The *very low-potential cluster* includes territories reaching the administrative centers of peripheral districts – Vsevolozhsk, Kirovsk, Tosno, Gatchina, Volosovo, and Sosnovy Bor. In the southwestern part its spatial configuration is similar to a similar cluster of demographic and settlement structure. In the rest of the Saint Petersburg agglomeration, the positive agglomeration effect of the economic potential is not manifested due to the reasons outlined in the characterization of the demographic and settlement structure.

Conclusion

Thus, the study formulated a theoretical basis for the formation of spatial potentials in the intra-agglomeration environment, the essence of which is based on the simultaneous action of centrifugal and centripetal gravitational forces. The source of spatial potential is agglomeration effects, the effectiveness of which can be manifested in the centers of concentration of certain functional structures and their impact on the surrounding space. The proposed methodological approach allowed determining the spatial potential of demographic, settlement and economic structures of the second largest urban agglomeration of the Russian Federation – Saint Petersburg. As a result, we revealed that agglomeration effects of the considered structures have a positive spatial potential for the formation and development of local peripheral centers. Initially, such localities should be administrative centers of the peripheral districts of the Leningrad Region – Vsevolozhsk, Kirovsk, Tosno, Gatchina, Volosovo, and Sosnovy Bor. The distinctive feature of the proposed and tested methodological approach is the discovery of spatial reserves (spatial potentials) on the basis of agglomeration effects in a developed intra-agglomeration environment. Interpretation of the spatial potential of the agglomeration effect in the structures of the Saint Petersburg agglomeration is represented in each of them by five groups of clusters: gravitational, high-potential, medium-potential, low-potential and very low-potential, the levels and configurations of which are defined through the neural network capabilities of Surfer Golden Software. Unlike traditional (mechanical) methods of clustering, the neural network of the applied software takes into account non-linear parameters of input and output data (indicators) on the basis of their interconnectedness, which made it possible to obtain the most accurate result that is not tied to administrative boundaries.

Promising directions for further research are related to the development of new methodological and methodological approaches aimed at finding and modeling agglomeration effects and their spatial potentials in the functional structures of individual cities, urban agglomerations or regions (investment, innovation, environmental, transport, service, cultural, etc.). It is also a promising direction to determine the spatial potentials of agglomeration effects of individual large enterprises based on the indicators of their functional activities. However, such research is difficult due to the lack of open statistical data at the enterprise level.

The research results can be used by regional and municipal public authorities in developing strategies of territorial, spatial, socio-economic and urban development, as well as by developers and business entities in choosing, respectively, the locations of real estate and production activities.

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Received February 14, 2024.

DOI: 10.15838/esc.2024.2.92.7
UDC 338.2, LBC 65.011.1

Developing a Model of Forest Enterprises Activities with the Prospect of Moving into Sustainable Development

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Abstract. The sustainable development concept is highly relevant in the modern scientific and applied agenda of country's social and economic development. Russia has approved a number of programs for its active implementation. This is reflected in almost all branches of the economy. The forest industry is crucial in this context as it uses and restores wood, one of major resources for the planet's ecosystems. The aim of the research is to develop a model for optimizing the activities of forest industry enterprises, taking into account the prospects of moving into sustainable development. The aim was predetermined by a necessity to design a means for supporting the idea of moving into sustainable development. The model includes a range of effects that impact the profit through the use of various resources. Forest enterprises activities concern a set of technical, economic, ecological and social aspects. The presented model helps to calculate the remaining profit available to the enterprise. It also covers crucial aspects such

For citation: Medvedev S.O., Zyryanov M.A. (2024). Developing a model of forest enterprises activities with the prospect of moving into sustainable development. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 129–145. DOI: 10.15838/esc.2024.2.92.7

as competitiveness and efficiency, which are determined by the effects of social, ecological and economic nature. An important finding is the demonstration of the need and interest of forest enterprises to fulfill the existing restrictions imposed by stakeholders. The presented results may be valuable for researchers of the forest sector economy and to the industry in general; for the federal authorities to implement sustainable development programs and create industrial policy; for the heads of forest businesses to develop relevant strategies and plans.

Key words: forest enterprise, sustainable development, model developing, effect, production factors, restrictions, optimization, profit.

Acknowledgment

The research was supported by Russian Science Foundation grant 22-78-10002, https://rscf.ru/project/22-78-10002/.

Introduction

The forest industry currently has a relatively small impact on the Russian economy. However, due to the huge natural forest resources, there is potential for significant growth in the industry, which could increase country's GDP. Finland provides a successful example of an economy that has fully used forest resources of the country (Halonen et al., 2022). Although there are difficulties in transferring foreign experience to Russian reality due to differences and restrictions, the forest industry is capable of producing high-quality, expensive products that are in demand on the world market. Obviously, the contribution of this industry cannot be compared to the oil and gas sector. However, improving the efficiency of the forest industry benefits both the state and businesses, profiting from the production and sale of products. It is an important and urgent task, confirmed in the Strategy for development of the forest industry[1].

The forest industry has been affected by the significant restrictions imposed on domestic economy by a number of countries. European countries, which were traditionally the major consumers of timber products and suppliers of equipment and machinery, have been replaced with Asian and other friendly countries. Enterprises have to cope with the current realities and overcome various challenges. Under these circumstances, optimizing is a crucial factor for increasing efficiency. Finding the most relevant methods and directions for this work is of great interest from both practical and fundamental perspectives.

Current geopolitical situation has led forest enterprises to search ways to improve their efficiency. Use of various modeling methods is a common option to achieve this goal. These methods provide valuable information about the consequences of certain decisions without the need for expensive experiments. There are many of them available. In practice, mathematical tools for economics can be some of the most relevant directions for business. These methods can be used for optimizing production programs, forecasting and solving problems. They can also represent, analyze, and describe complex social and economic processes in the economy, including the forest industry. Obtaining general models of forest enterprises' behavior under specific conditions is an important result.

[1] Strategy for development of the forest industry in the Russian Federation for the period up to 2030 (approved by RF Government Resolution 1989-r, dated September 20, 2018).

According to some experts and government agencies, sustainable development is a crucial strategic direction for domestic industry[2]. Many of the largest Russian companies are implementing projects to reduce their environmental impact. Sustainable Development Concept, which involves implementation of many different tasks, aims to organize production activities while considering the interests of future generations. However, Russian enterprises are lagging behind their Western counterparts in implementing solutions that contribute meeting this target. This situation arose largely due to the level of development of civil society. The need for clean environment, safe production, and respect for the interests of local communities in Russia, which have become a priority in a number of developed countries, is not yet considered as a prime concern. However, changes are taking place and there is a growing demand for responsible business. Despite the existing number of skeptical views, the evidence suggests that the Sustainable Development Concept will become increasingly relevant, and its principles will be implemented at more and more enterprises.

This research aims to develop a model for optimizing activity of forest industry enterprises, considering the moving into sustainable development. The focus should be on developing a suitable mathematical framework to determine the impact of decision-making on an enterprise's development. According to the authors, the primary challenge in implementing sustainable development principles is the business targeting on economic performance with less regard for social and environmental effects. Therefore, the proposed model should consider various social, ecological and economic parameters and their impact on forest enterprises' final outcomes.

Materials

The economics of the forest industry is a relevant subject in both Russian and foreign literature (Mourao, Martinho, 2020; Pyzhev, 2021). Many studies are devoted to improving the efficiency of forest enterprises, which stand for the objects of their analysis (Yen, 2018; Grigor'ev, Grigor'eva, 2016; Gordeev, Pyzhev, 2023). The works differ significantly in their specifics, applied methodologies and approaches, as well as goals.

Forest enterprises' efficiency in scientific research is often examined either to assess the impact of changes or to identify areas for optimization (Xue et al., 2018). Direct performance evaluation is also conducted, but only for testing or comparing specific results. Plenty of works identifies various stakeholders that influence different aspects of forest industry enterprises (Butko et al., 2013; Petrov et al., 2023). Each stakeholder, including the state, local communities, and business owners, views a forest enterprise in their own ways, based on their own interests and needs. (Soviana, 2015). Finding an optimal solution for all stakeholders is a complex task that should be solved in social, ecological and economic terms.

Many works have noted the dependency between economic performance of enterprises and ecological parameters of the environment. Some authors conduct fundamental research on climate change and its impact on businesses (Stern, 2007), while others observe various tools for analyzing or developing industrial structures (Polyanskaya et al., 2017; Laso et al., 2018). According to the scientists, one of the main concepts is the idea of environmental regulations to act as an incentive for implementing technological innovations.

[2] RF Government Resolution 1912-r, dated July 14, 2021 (amended on December 30, 2023) "On approval of targets and main directions of sustainable and environmentally friendly development of the Russian Federation".

This should increase competitiveness and economic efficiency of a business unit (Porter, Linde, 1995; Hu et al., 2017).

In modern literature, studies on sustainable development often explore the dependency between the economy, ecology, and social sphere (Bobylev, 2020; Izmaylova, 2021). This topic is widely discussed in both foreign and domestic publications. Relationship between sustainable development and performance of forest enterprises is often considered in applied aspect of its potential effects (Liang et al., 2024) or simply recognized as a dependency (Terent'yeva, Savchenko, 2022). In some authors' opinion, the relationship will become more obvious in the medium and long terms in Russian conditions. Foreign enterprises normally pay attention to the principles of sustainable development; that determines their success and, in some cases, the very possibility of doing business (Hahn, Knoke, 2010; Halonen et al., 2022). Production requirements come from outside (Budanov, 2016), and domestic forest enterprises will need to cope with increasingly changing conditions to operate in this direction.

One of the main aspects of sustainable development is the use of various resources. This is a significant research topic for the forest industry. The forest industry has a great advantage of natural resources restocking through reforestation (Petrov, 2020). Optimization of resources allocation with the use of various mathematical models at forest industry enterprises is considered in both theoretical and applied aspects (Ibrahim et al., 2018). However, most studies are focused on optimization of material resources, which may not lead to obtaining objective results in the current reality and trends.

The primary aspect of this research is to examine the improvement of enterprises, taking into account prospects for their development. It is important to consider the opinions of some authors (Hahn et al., 2014), who emphasize the significant dependency between decision-making and discounting. Bringing future cash flows to the present moment obviously allow reducing some risks and correctly assess potential results. However, the forest industry is known for a long recovery period of its main resource – wood, which can take up to 100 years. For this reason, it is difficult to develop objective models for optimizing the long-term activities of forest enterprises, including discounting elements. This opinion is shared by several foreign researchers (Gadow, 2000).

In general, obtaining an objective and quantitative assessment of many facts describing the functioning of enterprises in the industry requires the use of various economic and mathematical methods. This thesis is supported by numerous studies. This research provides examples of the mathematical framework use to assess waste management effectiveness (Amaral et al., 2022) and to meet environmental and economic standards (Niero et al., 2017).

Industry models are a particular case of more global and macroeconomic modeling. In the case of forest industry research, most works are focused on optimizing and changes forecasting of production and economic indicators (Blam et al., 2017; Rogulin, 2021). However, it is important to note that the authors' approach requires the inclusion of environmental and social components in the designed model. This is presented fragmentarily in the scientific literature. The final application models comply with the authors' hypothesis regarding the dependency between economic effects and sustainable development or green economy (Glazyrina et al., 2015). Most relevant modeling examples are balance models, presented in the scientific literature (Shelukhina, 2014).

In the authors' opinion, developing a model of sustainable development of enterprises is insufficiently presented in scientific literature. Existing approaches are either based on general ideas of sustainable development (Il'ina, 2021), limited to describing structural elements that should be included in such models (Koryakov, 2012), or focused on a restricted number of indicators used to assess sustainable development (Yarullina, 2008). The selection of these indicators is often questionable and meets the general focus the presented research. It should be noted that in foreign literature some works are interesting and detailed from both theoretical and practical perspectives (Chang, Cheng, 2019). However, most of the studies describe parameters, indicators, and practices of enterprises that are irrelevant in Russian conditions.

Analysis of existing studies allowed us to conclude, that developing a model of forest enterprises' activities in accordance with their possible movement into sustainable development is a highly relevant topic and should be accompanied by an appropriate theoretical base. To achieve objective results, it is necessary to balance technical, economic, environmental, and social spheres. Developing a model should consider various types of resources and effects. Their integration into a single balance model will expand the existing theoretical and applied ideas about the efficiency of forest enterprises.

Methods

The research is based on general scientific methods such as analysis, synthesis, generalization, etc. Statistical analysis was carried out to process data on the current state of the forest industry and its individual subjects. The research partially includes previously obtained results for optimizing the production program of a forest enterprise (Medvedev et al., 2020) and assessing the current state of the industry (Medvedev et al., 2022). The study consists of several stages:

1. Analyzing of resource flows at a forest enterprise. This stage is necessary to design graphic models of resource flows. The significant elements of this model include stakeholders: society, state, environment, market. Resources and effects circulate between these stakeholders and an enterprise. They also impose certain restrictions on an enterprise. Research proceed from the notion that an enterprise's resources are traditional production factors.

2. Studying of the interaction features between a forest enterprise and external environment. Effects and restrictions, specified at the first stage of the research, are analyzed to determine their specific influence on various aspects of forest enterprise activity. The results serve as an applied manifestation of the balance model.

3. Forming a model to optimize the activity of forest enterprises in accordance with their possible movement into sustainable development. This stage is performed with the use of traditional approaches for obtaining economic-mathematical balance models. The important aspect is description of current restrictions and effects concerning technical, economic, ecological and social factors. The theoretical model was visualized in Statistica application software in three-dimensional space with the fulfillment and non-fulfillment of the restrictions present in the model.

Results

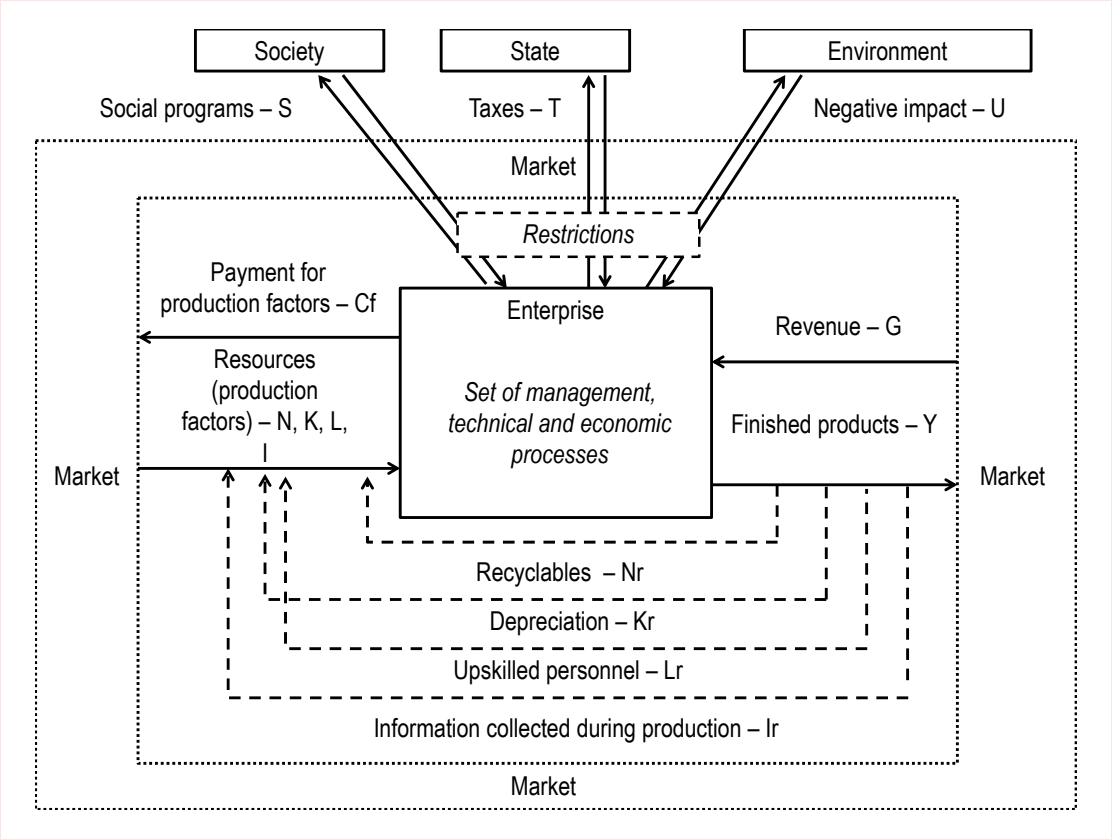
Model of resource flows at a forest enterprise are presented in *Figure 1.*

This model presents a number of classical ideas about the economics of production, enterprise and economic theory in general. Production is the major source of income and activity for an industrial enterprise. According to traditional ideas, it relies on production factors (resources) – labor (L), financial (K), natural (N) and informational (I).

Traditional factors "labor, land and funds" are most actively involved in the production processes of the forest enterprise. They are directly transformed into finished products. The modern forest industry is increasingly using informational resources. This includes many aspects of its activity, from market research to the use of different software solutions in various production processes (geographic information systems, systems applications and products etc.). However, the domestic information resource market lags behind advanced foreign experience.

The main component of this model is the set of management, technical and economic processes. This refers to a large number of processes that take place within an enterprise and result in the use of all material and informational resources. Essentially, incoming resources are managed and transformed into various output and/or material flows that circulate within the enterprise.

Figure 1. Model of resource flows at forest enterprise



Source: own compilation.

An enterprise's external environment consist of such components as market, society, state and environment. The market is a separate institution that forms the economic conditions for all business units. It provides necessary resources and transforms finished products into revenue. The model also includes society, the state, and the environment as separate components. Each of them plays a crucial role in the activity of forest enterprises. At the same time, these components naturally intersect each other and market in their interactions with the enterprise. For instance, the market provides labor resources which are a part of society.

Figure 1 does not present business owners and net income of enterprises they use for non-production purposes. The authors suggest considering these processes and components within the internal structure of enterprises. Therefore, this aspect of material flows and management can be described as part of the set of management, technical and economic processes presented in the model.

It is important to note that the components of the external environment impose a set of restrictions on the activities of enterprises. *Table* presents the resources and restrictions for forest enterprises. The enterprises under consideration also impose a number of restrictions on society, the state, and the environment. However, the scale of their impact is significantly smaller.

Enterprises negatively impact environment (U) by causing emissions, discharges, waste, deforestation, and soil disturbance. Some enterprises of the industry positively effect environment by reforestation and fighting harmful diseases and fires. However, Figure 1 emphasizes the dominant component of interaction between business and the environment. In fact, human activities provide minimal benefits to nature, as shown in Table.

Certain features of interaction between forest enterprises and external environment

External environment components	Provided resources / material and informational flows	Benefits	Restrictions
Market	All kinds of resources: material, financial, labor, informational etc. Revenue from products sale, infrastructure	Timber products, payment for the supplied resources. Commercial products' range and volumes expansion	Products price, possible sales volume, quality standards, available volume and quality of resources
Society	Labor resources; informational resources and informational support; the company's image	Employment; pay; social benefits; a piece of the finished product	Requirements to ensure social benefits, taking part in social programs and compliance with environmental standards
State	Access to logging base information; informational and legal support; infrastructure; access to government institutions and structures	Taxes; reduction of social tension and unemployment; GRP and GDP growth; business development	Ecological, technical, legal and regulatory and other restrictions to protect society, market, environment and state
Environment	Natural resources (wood resources), water resources; waterways for transporting raw materials and products	Set of environmental protection measures, if enterprise takes part in their implementation	Quality and amount of resources on a certain area; total water resources; possibility to create and maintain transport networks

Source: own compilation.

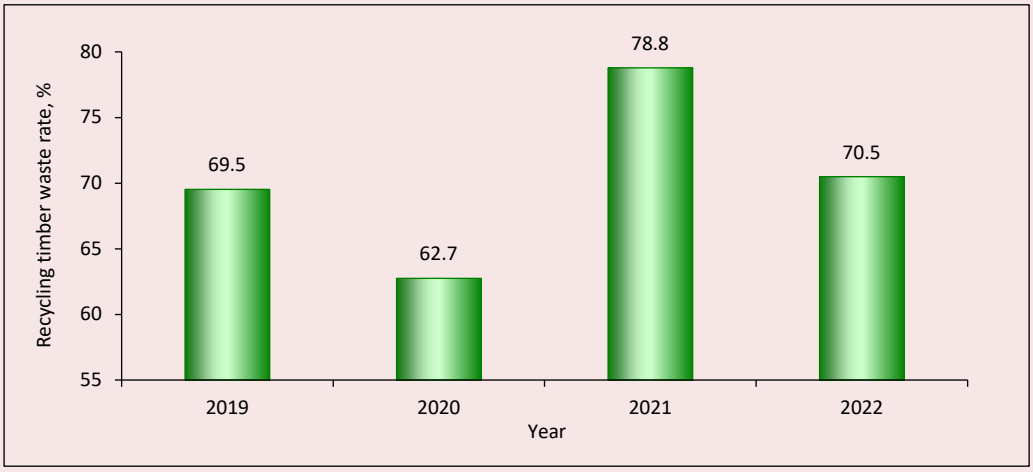
Modern Russian forest increasingly uses timber recyclables. In recent years, their recycling rate reaches approximately 70% (*Fig. 2*). This is the main resource in the model, which is being reused. On one hand, timber recyclables (Nr) expand the enterprise's resource base and, on the other hand, reduce the environmental damage.

External factors have significantly influenced the recyclable amount of waste in recent years. Fluctuations in production volumes, exports, and timber resources demand have been caused by restrictions imposed by markets and foreign governments. The industry has been refocusing on Asian markets since 2022. Products made from recycled timber resources are not in the same demand in Asian markets as they were in Europe. The most obvious example is pellet fuels (pellets).

The forest industry is primarily restricted by environmental requirements for both products and processes at enterprises. For Russian forest businesses environmental agenda has long been associated with meeting the environmental demands of export markets. Many enterprises limited to obtaining certifications (FSC, PEFC). However, in recent years, the relevance of this factor has increased due to the efforts of the state and society. Terms decarbonization, carbon footprint, and sustainable development are becoming more and more common in the goals and objectives of the industry. The activities of companies are gradually transforming as they have to meet modern requirements. Workers, environmental and public policies, as well as technologies are changing. Despite restrictions imposed by some countries, trend toward strengthening the role of environmental and social agenda continues.

Under these conditions, effective planning of activity, consideration of all restrictions and balance in decision-making at forest enterprises require proper justification. Economic and mathematical modeling is a common sufficient means to plan, analyze and forecast various aspects of enterprise activities at macro and meso levels. Currently, there are many mathematical models available for optimizing enterprise activities. Some of them also consider the balance between socio-ecological and

Figure 2. Recycling timber waste rate in Russia 2019–2022, %



Source: Federal Service for Supervision of Natural Resources.

economic interests (Shelukhina, 2014). However, such developments are rare for the forest industry and often require specification.

This study aims to design a mathematical model to find balance between economic, social and ecological development priorities and current restrictions.

Let us define a forest enterprise production to as $F(x_1, x_2, \ldots, x_n)$ – an objective function of production. n stands here for a resource used. As it was mentioned before, production and management activity of forest enterprises features various effects. Considering the general trends in science, they can be divided into the following categories:

– ecological: degree of environmental pollution (waste, emissions, discharges, occupational noise etc.); reforestation amount; forest resources extraction etc.;

– technical and economic: production volume, amount of revenue and net income, productivity gains (workers and machinery), new products, consumers etc.;

– social: working population; average pay; implementation of social programs for workers and local communities etc.

An enterprise's activities result in the m amount of such activities. Matrix of effects produced can be seen below:

$$E_p = \begin{pmatrix} e_{11} & e_{12} & \ldots & e_{1n} \\ e_{21} & e_{22} & \ldots & e_{21} \\ \ldots & \ldots & \ldots & \ldots \\ e_{m1} & e_{m2} & \ldots & e_{mn} \end{pmatrix}, \quad (1)$$

where $e_{ij} > 0$ – amount of j-effect, obtained from using of i-resource. Effects vector $\bar{o}$ is calculated as follows:

$$\bar{o}^T = E_p \cdot \bar{x}^T$$

$$\text{or } o_k = \sum_{j=1}^{n} e_{kj} x_j, k = 1, 2, \ldots, m, \quad (2)$$

where $\bar{x}$ – row vector of resources used.

Since enterprises are subject to various restrictions in addition to the effects obtained, the mathematical model should include several additional conditions. The following conditions should be added:

1. H Matrix of coefficients, limiting the resources. Market, society and state significantly influence this aspect of business activity. This is an external restriction for a forest enterprise.

2. $\bar{a}$ restrictions vector, determined by internal capabilities of a forest enterprise. It includes equipment performance, highway and storage capacity, financial ability of a business, requirements established in the charter or in corporate code.

3. Regulatory restrictions vector $\bar{o}^*$ for obtained effects This aspect is the most difficult to calculate and express. Considering the three areas under consideration, the following restrictions on the obtained effects can be examined:

– environmental sphere: meeting waste generation standards, maximum allowable concentration of emissions and discharges, noise restrictions etc. In Russia, such restrictions apply to all types of emissions and impacts from the forest enterprises' activities. Forest enterprises must also comply with restrictions on the amount of logging (both overcutting and undercutting are unacceptable in the cutting areas), scale of reforestation and other environmental protection measures;

– technical and economic sphere: meeting product quality standards (domestic and foreign in the case of their export); mandatory deductions to fund and budgets (taxes, social insurance funds); obligations for sale of foreign currency earnings; patent-licensing restrictions on the use, manufacture and sale of the products, machinery and equipment (both in the case of in-house developments and those purchased from third-party organizations), etc.;

– social sphere: pay amount (minimum wage and its relation to the average one for the region); meeting the working conditions and safety standards, compliance with certificates (for example, FSC и PEFC); an enterprise's involvement in social events and programs. Territorial governments traditionally attract forest enterprises, especially large ones, to finance and implement individual programs and projects (large businesses that participate in regional projects).

Efficient operation of an enterprise requires meeting the regulatory restrictions (including the reduction of a number of costs to eliminate non-compliance with regulations) or exceeding the values of impacts above their regulatory values:

$$\bar{o} \geq \bar{o}^*. \quad (3)$$

However, some restrictions establish the upper bound values of the effect, while others establish the minimum values. Therefore, ratio (3) is incorrect. To compare effects and their normative values, we introduced a vector $\bar{\tau}$, that defines the nature of the current restriction:

$$\tau_j = \begin{cases} -1, \text{if } o_j^* \text{ sets the upper threshold limit,} \\ 1, \text{if } o_j^* \text{ sets the minimum admissible limit.} \end{cases} \quad (4)$$
$$j = 1, 2, \dots, m.$$

Considering the $\bar{\tau}$ introduction, ratio (3) will be expressed as follows:

$$\bar{\tau} \cdot (\bar{o} - \bar{o}^*) \geq 0. \quad (5)$$

Let us give an example. Suppose the emission standard for a certain enterprise is 10 tons. Then, if the actual volume is 9 tons and τ = -1, the ratio is correct: $-1 \cdot (9 - 10) = 1 \geq 0$. If $\tau = 1$, for example when there are restrictions on the volume of reforestation work, the effect must exceed the value set for the enterprise in order to fulfill the condition. If the enterprise restored 50 hectares of forest with a standard of 40 hectares, ratio (5) will be correctly expressed as $1 \cdot (50 - 40) = 10 \geq 0$.

Summarizing the conditions presented above, the task of optimizing the production activity of a forest enterprise is to find the maximum of the function:

$$F(x_1, x_2, \dots, x_n) = F(\bar{x}) \to max \quad (6)$$

set of feasible solutions

$$\begin{cases} \bar{x} \geq \bar{0}, \bar{o} \geq 0, \\ Hx^T \leq \bar{a}^T, \\ \bar{\tau} \cdot (\bar{o} - \bar{o}^*) \geq 0. \end{cases} \quad (7)$$

The fulfilment of the final condition in system (7) (its expanded formula represents restrictions of the sum of achieved effects for each type of resource):

$$\bar{\tau} \cdot (\sum_{j=1}^{n} e_{kj} x_j - o_k^*) \geq 0, k = 1, 2, \dots, m, \quad (8)$$

represents enterprise activity during the movement into sustainable development. The sum of all effects (technical and economic, environmental, social) should lead to a positive outcome for an organization's functioning. Therefore, a forest enterprise must meet regulatory restrictions on each effect. This results in the creation of socially and environmentally responsible businesses that receive economic benefits. However, any failure to comply with any restriction (8) should have clear consequences.

The major purpose of any enterprise is profit maximization. Profit decline or loss, a logical consequence of stepping beyond regulatory restrictions, should become a driver in stimulating businesses to implement condition described above. On the other hand, it is important to encouraged businesses to move to sustainable development, considering

achievement of social, technical and economic and ecological effects. The value expression of the achieved results under such conditions is one of the most important elements of the problem being solved in this study. Let us refer to the classical definition of profit (*P*). This is revenue (*G*) minus costs (in our case for the use of production factors – *Cf*):

$$P = G - Cf. \quad (9)$$

Let us derive the expanded form of this equation by introducing a number of new components: p – aggregated price of the forest enterprise production; c – aggregated price of the production factors use (resources); $Z(x_1, x_2, \dots, x_n)$ – objective function of recourses use task (production factors). Production volume is denoted as $G = p \cdot F(x_1, x_2, \dots, x_n)$ or $G = p \cdot F(\bar{x})$; $Cf = \mathrm{c} \cdot Z(x_1, x_2, \dots, x_n)$ or $Cf = c \cdot Z(\bar{x})$.

Taking into account compliance with the regulatory values of the obtained effects being the crucial element for production optimization, it is logical to include in formula (9) an element reflecting sanctions for non-compliance with the established requirements. Let us introduce a vector $\bar{d}$, the components of which determine the amount of payment for the forest enterprise for non-compliance with the regulatory values of effects (if the third condition in (7) is not fulfilled):

$$\bar{d} = (d_1, d_2, \dots, d_m). \quad (10)$$

It is also necessary to introduce a vector $\bar{\varepsilon}$, which will determine the fulfillment of the third condition in system (7):

$$\varepsilon_j = \begin{cases} 0, \text{if } \bar{\tau} \cdot (o_j - o_j^*) \geq 0, \\ 1, \text{if } \bar{\tau} \cdot (o_j - o_j^*) < 0. \end{cases} \quad j = 1, 2, \dots, m, \quad (11)$$

where o_j and o_j^* – vectors components for obtained effects and their regulatory restrictions.

The Forest industry features the generation of timber waste which can be reused for products it was created from or to produce new ones. In the forest industry, such resources are most commonly used for energy and deep timber processing production (board materials, pellet fuels, pulp and paper products). Therefore, timber recyclables (*W*) contribute to other resources (production factors) in a form of material resources (*N*). A similar situation occurs with other resources (Fig. 1). *r* stands for recyclables' types. To each resource type x_n will be added *r* resources: $x_{n+1}, x_{n+2}, \dots, x_{n+r}$. The row vector of resources used will take the form of $\bar{y}$: $\bar{y} = (\overline{x_{n+r}})$. An enterprise will bear costs to reuse the recyclables, so both functions $F(\bar{x})$ and $Z(\bar{x})$. will be changed.

According to all additional conditions, the model for optimizing a forest enterprise activity is determined as finding the maximum of function (12) in the set of feasible solutions (13)::

$$P = p \cdot F(\bar{y}) - c \cdot Z(\bar{y}) - \bar{d} \cdot \bar{\varepsilon}, \quad (12)$$

$$\begin{cases} \bar{y} \geq \bar{0}, \\ H\bar{y}^T \leq \bar{a}^T. \end{cases} \quad (13)$$

According to the authors' concept, the variable *P* in the functional dependency (12) represent net income of an enterprise after deducting taxes, fines, and other mandatory payments is largely influenced by the set of management, technical, and economic processes, such as the amount of profit, the level of negative impact on the environment, compliance with regulations, and the value of assets etc. In fact, it is also part of the effects received from the use of resources, which fits into the model presented. Social programs implemented by enterprises follow the same logic. The resources allocated to them lead to a variety of effects: employee motivation, increased loyalty

of the population, absence of conflicts with local communities, etc. All this, as well as the interaction with the state and the environment result in significant effects on the production and economic processes within the enterprise.

The competitiveness and efficiency of forest enterprises are determined by the effects they produce. Taking into account the global trends of moving into sustainable development, joint efforts of business, society and state are required to change the existing approaches to their functioning. Structural changes and motivation of each stakeholder by all possible means are required. At the same time, in the literature (Bobylev, 2020; Hahn, Knoke, 2010) there are often references to the need for separate state programs to stimulate business to actively implement the principles of sustainable development. In the authors' opinion, such programs are an important component that will allow enterprises to improve many internal processes. The forms of state support can be different – subsidies, reduction of the tax base, allocation of additional resources (logging base), etc. In any case, the received benefits will be one of the produced effects reflected in (1). Therefore, all the changes that occur and directly or indirectly affect forest enterprises will be presented in the proposed model. The task for optimizing forest enterprises activities will be solved in practice with taking into account the input factors and the obtained effects. Each business will operate within the existing restrictions, considering the possible effects.

State stimulation to the sustainable development for forest enterprises is associated with the establishment of tighter restrictions $\bar{o}^*$. At the same time, the imposed restrictions should be accompanied by methods of positive stimulation – motivation. In this case, the positive effects will be able to exceed the negative ones, including trough the synergetic effect and the use of recyclables.

The proposed model has significant impacts in three areas: technical and economic, environmental, social. These effects are represented by a 3D model of the response surface (convex function; *Fig. 3*).

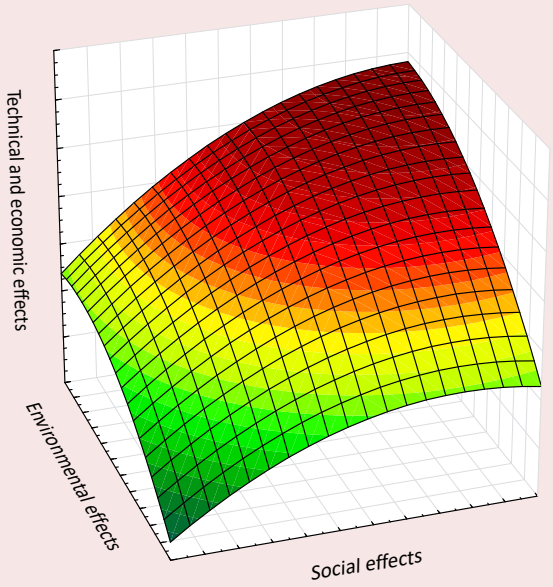
According to equation (12), non-compliance with regulatory values for effects leads to a decrease in all effects. Focusing on any one aspect of an enterprise's activity (for example, focusing on economic results only) will lead to reduction of other results, and this will affect the potential for achieving economic effects. Therefore, the maximum effect of one activity aspect will be restricted by the effects in other areas. As a result, the feasible region significantly reduces (*Fig. 4*).

The model clearly demonstrates the reduction of the feasible region to achieve desired effects. Therefore, forest enterprises are motivated to comply with the restrictions of the developed model.

To use the presented model in forest industry state management, changes in the regulatory base are necessary. They should encourage businesses to actively implement sustainable development principles. This can be achieved through the development and implementation of state programs that provide effective tools to promote responsible business (subsidies, huge resource allocation and other support measures). Changes of legal base should focus on tightening restrictive measures to ensure compliance with environmental, social, and economic requirements of state policy in the context of sustainable development.

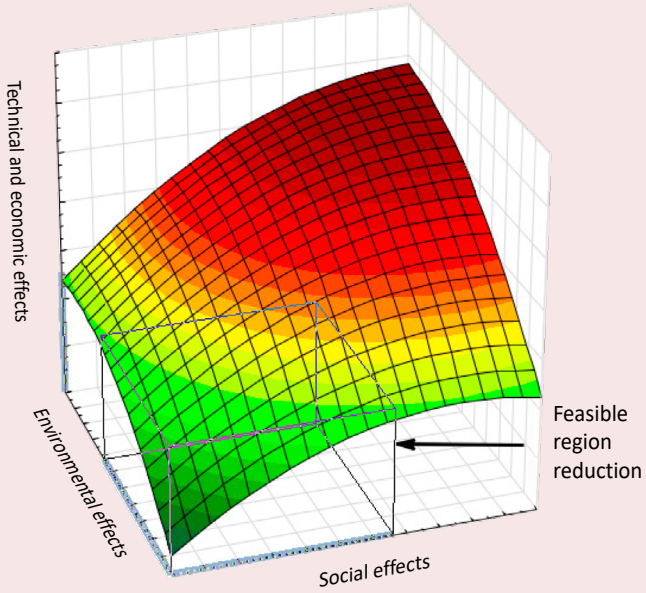
Some forest enterprises, using the model under consideration and their own business data, can obtain more information about development opportunities and the effects of participating in social and environmental activities. Therefore, the presented model serves as a basis for developing

Figure 3. 3D model depicting effects of forest enterprise activity



Source: own compilation.

Figure 4. Feasible region reduction if conditions of designed model are not met



Source: own compilation.

business strategies with taking into account their changing priorities (from economic to balanced). Implementing this model in enterprises' activity requires a preliminary review of all possible effects, resources, and restrictions; their correlation, and a set of calculations to assess the effectiveness of potential transformations. The widespread implementation of this approach requires a detailed methodology, the development of which is the next step of the authors' work.

Approbation and evaluation of the effects of using the above model is a complex task that requires, even for a single enterprise, a comprehensive study with access to a variety of data constituting a trade secret. The authors analyzed the practice of implementing certain principles of sustainable development by one of the leading timber enterprises of the Krasnoyarsk Territory. Based on the results of the practical study, it was revealed that the changes are associated with the transformation of the technological scheme, introduction of several units of high-performance equipment with less environmental impact, improved working conditions for personnel, partial modernization of infrastructure, and the output of new products based on previously unused wood waste. The resulting effects are associated with an increase in production and economic performance, an increase in staff salaries, a decrease in environmental impact and a number of other positive changes.

Conclusion

The research developed a model for optimizing forest enterprises' activities, considering the movement into sustainable development. The model includes a range of effects that impact the resulting economic parameter (profit) through the use of various resources. Enterprises are affected by a set of restrictions, that limit the feasible region of effects if these restrictions are not complied with. The authors' model takes this into account and represents the novelty of the research.

The research presents a graphical model of resource flows at a forest enterprise. The model summarizes generally accepted approaches to describing the activities of an enterprise, including assessment of the external environment, production factors, recyclables etc. The model emphasizes the resources, restrictions and effects obtained by forest enterprises. The designed model, along with the description of some external environment components, can be used for further research on interactions and the development of its components.

The main finding confirms the thesis that great efforts are needed to encourage businesses to implement sustainable development. These efforts should be based on tightening existing complimentary restrictions and developing measures to encourage businesses. The mathematical framework presented reflects the technical, economic, environmental, and social dependencies in the activity processes of forest enterprises. The presented mathematical framework reflects the technical, economic, environmental and social dependencies in the business processes of forest enterprises.

The presented results may be valuable to researchers of the forest sector economy and to the industry. In the applied aspect, the federal authorities can practically use the results to implement sustainable development programs and create industrial policy. Taking into account the prospects of transitioning to sustainable development, the presented results will be useful for the heads of forest businesses, especially large ones, in developing relevant strategies and development plans.

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Received February 28, 2024.

DOI: 10.15838/esc.2024.2.92.8
UDC 339.9, LBC 65.5

Sovereign Bonds of the CIS Countries: Integration Dynamics of Debt Markets in the Context of External Instability

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For citation: Romashkina G.F., Andrianov K.V., Yukhtanova Yu.A. (2024). Sovereign bonds of the CIS countries: Integration dynamics of debt markets in the context of external instability. *Economic and Social Changes: Facts, Trends, Forecast,* 17(2), 146–165. DOI: 10.15838/esc.2024.2.92.8

Abstract. The paper examines development specifics of sovereign bond markets in the CIS countries. The sample includes Russia, Kazakhstan, Uzbekistan and Azerbaijan, since only these countries, among the CIS members, possess enough sovereign bonds included in the global debt market. The relevance of the study is due to the increasing financial uncertainty, which attracts attention to relatively reliable means of public debt; the need to understand the functioning of debt markets against the background of anti-Russian sanctions and the increasing influence of the State. The aim of the work is to empirically verify the connectivity, integration and predictability of the sovereign bond markets of Russia, Kazakhstan, Uzbekistan and Azerbaijan. Empirical data include daily refinancing rates of national central banks, indices of total sovereign bond yields, G-spreads of international bonds of the countries in relation to the conditionally risk-free US bond yield curve for 2019–2023. The effects of market development features are divided into local, regional and global, such as the reaction to COVID-19 and anti-Russian sanctions after 2022. We use the following methods: dynamics analysis, correlation, factor and regression analysis. The novelty of the research lies in introducing new empirical data into scientific discourse, testing a methodology that allows us to assess the interaction of monetary policies and the functioning of sovereign bond markets, common features and differences in the behavior of these markets before and after the imposition of sanctions against the Russian financial system. We conclude that the integration of the considered markets within the CIS is violated, which poses risks to the effective economic development of the region. We consider the relatively developed and integrated, but poorly predictable markets of Russia and Kazakhstan. Unlike Russia, Kazakhstan has more connectivity regarding its monetary policy, sovereign bond yields and risks. The yield of Azerbaijan's sovereign bonds is influenced by a more developed market of Kazakhstan, especially in terms of risk assessment, but the market itself is developed poorly. Uzbekistan's market is even less integrated and developed.

Key words: market, bonds, yield, behavior, connectivity, predictability, government, crisis.

Acknowledgment

The research was supported by the Russian Science Foundation in the framework of project 23-28-01321 "Analyzing the behavior of debt market participants in crisis situations in related economies".

Introduction

The scientific problem of our study is related to the fact that rapidly changing global economic processes affect a variety of circumstances in the lives of people, countries and entire regions. These processes are widely discussed in the scientific and expert community, but there are very few scientific studies based on specific empirical data. It is especially difficult to conduct empirical research in an unstable external environment. Besides, the issue is important due to the lack or insufficiency of data for comparative studies.

The subject matter of the study is concretized with the help of examples of interactions between countries and financial markets in the context of rapidly changing external circumstances of 2019–2023. The state in a market economy traditionally acts both as a regulator and as an agent of market relations. An analysis that takes into account economic, institutional and behavioral factors (Wallis, North, 1986) demonstrates, for example, how fiscal and monetary policy determines the behavior of the financial market; how institutions influence the market and its functions; and how people's non-optimal behavior adjusts prices, profitability and the general situation in the markets. D. North received the Nobel Prize for research in the field of new institutional economics (North, 2016). His arguments about mental models,

traditions and limitations remain relevant today as well. A. Laplane and M. Mazzucato argued that the role of the state is better understood as the joint creation and formation of markets, and not just their fixation (Laplane, Mazzucato, 2020). Understanding the behavior of markets is not limited to formal models, it should include other factors.

The relevance of the specific formulation of the problem is determined by global, regional and local factors, including increasing financial uncertainty, which draws attention to relatively reliable means of public debt; interest in the countries and markets that historically interact with Russia; the need to understand the functioning of debt markets against the background of anti-Russian sanctions and growing state influence. According to official data, the CIS currently includes 10 countries[1]. The ranking of CIS member states in terms of GDP is headed by Russia, Kazakhstan, and Belarus. All countries in the region have significant differences in the level of development, and the processes of their interaction are ambiguous. This region is currently critically important for the Russian economy; this fact determines the practical significance of our research. The presence of developed and efficient financial markets contributes to more sustainable development, reduces financial risks, and creates new opportunities for interaction, including through debt instruments and mutual investments. In this regard, it is important to understand how predictable the behavior of debt markets is under the influence of government policy, external risk assessments and information from the market itself.

The aim of this work is to empirically verify development features of sovereign bond markets in the CIS countries in terms of their integration, local connectivity and predictability, as well as the reaction of these markets to new shocks such as COVID-19 and anti-Russian sanctions. The sample includes Russia, Kazakhstan, Uzbekistan and Azerbaijan. The period under consideration is 2019–2023, includes two crises – the global one related to COVID-19, and the introduction of sanctions in 2022. We assume that the imposition of sanctions on the Russian financial system could affect the nature of interaction between financial management policies and the placement of government (sovereign) bonds of the CIS countries. Almost simultaneously, after the 1990s, the market began to develop in these countries, primarily the financial one. If bond markets have not developed enough, trading on them is represented by a very small number of transactions and high volatility, which makes comparative studies difficult. Local financial markets in the rest of the CIS countries that were not included in the sample do not have a sufficient number of sovereign bond issues.

Market capitalization of international bond markets is much higher than that of international stock markets. However, compared to the large amount of literature on international interactions in stock markets, few empirical studies have been conducted on the systemic risk of bonds or joint movements in the international bond market. Interconnectedness in the international bond market is noteworthy because it can have important implications for the cost of financing budget deficits, monetary policy independence, modeling and forecasting long-term interest rates, and bond portfolio diversification.

The novelty of our research lies in the introduction of new empirical data into scientific discourse; testing of a methodology that allows us to assess the interaction of monetary policies and the functioning of sovereign bond markets, the behavior of these markets before and after the imposition of sanctions against the Russian financial system. Conclusions are drawn about the violation of the integration of the considered markets within the CIS, which creates risks for the effective economic

[1] Available at: https://e-cis.info/news/566/110831 (accessed: March 29, 2014).

development in the region. The main reason for the violation of integration at the level of empirical data is weak predictability of market behavior for investors.

Literature review

Over the past 20 years the scientific literature has witnessed an increased interest in analyzing the dynamics of stock market indices based on an econometric approach that includes analysis of mutual impacts, joint changes and market connectivity. An important part of these studies was the inclusion of institutional variables in the structure of econometric data. For example, a comparison of stock prices over a long period showed how the provision on fair disclosure of information reduced spreads and costs of adverse selection almost 3-fold (Jiang, Kim, 2005). La Porta and co-authors studied securities legislation in 49 developing countries and confirmed that disclosure laws benefit stock markets through liability rules (La Porta et al., 2006). R. Duncan used a dynamic log-linear model on the example of 56 countries between 1984 and 2008 and showed that the volatility of financial markets in emerging economies was driven by the support or instability of monetary policy (Duncan, 2014). A. Abramov and co-authors assessed the integration of the regulatory and supervisory system as a measure of effectiveness of financial market regulation in Russia in 1999–2013 and made a forecast on the classification of Russia into one or another group in a sample of 50 countries (Abramov et al., 2014). This work contributed to the development of knowledge about the Russian financial market, but it does not consider the government securities market; the analysis is carried out only on the basis of aggregated indicators, crisis periods are not highlighted. Our work tests this method of evaluating effectiveness, but new empirical data on the sovereign bond market are being introduced into scientific discourse and the analysis methodology is being modernized.

A study by M. Shah and co-authors (46 countries in 2000–2019) shows that formal institutions such as property rights, financial freedom and government regulation play a crucial role in the development of the stock market in emerging market economies (Shah et al., 2023). However, the question remains whether this dependence is determined only by local political factors or is formed under the influence of some general trends.

According to D. North's postulates, institutions are formed historically and are largely influenced by cultural traditions. For example, the countries of English-speaking culture have been interdependent for quite a long time. The markets of such countries remain influenced by larger and more developed markets. There are many studies devoted to the interconnectedness of the financial markets of these countries. In addition, issues of effective interaction between government institutions, markets and end users of financial instruments are important.

The development of the government bond market (GBM) is largely due to the availability of institutional and private investors willing to invest their funds. In addition to the willingness of residents to invest, important factors include economic stability and the condition of the state's main cash flows. After a radical change in the financial system of the countries that were previously part of the USSR, for some new developing economies a combination of factors led to the development of the sovereign bond market; for other countries the formation of public debt is provided by a more expensive tool such as attracting foreign currency loans.

The effectiveness and institutional conditions of government interactions with GBM creditors are discussed in the literature on new institutional economics, behavioral economics, and econometric research. An econometric analysis of bond yields from 131 countries in the course of 240,000 transactions on the primary market between 1990

and 2016 indicates that bonds denominated in national currency began to dominate the market, although the issuance of bonds in national currency is often accompanied by shorter maturities (Ballard-Rosa et al., 2022). Having considered the daily returns in a sample of 496 stocks that make up the S&P500 for the period from 2014 to 2021, R. Casarin and co-authors showed a change in market signals during the first period of the spread of COVID-19, followed by normalization of the processes. The financial market fluctuated above the benchmark, responding to risks from 50 to 30% in a logarithmic model (Casarin et al., 2023). We study such interactions through integration, the behavior of regulators, indices of bond yields in national currency and proxy risk assessments through the spreads of these yields.

The yield spreads we use to model expectations or risk have proven themselves well. A. Ang, M. Piazzesi, M. Wei assured that the so-called "short calendar spread" has greater predicting power than any other time-bound spread for forecasting GDP, but their model did not allow for arbitrage and did not take into account the endogeneity of factors. It is clear that the spread itself does not cause GDP growth, but demonstrates investors' expectations. The authors also proposed using yield models for bonds with the longest maturity to measure the slope of the curve (Ang et al., 2006).

In modern economics, it is not enough to consider purely economic variables to explain processes. Thus, the concept of behavioral finance examines how individuals and organizations acquire and allocate resources, taking into account the associated risks (Baker, Nofsinger, 2010). Preference models show the pricing of capital assets in markets (Hirshleifer, 2015). It has always been clear to researchers that risky assets should be valued in such a way as to receive, on average, higher returns than less risky ones, as compensation for risk. Behavioral factors have determined the efficient market hypothesis, which postulates that asset prices reflect information, so excess returns cannot be obtained on a permanent basis (Rau, 2010). The validity of the efficient market model is debated by those proponents of behavioral finance who argue that individual irrationality affects market outcomes. Sovereign bonds can play not only a stabilizing part when they act as an institutional background, but also a direct investment part (Glushkov et al., 2018).

Behavioral factors in investors' activities on the example of the financial market of the Republic of Belarus were considered by S.S. Osmolovets. The analysis was carried out on the basis of correlations between the indicators on average in the Republic, but risks and target values were not taken into account (Osmolovets, 2022). The conclusion about the weak effectiveness of the financial market of the Republic of Belarus is declared in terms of behavioral finance, but the author does not provide evidence that would be based on the hypothesis of financial market effectiveness.

The dynamics, structure and mechanisms of the bond market in Russia for 2012–2019 were studied by S.D. Ageeva. It is concluded that already in 2021, the government took a predominant position in the financial market (Ageeva, 2022). However, S.D. Ageeva simply pointed out the inequality of access to securities for private companies, but did not analyze the profitability of these securities or consider quantitative indicators of state participation.

The existence of a global monetary policy factor in GBM yields is considered by D. Malliaropulos and P. Migiakis on the example of nine major economies. Asset purchases by global central banks during the COVID-19 crisis balanced the impact of the growing budget deficit on international bond yields, which declined as a result, and investors rebalanced their portfolios toward riskier assets (Malliaropulos, Migiakis, 2023). The same authors have shown how country-specific factors affecting the yield of sovereign bonds, such as the risk of sovereign default, can be taken into account. For example, how the probability of default, the total assets of central banks and the duration of their interaction affect the level of integration.

The predictability of bond yields using real-time macro variables based on a non-linear model was shown by D. Huang and co-authors (Huang, 2023). Moreover, bonds generate significant economic values, and their predictability is not limited by the yield curve. The authors have shown that bond yields and the degree of predictability increase during economic downturns, which provides empirical support for well-known theories of macro financing.

There are publications on developing countries, in which a very important issue in studying the interconnectedness of yield dynamics is the analysis of the relative influence of fundamental variables on their behavior (Cifarelli, Paladino, 2006), as well as on the secondary effects of volatility in international bond markets (Panchenko, Wu, 2009), etc.

One can read about the sources of joint movement in the sovereign bond markets in the European context in the works of R. Abad and co-authors. For example, to analyze the impact of the Economic and Monetary Union (EMU) on the integration of the European debt market, the GBM yield of each country was divided into three components: local effect (own country), regional (eurozone) and global (world). It is concluded that the markets of countries that have decided not to join the EMU demonstrate higher vulnerability to external risk factors (Abad et al., 2010; Abad et al., 2014).

The dynamics of bond market integration under the influence of financial crises over long periods was studied in the works of E.J. Abakah, W. Qin and co-authors (Abakah et al., 2021; Qin et al., 2023). It seems obvious that developed markets have a much higher level of market integration than developing ones. In most developed markets, the level of market integration is increasing, while in developing markets it is not. Crisis periods demonstrate a strong imbalance; therefore, we find it important to clarify the method used by the authors, separating periods and groups of countries, as well as effects on bond maturities. The classification by region is as follows: North and South America are the most integrated ones, followed by Europe. Integration of Asia-Pacific markets is the lowest (Qin et al., 2023).

Thus, stock market analysis is widely presented in the world literature, but there is very little research on the bond market. The available works on bond analysis focus to a greater extent on the markets of the European Union, America, and the largest developing countries. There are enough studies of the stock market in Russia in the Russian-language literature, but we have not found any scientific publications that analyze the Russian sovereign bond market with the disclosure of model data and an econometric approach. There are enough commercial analytical reviews aimed at supporting a qualified investor, but they do not have a research context. Perhaps, due to limited access to information, the integration of CIS sovereign bond markets has remained virtually unexplored.

Analyzing Russia's balance of payments until 2016, N.A. Dementiev pointed out that Russia acts as a large balance creditor to the rest of the world (Dementiev, 2018). We should recognize that in seven years the situation has changed only in a geographical aspect. Partial reorientation of Russian capital from the west to the southeast has aroused interest in alternative risk assessments in the Russian economic and political space, for example, based on the Chinese rating. This problem is being actively discussed. A.V. Kuznetsov believes that the Big Three rating agencies artificially underestimate the ratings of developing countries, limiting their access to capital markets, and suggests encouraging the creation of national rating agencies (Kuznetsov, 2022).

The interconnectedness of the Russian economy with the economies of other countries is demonstrated by Russia's net international investment position over the past five years – an upward trend against the background of an outstripping decrease in liabilities compared to assets. The aggravation of the geopolitical situation in February 2022 and the sanctions imposed against the Russian Federation had a serious impact on the financial market and

on Russia's international investment position in 2022–2023. The largest Western stock exchanges announced the termination of trading in securities of Russian companies, foreign funds were forced to urgently sell Russian assets. In this situation, the Russian Federation is a net importer of capital. Thus, as of January 1, 2023, external financial assets twice exceeded external financial liabilities, and Russia's investment income as of 2022 is more than twofold less than the income of other countries from investments in Russia.

Taking into account the current situation, the nature of Russia's investment cooperation within the CIS acquires a special role. CIS countries are its strategic partners. In order to explore the interconnectedness of CIS sovereign bond markets within the region, it is necessary to assess the degree of economic cooperation, expressed in the intensity of investment interaction. The most significant for the analysis is the consideration of Russia's ties with Kazakhstan, Uzbekistan and Azerbaijan in terms of mutual direct investments according to the data provided by the Bank of Russia (*Tab. 1*).

According to the official data, during the period under consideration there were no drastic changes in the volume of accumulated direct investments of the three countries with the Russian Federation. The structure of relationships and their orientation significantly depend on the size and power of the economy. In the case of Kazakhstan, the Russian Federation acts as a net investor, and this gap increased slightly by January 1, 2022. In relations with Uzbekistan and Azerbaijan, the Russian Federation takes the position of a net borrower.

Kazakhstan, the second major economy after the Russian Federation in the considered group of countries, significantly surpasses the rest ones in terms of mutual accumulated direct investments. The volume of accumulated investments of Kazakhstan and Russia in the form of direct investments is approximately the same, it has a slight upward trend.

Uzbekistan and Azerbaijan, as economies of a smaller scale, have significantly smaller volumes of mutual investments with the Russian Federation. The volume of direct accumulated investments in Azerbaijan and Uzbekistan from Russia is more than two times less than investments in Russia from these countries. We can argue that the volume of mutual investments in the form of direct investments (balances on a specific date) is slightly

Table 1. Mutual accumulated direct investments of Russia (RF), Kazakhstan (KAZ), Azerbaijan (AZ), Uzbekistan (UZ), million USD

Date	Accumulated direct investments to RF			Accumulated direct investments from RF		
	KAZ	AZ	UZ	KAZ	AZ	UZ
January 1, 2019	2900.19	572.39	853.68	3340.57	246.17	65.41
April 1, 2019	3180.43	611.99	913.66	3412.06	272.28	70.87
July 1, 2019	3336.67	631.67	937.96	3590.14	245.87	100.61
October 1, 2019	3258.39	631.53	892.69	3698.48	241.53	114.7
January 1, 2020	3520.13	642.45	838.66	3684.06	343.53	127.08
April 1, 2020	2881.58	526.4	679.1	3345.19	188.7	139.03
July 1, 2020	3242.98	621.72	763.81	3493.98	216.74	141.7
October 1, 2020	2834.31	548.68	680.98	3328.84	198.85	140.57
January 1, 2021	3042.93	585.64	758.82	3524.7	241.7	177.2
April 1, 2021	3038.13	599.43	740.3	3533.51	250.04	191.97
July 1, 2021	3033.7	630.36	775.56	3608.27	241.37	210.12
October 1, 2021	3036.27	632.62	772.22	3902.43	207.7	212.96
January 1, 2022	3310.67	613.47	756.81	3982.3	344.94	282.07

Source: Accumulated direct investments by geographical region of the world, country, instrument and type of economic activity. Available at: https://cbr.ru/statistics/macroitm/svs/npi/ (accessed: February 9, 2024).

expanding, but the size of investment cooperation itself is small. The presence of mutual influence and mutual interest, according to empirical data from 2019–2022, was revealed only in relation to the Russia–Kazakhstan pair.

Thus, the theoretical and methodological foundations of our research contain elements of an econometric approach to the analysis of financial markets, institutional and global economics, and behavioral finance. Based on the literature review, we assumed that an effective market should be linked to a system of regulation and control and be moderately predictable; the effects of market development should be divided into local, regional and global. Effectiveness is manifested in the fact that excess profitability cannot be obtained on a permanent basis, and rational investors, seeking to maximize their income, will try to anticipate the behavior of the regulator as much as possible. This logic of the research determines its theoretical significance. The hypotheses we test are as follows: 1) historically interconnected economies form a regional integrated and efficient government bond market (GBM); 2) Russian sovereign bond market is locally connected and predictable.

Data and methodology

The methodology of this work is based on the techniques and models used in the analysis of the integration and connectivity of financial markets, which have been adjusted for the securities market and central bank refinancing rates, taking into account proxy risk assessments. The specific feature of the technique lies in the consistent application of correlation, factor and regression analysis, and the Granger causality test.

The following values were collected and calculated for each country in the sample:

1) $S_{n,t}$ – local refinancing rate of the Central Bank (characteristic of the regulator's behavior);

2) $I_{n,t}$ – total return composite indices (average yield of the sovereign bond market);

3) $G_{n,t}$ – G-spread (average risk estimates for international sovereign bonds),

where t – time from June 25, 2019 to October 31, 2023, the data are given for working days of the relevant trading platforms; n stands for country: Russia (RF), Kazakhstan (KZ), Uzbekistan (UZ), Azerbaijan (AZ)[2].

If the corresponding designations have no time parameter (t), then vector variables are represented.

To estimate sovereign bond yield $I_{n,t}$, we used daily data on the yield of the full list of sovereign bonds, see formula (1).

$$I_{n,t} = \frac{\sum_i Y_{i,t} D_{i,t} \left[P_{i,t} + ACI_{i,t}\right] N_{i,t}}{\sum_i D_{i,t} \left[P_{i,t} + ACI_{i,t}\right] N_{i,t}}, \quad (1)$$

where $I_{n,t}$ – weighted average yield of selected securities (simple);

$Y_{i,t}$ – yield of issue i at time t (simple);

$ACI_{i,t}$ – accrued coupon income on security i in time period t;

$D_{i,t}$ – duration of emission i at time t;

$N_{i,t}$ – volume of the i-th bond issue from the index list (units) at time t;

$P_{i,t}$ – net market price of the bond.

All prices in the calculations of the index are given on the current date.

As a risk assessment indicator ($G_{n,t}$) we used G-spread/1000 – the spread on international bonds of the relevant country, calculated as the discrepancy between the yield of international sovereign bonds denominated in dollars and the yield on US sovereign bonds, which are considered risk-free. Securities with a maturity of less than five years were excluded from the calculation, and a simple average value was calculated for the remaining securities as a risk assessment measure.

The Cbonds-GBI RU YTM index calculated by the Cbonds news agency was used for the Russian Federation. For the other three countries, we calculated the indices on the basis of trading data

[2] Trading platforms from which the initial information was taken: Moscow Stock Exchange (MISX), Saint Petersburg Currency Exchange (XPIC), Cbonds Estimation; Kazakhstan Stock Exchange (XKAZ); Baku Stock Exchange (BSEX); Uzbek Republican Currency Exchange (XSTE).

according to a methodology similar to Cbonds-GBI RU YTM. If only one security out of all sovereign bonds in the national currency was traded on the day, the yield of trading on this security was used. If several transactions took place during the day, then the weighted average value was taken as the index value, where the weight corresponded to the volume of bond placement for that day. If there were no transactions with securities, the index value for that day was not calculated.

All averages were calculated as a weighted average for issues, taking into account maturities. According to the recommendations of analysts, we considered local connectivity and integration of markets (Abad et al., 2014; Casarin et al., 2023).

The methodology for testing the hypotheses implies that emerging markets strive to improve their efficiency, and the behavior of investors can predict the behavior of the regulator by learning from previous examples of data from their country (predictability) and other markets (integration). Connected markets have stable and significant correlations between the corresponding indices. If there is integration, then the convergence of the behavior of international investors leads to greater predictability and increased mutual interest. The opposite effect is also true. Therefore, interaction is divided into local, when the characteristics of a given country are more closely related (local connectivity), and external (integration), when the corresponding characteristics in a group of countries are more closely related. Predictability refers to a situation where markets can predict the behavior of their regulator, and risk assessments by market participants describe the market situation quite clearly. If it is not possible to statistically significantly determine the effects of connectivity, predictability and integration for a local market at the same time, such a local market should be considered unbalanced.

Autoregression models with a distributed lag time series order, k – number of lags, q – number of exogenous variables, were used to assess the degree of predictability of the regulator's behavior, taking into account the behavior of the dynamic series and exogenous variables with lags. The method of assessing the consistency of financial markets through models is widely used in the literature, for example, discussed in (Stoupos, Kiohos, 2022; Malliaropulos, Migiakis, 2023; Qin et al., 2023).

Hypothesis (1) was tested using a description of the average values (Appendix 1), analysis of dynamics (see Fig. 2–4), presence of paired correlations (according to Spearman, see Tab. 4–5) and using the principal component method (see Appendix 2). The Spearman correlations make it possible to exclude the influence of strong noises, thereby correcting strong deviations. The result of factor analysis is the grouping of indicators. The adequacy of the application of factor analysis was checked by the Kaiser – Meyer – Olkin test, F-test (see Appendix 2).

Hypothesis (2) was tested in two stages: the presence of paired correlations (integration and connectivity) and the Granger causality test (connectivity and predictability) for the Russian sovereign bond market. The predictability of the behavior of the Russian Central Bank in the market is assessed through the possibility of predicting the behavior of the Russian regulator $S_{RF,t}$ (refinancing rate of the Russian Central Bank) from predictors with time lags $I_{m,t-k}$, $G_{m,t-k}$, equal to 5 and 10 working days. In general, models of two related regression equations for RF ADL (T, 2, 2) were tested:

$$\hat{S}_{1,t} = \widehat{A_{(1)}} + \sum_{n=1}^{4} \sum_{k=0;5;10} \beta_{n,k}{}^{(1)} I_{n,t-k} + \\ + \sum_{n=1}^{4} \sum_{k=0;5;10} \alpha_{n,k}{}^{(1)} G_{n,t-k} + + \sum_{n=2}^{4} \sum_{k=0;5;10} \gamma_{n,k}{}^{(1)} S_{n,t-k} \quad (2)$$

$$\hat{I}_{1,t} = \widehat{A_{(2)}} + \sum_{n=2}^{4} \sum_{k=0;5;10} \beta_{n,k}{}^{(2)} I_{n,t-k} + \\ + \sum_{n=1}^{4} \sum_{k=0;5;10} \alpha_{n,k}{}^{(2)} G_{n,t-k} + \sum_{n=1}^{4} \sum_{k=0;5;10} \gamma_{n,k}{}^{(2)} S_{n,t-k} \quad (3)$$

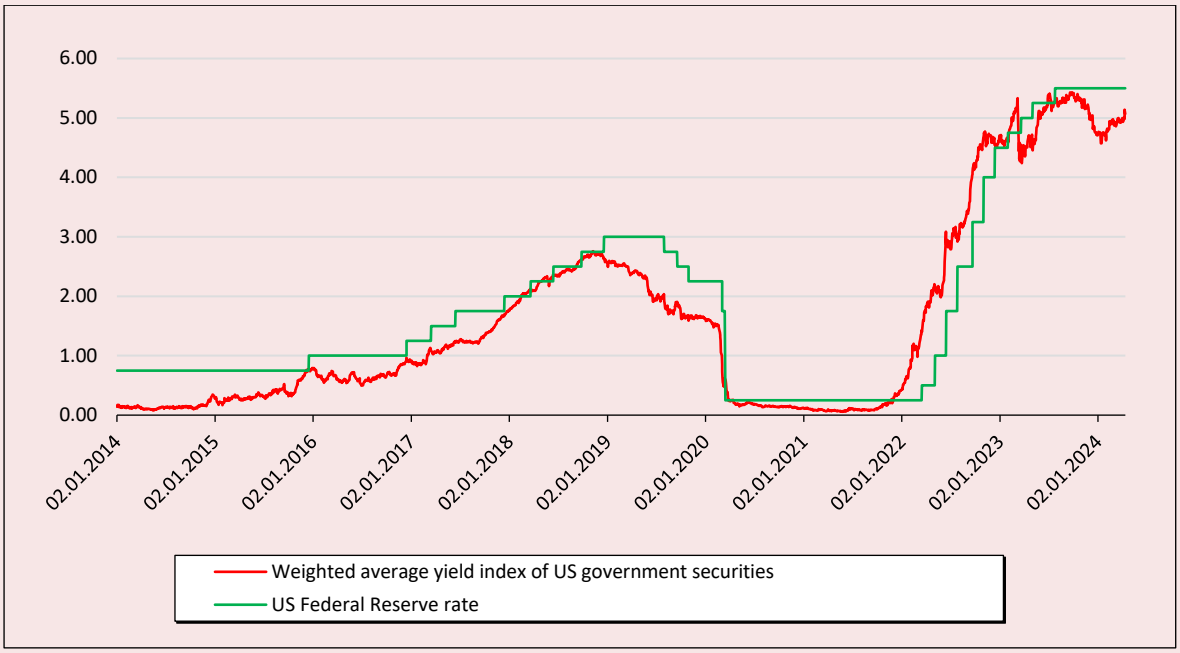
where $t = \overline{0;T}$ – moment of time; n – countries (1) RF, (2) KZ, (3) UZ, (4) AZ; $k = 0, 5, 10$.

Based on a comparison of models (2) and (3), the Granger causality test is constructed, which allows us to conclude how much the presence of information about one variable improves the significant presence of a second variable in the regression series. The standard way to improve models is to use step-by-step methods that exclude insignificant and unnecessary predictors according to the criteria F, VIF, AIK, BIC. The stationarity of the time series was estimated using the Dickey – Fuller test, the length of the distributed lags was estimated by the Koyck transformation, the coefficients of the autoregressive series are maximized at $n = 5, 10, |\alpha| < 1$. We should note that the time series do not represent calendar days, but working days on the relevant trading platforms, which are not always simultaneous; this explains the slight jumps in these periods. Table 6 shows the results of applying the step-by-step method of evaluating model (2), the calculations were performed in SPSS-24 on a complete data model with lags. We should point out that such step-by-step models do not allow for a direct interpretation of linear regression coefficients, but allow us to assess the degree of predictability of the process in terms of information. The result is interpreted in the presence of information from the predictor process for the target variable process (Stoupos, Kiohos, 2022). In general, complete and reduced models were evaluated at $k = \overline{1;10}$.

Analysis of the results

At the *first stage*, let us consider the dynamics of the US government securities market, which is considered risk-free (*Fig. 1*). Relative to this market, the risks of investing in securities of all other countries were calculated. The market fluctuates with a high degree of correlation with the rate movements of the US Federal Reserve System (FRS), almost anticipating the rate movements in advance. Such a market is effective because investors can earn money by anticipating the regulator's policy with a more or less high degree of

Figure 1. Dynamics of the rates of the US Federal Reserve System, the weighted average yield index of US government securities, 2014–2023



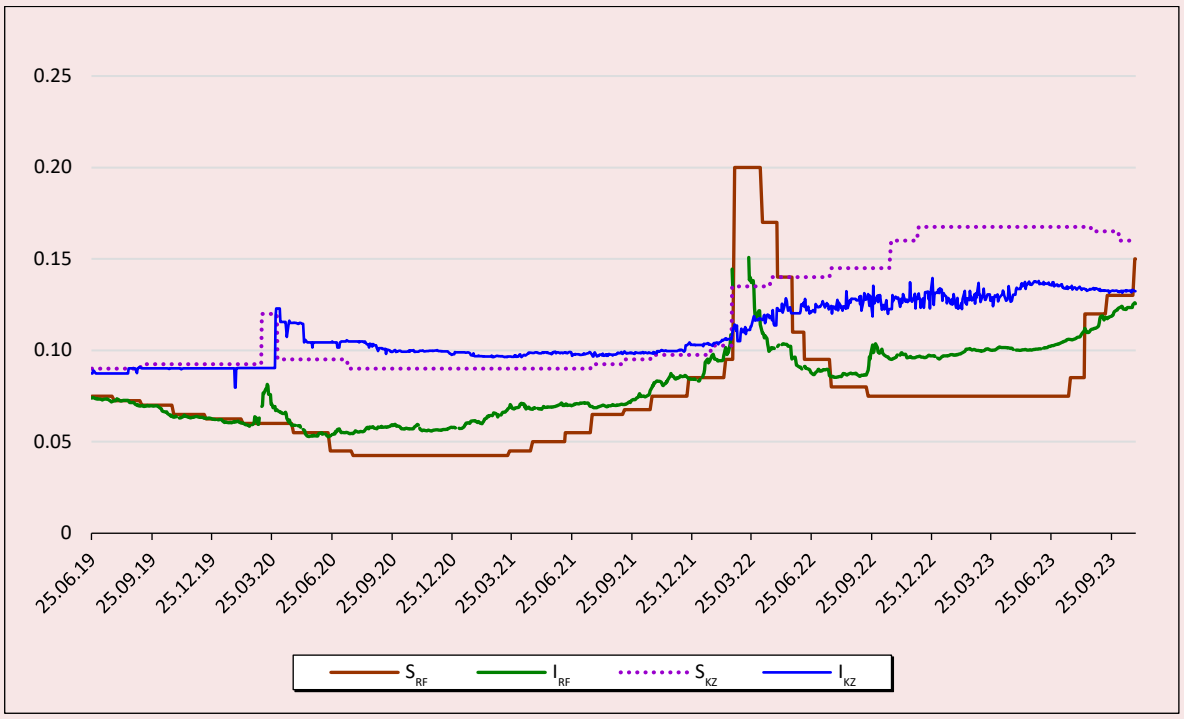
Source: Cbonds. Available at: https://cbonds.ru/indexes/1607/; https://cbonds.ru/indexes/79117/

probability. In a stable economy without crises, the national regulator sets the refinancing rate based on an assessment of current and projected inflation (in the case of inflation targeting). The earlier and more accurately market participants can predict the next action of the regulator, the more profit they can get. In developed economies with an active market, this leads to the fact that bond yield indices in most cases adjust to the future action of the regulator a few days before the decision is announced. Such predictable processes create a safe environment that is more effective for institutional and private investment, both in the stock market and debt market, including government market.

At the *second stage*, we consider the dynamics of sovereign bond markets in connection with the dynamics of Central Bank refinancing rates and the spreads of expected S-spread bond yields for the sample countries. Among the CIS countries, Russia has the most developed sovereign bond market. However, it is noticeable that starting from 2022, this is the most risky and volatile market. Fluctuations in the $G_{n,t}$ indicator in the period up to February 2022 and after it differ by more than 400% (see Appendix 1, Fig. 3).

In crisis conditions, the yield on sovereign bonds for the Russian Federation is catching up with the Central Bank's rates, which indicates a weak predictability of the regulator's actions on the part of the market (*Fig. 2*). Two crises can be clearly seen on the weighted average yield chart: COVID-19 and the crisis of February – June 2022. Estimates of $G_{n,t}$ as of February 7, 2022 and February 8, 2022 rose to 1.73 and 1.25, respectively, in the wake of the panic. The second disturbance of spreads occurred in April – June 2022, when variable $G_{n,t}$ fluctuated in the range of 0.4–0.8. The average annual spreads in the Russian Federation increased sharply in 2022,

Figure 2. Dynamics of Central Bank refinancing rates (S_{RF}, S_{KZ}), yield index (I_{RF}, I_{KZ}) of the Russian Federation and Kazakhstan

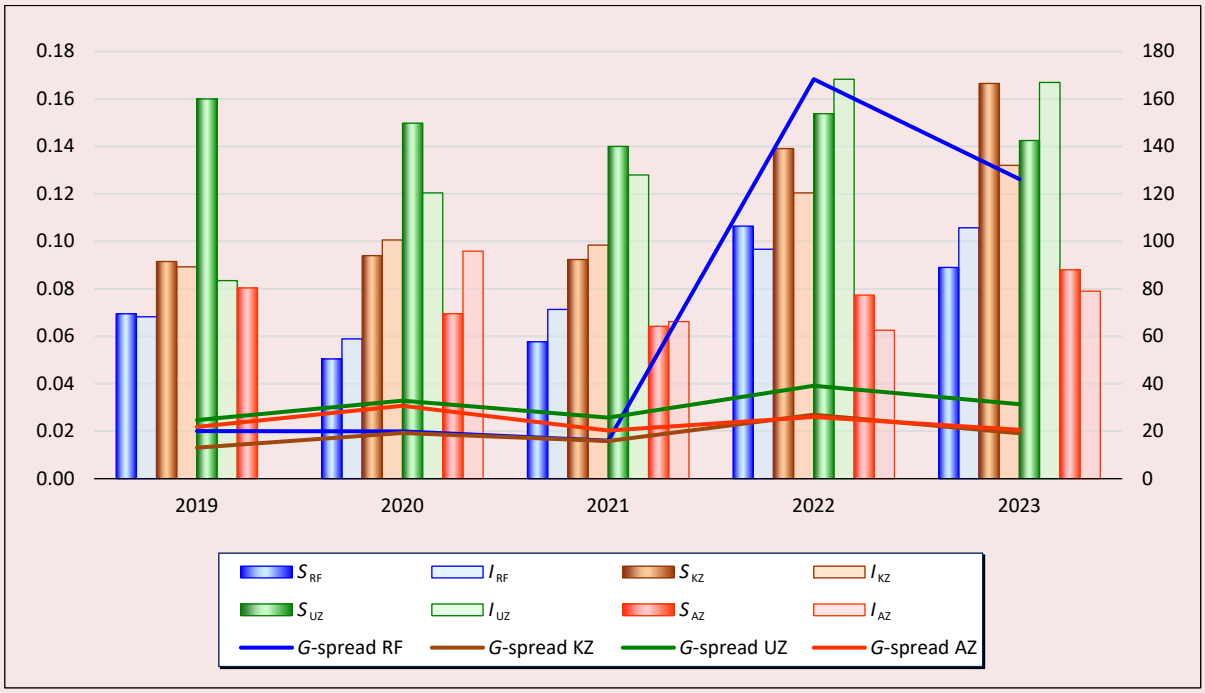


Source: own compilation according to Cbonds. Available at: https://cbonds.ru/indexes/Cbonds-GBI-RU-YTM-eff/, https://cbonds.ru/indexes/9237/

decreased slightly in 2023, but remained at a high level (*Fig. 3*). Until March 2022, the trends in the Central Bank rate and the weighted average yield of the Russian sovereign bond market were in relative agreement. If the rate of return roughly corresponds to the Central Bank's rate, the market is considered effective when there are opportunities to approach changes in the refinancing rate in advance (before the jump) (Abad et al., 2014; Abakah et al., 2021). After March 2022, the market entered a period of strong volatility, which was relatively overcome by July 2022. Further, the profitability of the market grew slowly, reflecting high risk expectations. However, neither before nor after the crises, the sovereign bond markets of the Russian Federation and Kazakhstan presumably have not behaved effectively in relation to local refinancing rates. We will check this assumption at the next stage for the Russian Federation.

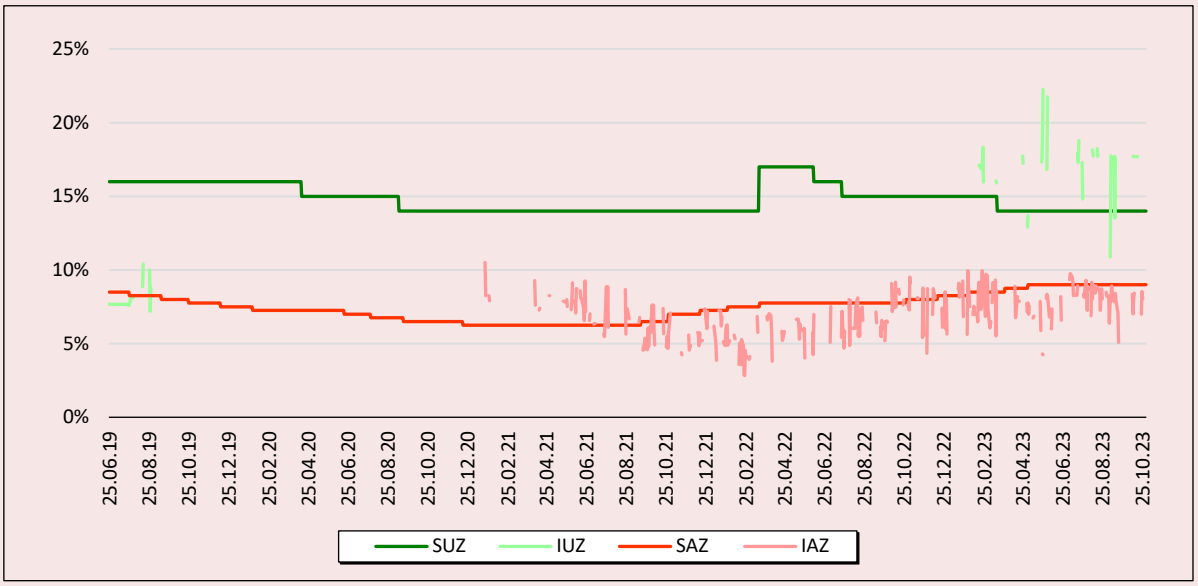
L.A. Baibulekova and G.K. Lukhmanova showed that the stock market of Kazakhstan (KASE) is developing rapidly, ranking second in the CIS. In 2018, KASE was more than three times inferior to the Moscow Stock Exchange in terms of the number of instruments, and almost six times in terms of the number of issuers and corporate bonds. The exchange rate of the national currency, according to analysts, is strongly related to the inflation index, but the latter is non-monetary (Baibulekova, Lukhmanova, 2019). Our data confirm these conclusions. We should note that investors in sovereign bonds worked in conditions of lower risk until 2022 (see Fig. 3). The risk of inconsistency increased dramatically after February 2022, then the dynamics of refinancing rates significantly exceeded the yield index, which reduced the opportunities for investment income (see Fig. 2). This behavior of the regulator can

Figure 3. Average annual values of yield indices I, refinancing rates S (left axis), G-spread (right axis) for Russia (RF), Kazakhstan (KZ), Uzbekistan (UZ), Azerbaijan (AZ)



Source: own calculation according to Cbonds.

Figure 4. Dynamics of Central Bank rates (S), yield index (I) for Uzbekistan (UZ) and Azerbaijan (AZ)



Source: own compilation according to Cbonds. Available at: https://cbonds.ru/indexes/173/; https://cbonds.ru/indexes/170/

Table 2. Spearman's paired correlations in countries (local)

Coefficient / countries	RF	KZ	UZ	AZ
$S_{n,t} - I_{n,t}$	0.692	0.930	-0.218	i/s
$G_{n,t} - I_{n,t}$	0.413	0.525	i/s	i/s
$S_{n,t} - G_{n,t}$	0.527	0.449	0.205	i/s

Note: i/s – insignificant correlations that are modulo less than 0.2, or p > 0.01, are suppressed.
Source: own compilation according to Cbonds. Available at: https://cbonds.ru/indexes/168/; https://cbonds.ru/indexes/173/; https://cbonds.ru/indexes/170/; https://cbonds.ru/indexes/9237/; https://cbonds.ru/indexes/Cbonds-GBI-RU-YTM-eff/

Table 3. Spearman's paired correlations between countries

Values of n	RF-KZ	RF-UZ	RF-AZ	UZ-AZ	UZ-KZ	KZ-AZ
$S_{n,t} - S_{n,t}$	0.501	0.320	0.480	0.249	i/s	**0.778**
$I_{n,t} - I_{n,t}$	**0.764**	0.215	i/s	i/s	0.360	i/s
$G_{n,t} - G_{n,t}$	0.374	0.324	i/s	0.652	**0.939**	0.548
$S_{n,t} - I_{n,t}$	0.423	i/s	i/s	i/s	i/s	i/s
$I_{n,t} - S_{n,t}$	**0.833**	i/s	0.699	i/s	0.306	0.649
$G_{n,t} - I_{n,t}$	0.465	i/s	i/s	i/s	0.477	i/s
$I_{n,t} - G_{n,t}$	0.282	0.239	i/s	i/s	i/s	i/s
$G_{n,t} - S_{n,t}$	0.491	0.259	0.347	0.214	0.389	i/s

Note: i/s – insignificant correlations that are modulo less than 0.2, or p > 0.01, are suppressed.
Source: own compilation according to Cbonds. Available at: https://cbonds.ru/indexes/168/; https://cbonds.ru/indexes/173/; https://cbonds.ru/indexes/170/; https://cbonds.ru/indexes/9237/; https://cbonds.ru/indexes/Cbonds-GBI-RU-YTM-eff/

be attributed to a strict non-monetary policy that increases local incoherence. G-spreads in Kazakhstan retain the lowest values in the sample, and are highly correlated with G-spreads in Uzbekistan (see Fig. 3, Tab. 3).

Let us consider the behavior of the sovereign bond markets and national central banks in Uzbekistan and Azerbaijan, which are much less developed (*Fig. 4*). Before 2019, the volume of issues of sovereign bonds of Uzbekistan was small, as was the intensity of issues. Later, in the 2020s, there began the active issuing of sovereign bonds, the fluctuations in the yield index of which are very high due to small market capacity. The sovereign bond market in Azerbaijan is not linked to monetary policy, and the formation of a distinct yield trend is likely a matter of the future. We note the relatively low values of G-spreads in Azerbaijan (see Fig. 3). The policy of the monetary authorities of Uzbekistan is largely oriented toward the more developed market of Kazakhstan (Tab. 2, 3). But the behavior of the markets is also catching up with the Central Bank's rates, which confirms the unpredictability of the regulator's actions on the part of the market.

At the *third stage*, the Spearman correlation analysis and factor analysis were used for a preliminary analysis of market connectivity (see Tab. 2, Appendix 2). The principal component method allows combining the considered indicators into groups, demonstrating the factor structure of the relationships.

Since the distribution of the data differs from the normal one (see Appendix 1), we considered pairs of non-parametric Spearman's correlations. In the Russian market, sovereign bond yields and the monetary policy of the Central Bank (CB) are moderately related. Fluctuations in risk assessment are very poorly related, since they are influenced by political factors, which we do not consider in this paper. In the Kazakhstan market, monetary policy and sovereign bond yields are strongly related, and risks are moderately related.

The sovereign bond markets of Russia and Kazakhstan differ from the markets of Uzbekistan and Azerbaijan in the direction of greater development and balance (see Tab. 2). The most balanced market is in Kazakhstan, where volatility and risk are significantly lower (see Appendix 1), and the correlation between rates and bond yields exceeds 0.9. The sovereign bond market of Uzbekistan is very poorly developed; it is unbalanced due to the low development of the secondary debt market. There is no significant correlation between the indicators in Azerbaijan. The market is moderately dependent on the more developed market of Kazakhstan (see Tab. 3). As a result, a sequence of mutual influences is being built: on the one hand, there are relatively integrated and developed, but poorly predictable markets of the Russian Federation and Kazakhstan; on the other hand, Uzbekistan and Azerbaijan, the predictability of which we have not checked, are relatively integrated with the market of Kazakhstan.

The sovereign bond markets of Russia and Kazakhstan are moderately related and integrated, which is confirmed by both non-parametric correlations and the principal component method. We should note that the monetary policies of Kazakhstan and Azerbaijan are related ($r = 0.778$). There is no connection for other countries. At the same time, the yields of sovereign bonds of Kazakhstan and Russia are related ($r = 0.764$). The debt markets of Uzbekistan and Azerbaijan are practically unrelated to the policy of the Central Bank of the Russian Federation.

According to the results of the factor analysis, we should note that the monetary policy of Azerbaijan fell into the first factor uniting the markets of Russia and Kazakhstan. This means that the Azerbaijani market is poorly integrated with the markets of Russia and Kazakhstan in terms of the dynamics of refinancing rates. The principal component method revealed a strong correlation between the dynamics of the riskiness of the public debt of Kazakhstan, Uzbekistan and

Azerbaijan, if they are evaluated in relation to US government securities. These four indicators are combined into one factor. The third factor indicates the imbalance of the Uzbek market, since rates and yields practically fluctuate in opposition. The fourth factor highlights only the yield of Azerbaijani sovereign bonds, the dynamics of which cannot be explained within the framework of the models under consideration. The sovereign bond markets of the countries in question can be divided into two groups: the markets of Russia and Kazakhstan, moderately related and relatively integrated, and the markets of Uzbekistan and Azerbaijan, unrelated and poorly integrated with Kazakhstan.

Due to the fact that with the help of correlation analysis and the principal component allocation algorithm we cannot determine which variable provides information for predicting another variable with a good reason, at the *fourth stage* we applied the Granger causality test. Hypothesis 2 was tested by analyzing sequential linear regressions, the general model for which has the form (2–3). The results are shown in *Table 4*. The target variables are consistently $S_{RF,t}$ CB RF rate (models 2.1 and 2.2) and $I_{RF,t}$ (models 3.1 and 3.2). This method of testing market integration has been proposed by researchers and tested in a number of authoritative publications (Abakah et al., 2021; Qin et al., 2023).

In Table 4, we have left only two significant final models. Step-by-step methods generate a large number of models, but the basic information in them does not fundamentally change. First, we note the significantly worse quality of model (2) based on the Durbin – Watson test compared to model (3). For model (2), it should be concluded that there is autoregression of first-order residuals. All models have a high level of significance of coefficients for variables, the limitations are determined by the emerging multicollinearity and heteroscedasticity with a growing number of predictors. The increase in the significance of the model with the addition of predictors in each of the groups is vanishingly small, it is enough to assess the quality of models (2.1) – (2.2) and (3.1) – (3.2). Second, the mutual participation of variables S_{RF} and I_{RF} with lags in models 2 and 3 demonstrates the connectivity of the corresponding indicators. The contribution of information on the yields of the sovereign bond market of the Russian Federation (I_{RF}) to the assessment of the dynamics of the refinancing rate of the Central Bank of the Russian Federation (S_{RF})

Table 4. Regression models for $S_{RF,t}$ and $I_{RF,t}$

Target variable	Model (2) $S_{RF,t}$		Model (3) $I_{RF,t}$		
Predictors	(2.1)	(2.2)	Predictors	(3.1)	(3.2)
Const (A)	0.020	0.017	Const (A)	0.052	0.058
$S_{RF,t-5}$	0.943	0.964	$I_{RF,t-5}$	0.444	0.480
$S_{UZ,t-10}$	-0.165	-0.141	$S_{KZ,t}$	0.211	0.191
$I_{RF,,t-5}$	0.107	0.221	$S_{RF,t-10}$	0.184	0.247
$G_{RF,,t-10}$	no data	-0.011	$S_{UZ,t-10}$	-0.262	-0.292
$I_{RF,,t-10}$	no data	-0.120	$G_{AZ,t-10}$	-0.241	-0.268
			$G_{RF,t-5}$	no data	-0.018
			$S_{RF,t}$	no data	0.013
R-square	0.837	0.839	R-square	0.905	0.909
F	5630	3481	F	2159	1881

All coefficients are significant at the level of $p < 0.001$.
In model (2) the Durbin – Watson coefficient = 0.435.
In model (3) the Durbin – Watson coefficient = 1.556.
The method used: step-by-step, eliminating unnecessary and insignificant variables.
Source: own compilation.

is very small. If the model for S_{RF} includes two lag steps, the coefficients are opposite in modulus.

Therefore, we can assume that the sovereign bond market is late in its fluctuations compared to changes in exchange rates, since it has not learned to predict the behavior of its regulator. The behavior of sovereign bond yield indices is influenced by its own trend and the rates of the Central Bank of the Russian Federation and Kazakhstan. The effect of the first predictor in all models is significantly higher than that of the second and third. None of the selected models can predict the behavior of the Central Bank of the Russian Federation qualitatively enough, but there is a weak connection with local bond yields and an anticyclical relationship with bond spreads, which is quite consistent with the theories of macroeconomics.

Thus, hypothesis 1 is confirmed only in terms of the local connectivity of the bond markets of the Russian Federation and Kazakhstan and their relative integration. The hypothesis of the coordinated behavior of regulators and sovereign bond markets at the level of the CIS region (integration and efficiency of markets) is refuted.

Hypothesis 2 has been confirmed in terms of local connectivity and refuted in terms of predictability. Therefore, by now there is no reason to conclude that the Russian sovereign bond market is operating effectively. The main reason for the efficiency violation is that the markets do not have time to predict the behavior of the regulator; fluctuations in the yield indices and rates of various countries after 2022 are poorly coordinated.

Model 2, describing the forecast of the refinancing rate of the Central Bank of the Russian Federation $S_{RF,t}$, based on its own trend, the countercyclical behavior of the refinancing rate of the Central Bank of Uzbekistan with a 10-day lag and local full yield indices, demonstrates a high value of explanatory power with a very low value of the Durbin – Watson coefficient (see Tab. 4). Adding local predictors to the model does not provide any significant improvement to model (2.2). The dynamics of the CB RF rates tend to be countercyclical in relation to the rates of Uzbekistan, and information on the Azerbaijani and Kazakh markets is not significant for forecasting the behavior of the Central Bank of the Russian Federation. We can conclude that there is a weak inverse relationship between the behavior of regulators of the Russian Federation and Uzbekistan, but this relationship does not show integration. Model 3.1 demonstrates local connectivity and predictability of the Russian sovereign bond market. Model 3.2 demonstrates that taking into account the influence of local spreads and the simultaneous action of the regulator on the behavior of the Russian sovereign bond market cannot sufficiently improve the quality of the forecast. Taking into account the lag in risk response increases the explanatory power of the model, but very slightly. The reduction of the period under consideration for the period after 2022 led to the disappearance of the reliability of the forecast. This indirectly confirms the hypothesis that there is a decrease in the dynamics of the balance of the behavior of the regulator of the Russian Federation, risk assessment and profitability of sovereign bonds of the Russian Federation. Thus, the Russian sovereign bond market is moderately locally connected and integrated with the Kazakh market, and investors in the market cannot predict the behavior of the regulator.

Conclusions

At first glance, the rates of the Central Bank of Russia, Kazakhstan, Uzbekistan, and Azerbaijan are poorly interconnected and are more responsive to the economic realities of each particular country. The results of quantitative studies partially confirmed these assumptions.

There is a moderate integration of the monetary policies of Russia and Kazakhstan. The trends in the monetary policies of Azerbaijan and Uzbekistan are rather aimed at reducing integration, which may be of great importance for the future situation. There is a weak inverse relationship between the behavior

of the regulators in Russia and Uzbekistan; it rather refutes the integration of the markets of these countries. We can assume that a substantive study of the monetary policy of Azerbaijan and Uzbekistan requires the introduction of data on other countries into the model.

Perhaps, in order to maintain stable and predictable interactions between the CIS countries, it makes sense to hold mutual consultations, conferences and open platforms with the participation of central bank managers. If predictability is maintained, the market becomes more efficient. Market efficiency creates incentives for investors based on transparency and predictability of their behavior (Duncan, 2014; Shah et al., 2023).

The Russian debt market very adequately correlated with the Central Bank rate until 2021. After 2022, the correlation decreases against the background of increasing uncertainty. The decisions of the Central Bank of the Russian Federation turned out to be unrelated to the situation on the debt market, and the market itself has high volatility and cannot adjust to the changes of the Central Bank. The actions of the Central Bank of the Russian Federation do not correlate with the debt markets of other countries if there was no reaction from their central banks.

The sovereign bond markets of Uzbekistan and Azerbaijan are practically not connected with the Russian Federation. The sovereign bond markets of Russia and Kazakhstan turned out to be moderately connected and relatively integrated.

The dynamics of the riskiness of the public debt of Kazakhstan, Uzbekistan and Azerbaijan demonstrated a strong correlation in relation to US securities. In relation to this group of countries, Russia acts more as a source of unpredictability, which leads to the withdrawal of this group of countries beyond integration.

Among the countries considered, we can highlight the group of Russia and Kazakhstan, whose sovereign bond markets interact in a moderately coordinated manner, and the group of Uzbekistan and Azerbaijan, whose markets do not integrate with those of the first group. The yield of Azerbaijani sovereign bonds is influenced by the more developed market of Kazakhstan, especially in terms of risk assessment, but the market itself is unbalanced. The Uzbek sovereign bond market is characterized by weak connectivity, a practical lack of integration into the group of CIS countries due to poor development.

It is possible to identify a chain of relationships in the sovereign bond markets of Russia – Kazakhstan – Azerbaijan – Uzbekistan. Kazakhstan plays the role of a connecting link in this chain to a greater extent.

The results of our study have shown that the CIS securities markets have different integration capabilities. The sovereign bond market is developed to a certain extent in almost all the countries in question. A more serious degree of interconnection and potential for coordinated interaction have been identified in the Russia–Kazakhstan pair. The markets of these countries react approximately the same way to the behavior of their regulators, having a delayed nature of adaptation under the influence of changes in the rates of local central banks. That is, opportunities for effective investor interaction in these markets have not yet been created, but moderate connectivity and relative integration continue to be maintained.

We should note that according to the Strategy for the Development of the financial market of the Russian Federation until 2030 (RF Government Resolution 4355-r, dated December 12, 2022, as amended on December 21, 2023) the creation of such forms of regulation, based on the ability to adapt to rapidly changing realities, is stated as a priority in this sector of the economy, because if the relationship in the financial market begins to acquire a cross-border character, there emerges

a convergence of local markets, which primarily concerns the CIS countries. In this direction, the Bank of Russia, in conjunction with regulators in other countries, is working to introduce regulation of this type of relationship in the financial market. The results of empirical research demonstrate a great potential for improvement in this area.

Under conditions of uncertainty, government securities of the Russian Federation are characterized as highly profitable and at the same time high-risk, and the bond market itself is poorly predictable and adapts to changes in the regulator for quite a long time. In this case, the actions of the Central Bank should be less abrupt and more predictable, which will enable the financial market to adapt more quickly to changing conditions.

The practical significance of the study of integration processes in the CIS sovereign bond market lies in the potential for increasing investment opportunities, forecasting and risk management in financial markets for the sustainable development of national economies.

Appendix 1

Descriptive statistics of the variables under consideration

	N	Minimum	Maximum	Average	Standard deviation	Asymmetry		Excess	
						Stat.	St. error	Stat.	St. error
S_{RF}	1136	0.043	0.200	0.075	0.032	2.086	0.073	5.022	0.145
I_{RF}	1086	0.053	0.151	0.080	0.020	0.537	0.074	-0.588	0.148
G_{RF}	1126	0.005	1.730	0.073	0.118	5.383	0.073	49.599	0.146
S_{KZ}	1136	0.090	0.168	0.117	0.032	0.596	0.073	-1.430	0.145
I_{KZ}	1136	0.080	0.140	0.109	0.016	0.352	0.073	-1.372	0.145
G_{KZ}	1098	0.010	0.044	0.019	0.006	1.206	0.074	1.066	0.148
S_{UZ}	1136	0.140	0.170	0.148	0.009	0.729	0.073	-0.691	0.145
I_{UZ}	127	0.068	0.306	0.136	0.046	0.252	0.215	-0.097	0.427
G_{UZ}	1096	0.020	0.065	0.031	0.008	1.423	0.074	2.034	0.148
S_{AZ}	1136	0.063	0.090	0.075	0.009	0.137	0.073	-1.061	0.145
I_{AZ}	380	0.010	0.115	0.070	0.016	-0.145	0.125	-0.034	0.250
G_{AZ}	1047	0.016	0.064	0.024	0.006	1.869	0.076	4.264	0.151

Appendix 2

Results of the factor analysis

	1	2	3	4
I_{RF}	**0.916**	i/s	i/s	i/s
S_{KZ}	**0.897**	i/s	0.254	i/s
S_{AZ}	**0.830**	i/s	i/s	0.252
I_{KZ}	**0.798**	0.319	0.385	i/s
S_{RF}	**0.769**	i/s	-0.245	-0.347
G_{RF}	**0.610**	0.265	i/s	-0.219
G_{UZ}	0.252	**0.925**	i/s	i/s
G_{KZ}	0.288	**0.892**	i/s	i/s
G_{AZ}	-0.229	**0.845**	i/s	i/s
S_{UZ}	i/s	0.239	**-0.817**	i/s
I_{UZ}	i/s	i/s	**0.685**	i/s
I_{AZ}	i/s	i/s	i/s	**0.923**

Note: i/s – insignificant correlations are suppressed, modulo less than 0.2.
Principal component method, Kaiser normalization.
The measure of the adequacy of the Kaiser – Meyer – Olkin sample (KMO = 0.685, value = 0.000)

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Received February 12, 2024.

DOI: 10.15838/esc.2024.2.92.9
UDC 332.14 + 330.43, LBC 65.9(2Rus)26+65.9(2Rus)29

Scenario-Based Approach to Modeling Bankruptcy Risks for Enterprises in Various Industries

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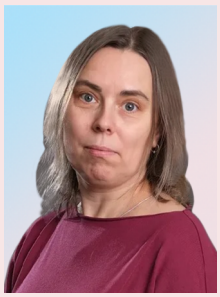

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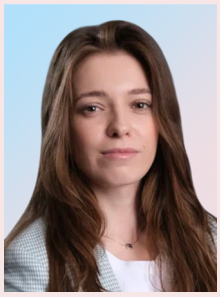

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For citation: Naumov I.V., Nikulina N.L., Bychkova A.A. (2024). Scenario-based approach to modeling bankruptcy risks for enterprises in various industries. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 166–186. DOI: 10.15838/esc.2024.2.92.9

Abstract. The deterioration of the financial situation of enterprises in various industries, which is currently observed in many regions, creates prospects for reducing their financial stability and the emergence of bankruptcy risks. It is necessary to develop existing methodological approaches so as to assess and forecast the risks of bankruptcy for industries as a whole, rather than for individual enterprises, and form effective state support mechanisms for them. The main goal of our research is to develop these approaches. The novelty of the presented approach consists in the following facts: we develop an algorithm for scenario modeling and forecasting the risks of bankruptcy for industries, including an assessment of the financial stability of the industries under consideration and the probability of bankruptcy; we design regression models showing the dependence of change in the probability of bankruptcy on a whole system of internal and external factors; we conduct autoregressive modeling of the dynamics of internal and external factors using a moving average (ARMA). Autoregressive modeling allows us to form the most probable, inertial forecast scenario for the next five years taking into account the preservation of the noted trends and the corridor of maximum possible values. The forecast values of the dynamics of these factors and the constructed regression models serve as a basis for designing forecast scenarios for changes in the probability of bankruptcy of large, medium and small machine-building enterprises in the Sverdlovsk Region. As a result, we reveal that major machine-building holdings of the Sverdlovsk Region that do not have sufficient working capital, have a low level of solvency, and experience a significant debt burden are most susceptible to bankruptcy risks. In order to increase financial stability and effective development of large machine-building enterprises, government support is required.

Key words: bankruptcy risks, financial stability, industries, autoregressive modeling, scenario forecasting.

Acknowledgment

The research was supported by Russian Science Foundation grant 24-28-00704 "Scenario modelling and bankruptcy risks forecasting for industrial sectors in the Sverdlovsk Region" (https://rscf.ru/project/24-28-00704/).

Introduction

The industries make the main contribution to the formation of the gross regional product of the constituent entities of the Russian Federation. Financial insolvency of enterprises of the real economy entails a serious deterioration in the socio-economic and financial condition of the regions. The 2020 lockdown associated with the coronavirus pandemic and the worsened geopolitical situation, serious sanctions pressure on the Russian economy have aggravated the already difficult situation in the real economy. The growing political tension, the breakdown of international production interrelations, the loss of foreign markets for products manufactured in the Russian regions form threats to the economic and financial development of enterprises in various industries. Today, many Russia's regions have a steady tendency to reduce the number of enterprises in various spheres of economic activity, which negatively affects the development of the social sphere in the region: the unemployment rate is increasing, incomes, the standard of living and quality of life are decreasing.

In the current circumstances, the study devoted to scenario modeling and forecasting of bankruptcy risks of industrial enterprises in such an industrially developed region as the Sverdlovsk Region becomes particular relevant. In the conditions of growing crisis phenomena in the economy, the most important task of public authorities is to develop anti-crisis measures to support the real economy,

which is the basis of socio-economic development of any territorial system. It is necessary to assess the financial stability of industrial enterprises, to carry out multivariate forecasting of the dynamics of their bankruptcy risks, to analyze the factors concerning formation and development of these risks, as well as socio-economic consequences in case of deterioration of the macroeconomic situation in the regions to determine the effective mechanisms of its support and to develop an appropriate industrial policy. The currently used methodological approaches have a number of limitations and do not allow assessing the risks of loss of financial solvency of enterprises of industries as a whole, they are used to forecast the bankruptcy risks of individual enterprises. The data base formed by the Federal State Statistics Service does not allow for a full-fledged analysis of the financial position of enterprises, their financial stability, so a new methodological approach is required.

Our research is devoted to the design of a new theoretical and methodological approach to scenario modeling and forecasting of bankruptcy risks of industrial enterprises in the region, the implementation of which will make it possible to create effective mechanisms of state support of industries, increase their financial sustainability for sustainable socio-economic development of the territory. We defined the following tasks to achieve the aim of the research: to generalize the research results in the field of assessing the bankruptcy risks of industrial enterprises; to develop a methodological approach to the assessment, scenario modeling and forecasting of bankruptcy risks of enterprises, taking into account the factors concerning internal and external environment; to approbate the developed approach for forecasting the bankruptcy risks of machine-building enterprises in the Sverdlovsk Region (assessing the probability of enterprises' bankruptcy in the industry using the Altman methodology, regression modeling of bankruptcy risks of enterprises, *ARMA*-modeling of the dynamics of internal and external environment factors in the region that form these risks, development of forecast scenarios of changes in the probability of enterprises' bankruptcy).

Enterprise bankruptcy risk forecasting models

The scientific literature distinguishes two main approaches to assessing enterprises' bankruptcy risks: multivariate discriminant analysis and econometric analysis. The founders of the first approach to assessing the bankruptcy risks of enterprises are W. Beaver (Beaver, 1966), who used the financial statements of companies to determine the signs of bankruptcy, and E. Altman (Altman, 1968), who used statistical methods of analysis to identify enterprises with a high risk of bankruptcy, with uncertain financial condition and with high financial stability. These methods are still used by researchers as a basis for the formation of models for assessing the bankruptcy risks of economic entities (*Tab. 1*). The methods of ***econometric analysis*** are also used in the assessment of bankruptcy risks of enterprises. For example, J.A. Ohlson (Ohlson, 1980) used logistic regression to predict bankruptcy. J. Kaczmarek et al. analyzed bankruptcy threats using forecasts derived from the multivariate logit model (Kaczmarek et al., 2021).

L. Cultrera and X. Brédart used a regression model to predict the bankruptcy of Belgian enterprises. Brédart applied a regression model including control variables: size and age of the company, as well as financial indicators (profit, solvency and liquidity) to test the predictive power of the generated forecasts (Cultrera, Brédart, 2016). Regressions were applied by Z. Qin and Y. Chen to develop an early warning system of enterprise bankruptcy and assess the factors leading to financial crisis (Qin, Chen, 2010).

Econometric methods for assessing the bankruptcy risks of enterprises in certain industries have also been used by ***Russian researchers***. A.N. Mogilat used the maximum likelihood

Table 1. Models for assessing enterprises' bankruptcy risk using multivariate discriminant analysis

Authors of the model	Advantages	Disadvantages
E. Altman (Altman, 1968)	Simplicity of calculations of bankruptcy risks based on the data of primary accounting statements of enterprises	The model does not take into account the influence of coefficients characterizing the efficiency of resource use, business activity, etc. The model can be used only for assessing bankruptcy risks of production enterprises whose shares are traded on the stock market
W. Beaver (Beaver, 1966)	It helps to predict bankruptcy risks of different types of enterprises, applicable for assessing the solvency of the enterprise and its comparison with competitors	The model uses a limited set of indicators, does not take into account industry specifics of the entities' functioning, and does not allow assessing bankruptcy risks due to the lack of an integral indicator
Model *CA-Score* of J. Legault (Legault, 1987)	It is characterized by its ease of use as it is based on three main factors	The model requires information on income and assets for the two previous periods, as well as the amount of equity capital to be used
R. Taffler and H. Tisshaw (Taffler, Tisshaw, 1977)	The model is highly accurate in predicting the probability of a company's bankruptcy because it uses a huge number of indicators	The model is applicable only to public companies whose shares are traded on the stock market; the accuracy of model calculations depends on the availability of source information
D. Fulmer (Fulmer et al., 1984)	The model takes into account the size of the company, is suitable for enterprises on the verge of bankruptcy and stably functioning, allows for dynamic analysis and forecasting of financial stability	The complexity of calculations may lead to an inadequate forecast different from the actual situation
J. Conan and M. Holder (Conan, Holder, 1979)	Bankruptcy risks are assessed depending on the probability that the company will delay payments on its obligations	The model uses close intervals between the levels of solvency of the enterprise, and a slight distortion leads to incorrect results
K. Adamowicz, T. Noga (Adamowicz, Noga, 2018)	The model takes into account the industry specifics of enterprises and can be used to assess bankruptcy risks of certain industries	The model is used only for the woodworking industry
O.P. Zaitseva (Zaitseva, 1998)	The model can be applied to assess the probability of bankruptcy of Russian enterprises and used for making managerial decisions	Forecasts generated by the model are not always adequate, correction factors are required for more accurate estimation
M.V. Evstropov (Evstropov, 2008)	The model has high accuracy in estimating the probability of bankruptcy of enterprises in manufacturing industries	There are restrictions on use by type of industry
E.G. Shatkovskaya, A.Kh. Faizulloev (Shatkovskaya, Faizulloev, 2016)	Equal steps of intervals are used based on the maximum and minimum values for financial indicators and integral indicator to correctly assess the probability of bankruptcy of enterprises	In practice, the model is applied only to assess the efficiency of functioning of enterprises of the information communication industry and is not tested at the enterprises of other industries
P.A. Ismailova, S.Yu. Evdokimov, N.Ya. Golovetskii (Ismailova et al., 2019)	The model is based on the two-factor Altman model, which allows predicting the probability of financial insolvency of enterprises	The reliability of forecasts is low, as the calculations use a non-five-factor model, which covers more indicators for assessing the probability of bankruptcy of enterprises
Source: own compilation.		

method with regrouping to assess the risk of loss of financial stability for Russian industrial companies. Our toolkit made it possible to reduce the impact on the model parameters of such shortcomings in the source data as the rarity of the event, the presence of errors in the grouping of companies into "problematic" and "prosperous" (Mogilat, 2019).

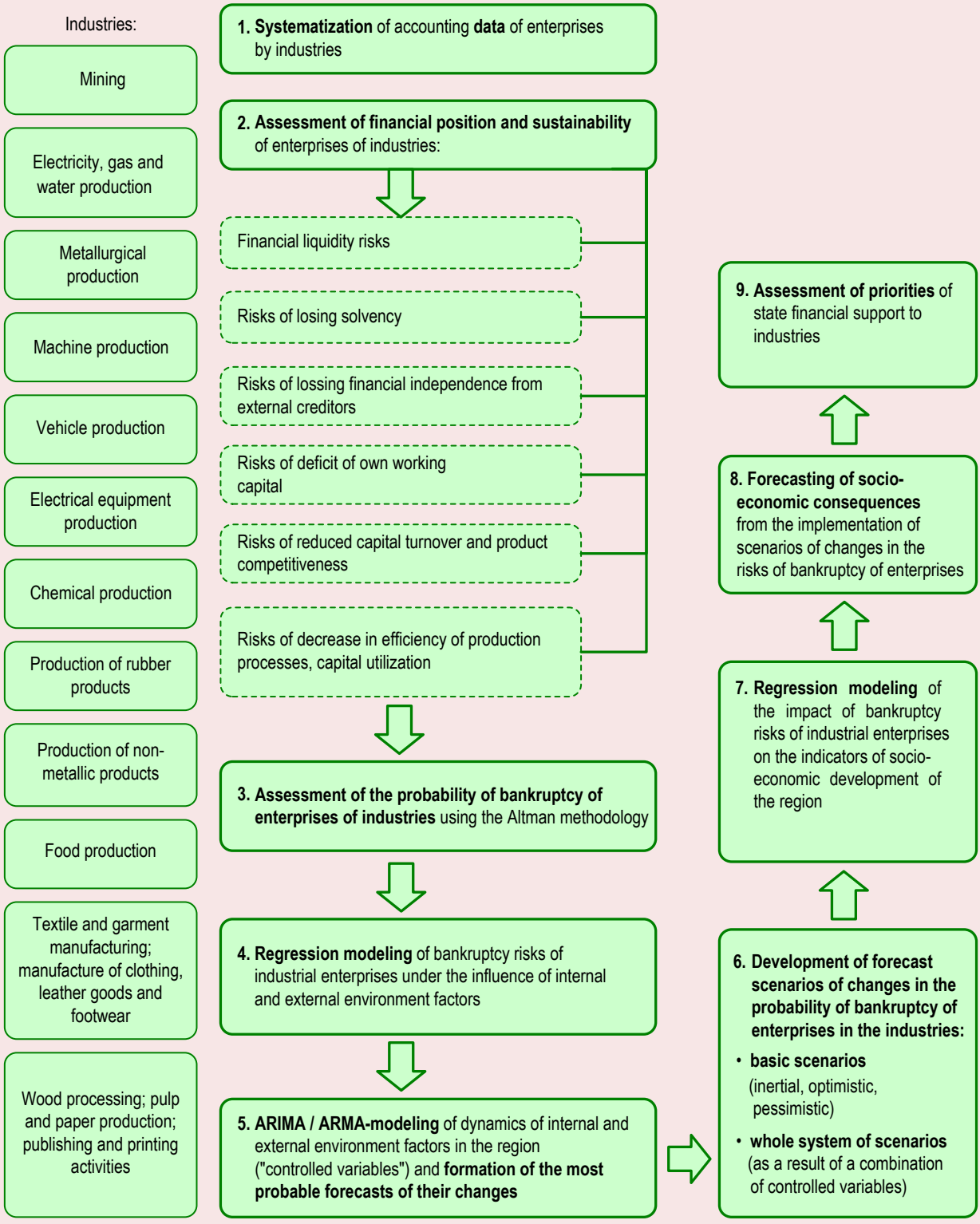
Some researchers have tried to predict the bankruptcy risks of enterprises of industries with the help of regression models, highlighting the characteristic features of their development. In particular, A.M. Bat'kovskii et al. assessed the bankruptcy risks of enterprises of the defense industry complex (Bat'kovskii et al., 2016). N.A. Kazakova, A.F. Leshchinskaya, A.E. Sivkova considered the problems of predicting the bankruptcy risks of companies of the mining and metallurgical complex. Their study proved that discriminant models can serve only for express testing of the probability of bankruptcy of enterprises because they take into account a limited number of factors, while regression modeling allows assessing the impact of various factors on the financial condition of enterprises and more accurately assessing the probability of their bankruptcy (Kazakova et al., 2018). T.K. Bogdanova and Yu.A. Alekseeva developed and tested a set of regression models for assessing the financial condition and forecasting bankruptcy risks of manufacturing enterprises. The authors noted that depending on the observed scenario the bankruptcy risks of enterprises can be forecasted for a period of one to four years with a sufficiently high degree of accuracy (Bogdanova, Alekseeva, 2011). Logistic regressions were used by E.V. Ivanova and T.I. Efremkova to forecast the bankruptcy of small business enterprises. The authors found that regression models provide more effective assessments of insolvency risk and provide extensive opportunities for testing the statistical significance of the model (Ivanova, Efremkova, 2020). Regression models were used by E.A. Fedorova, L.E. Khrustova and D.V. Chekrizov to forecast the bankruptcy of enterprises in eight industries. The models helped the authors to specify the threshold values of indicators for assessing the probability of bankruptcy of enterprises for each industry (Fedorova et al., 2018).

The theoretical review of works has shown that the methods of bankruptcy risk assessment do not take into account the industry specifics of enterprises, they are more suitable for individual enterprises and are difficult to apply to the study of bankruptcy risks of enterprises in industries. These methods are not aimed at studying the dynamics of bankruptcy risks of enterprises, do not assume the formation of forecast scenarios of their development in the future. In addition, the existing models and methods do not take into account the influence of internal and external environment factors on the formation and development of risks. The foreign methods available in the scientific literature are difficult to adapt to the assessment of bankruptcy risks of Russian enterprises due to the incomparability of companies' reporting standards.

Methodological approach of the research

To forecast the bankruptcy risks of enterprises in the industrial sectors, we need a new methodological approach that helps us to assess the financial stability not of individual enterprises, but of the industry as a whole, as well as the probability and bankruptcy risks, taking into account the impact of a system of internal and external environmental factors; to model the forecast scenarios of changes in the probability of bankruptcy of enterprises, to choose the optimal measures of their state support in the framework of this or that scenario. For a correct and reliable assessment of bankruptcy risks of industrial enterprises **at the initial stage of the developed methodological approach** (*Fig. 1*) we propose to systematize the data of accounting statements of enterprises for mining, production and distribution of electricity, gas and water, as well as manufacturing companies.

Figure 1. Algorithm of scenario modeling and forecasting of bankruptcy risks of industrial enterprises in the region



Source: own compilation.

The use of primary reporting will make it possible to obtain a wide range of indicators characterizing the dynamics of financial development of enterprises of industries, which is absent in statistical compilations.

At the next stage of the study, we assess the financial position and financial sustainability of the enterprises of the above industries by liquidity, business activity (turnover of fixed and current assets, inventories, accounts payable and receivable), resource utilization efficiency (profitability of assets, production activities and sales). These indicators were used, for example, to assess the financial stability of enterprises of metallurgical complex by M.A. Pechenskaya-Polischuk and M.K. Malyshev (Pechenskaya-Polischuk, Malyshev, 2021). At this stage, the liquidity of the enterprises of the industries is assumed and assessed (*Tab. 2*) by comparing the rate of realization of the most liquid (A1), quickly realizable (A2), slowly realizable (A3) and difficult to realize (A4) assets of the enterprises and the maturity of their liabilities – the most urgent (P1), short-term (P2), long-term (P3) and permanent (P4).

Assessment of the provision of enterprises with reserves (F_s), functioning capital (F_f) and the total amount of capital at the expense of all sources (F_o) will make it possible to conclude the financial stability of companies (*Tab. 3*):

$$F_s = WC_o - SL,\ F_f = WC_o + L_{lt} - SL,\\ F_o = WC_o + L_{lt} + L_{st} - SL, \quad (1)$$

where WC_o – own working capital, rubles;

ZL – stock level of raw materials and supplies, rubles;

L_{lt} – long-term liabilities, rubles;

L_{st} – short-term liabilities, rubles.

Calculation of the above indicators in dynamics from 1999 to 2022 for the whole set of enterprises of each industry sector will make it possible to analyze the dynamics of financial development of industries and assess the risks of loss of financial stability. We propose to calculate the presented indicators for separate groups of enterprises depending on their size (large, medium-sized and small). This will make it possible to take a differentiated approach to the study of the financial position and sustainability

Table 2. Conditions for assessing the solvency of enterprises in the industry

Conditions	Conclusions
A1 ≥ P1; A2 ≥ P2; A3 ≥ P3; A4 ≤ P4	Absolute liquidity (solvency) of the company
A1 + A2 ≥ P1 + P2; A4 ≤ P4	Current liquidity, it indicates the solvency of the enterprises of the industry in the near future
A3 ≥ P3; A4 ≤ P4	Prospective liquidity – forecast of solvency based on comparison of future receipts and payments
A4 ≤ P4	Insufficient level of prospective liquidity
A4 ≥ P4	Balance sheet is not liquid (the company is not solvent)
Source: own compilation.	

Table 3. Conditions for assessing the financial stability of enterprises

Conditions	Degree of financial stability of enterprises in the industries
$F_s > 0, F_f > 0, F_o > 0$	Absolute financial stability
$F_s < 0, F_f > 0, F_o > 0$	Normal financial stability
$F_s < 0, F_s < 0, F_o > 0$	Unstable financial situation
$F_s < 0, F_f < 0, F_o < 0$	Crisis financial situation
Source: own compilation.	

of enterprises of industries in the region, to identify the type of enterprises experiencing the most serious financial difficulties and most exposed to the bankruptcy risks.

At the third stage, the research proposes to estimate the probability of bankruptcy of enterprises of industries. The theoretical review of works has shown that the methods of discriminant evaluation of bankruptcy probability are not universal for the study of all industries. For example, the methodology of E.S. Lyutova (Lyutova, 2011) is more suitable for assessing the probability of bankruptcy of metallurgical enterprises, the methodology of E.A. Fedorova and Yu.V. Timofeev (Fedorova, Timofeev, 2015) – for construction and agriculture. The methods of M.V. Evstropov (Evstropov, 2008), T.K. Bogdanova and Yu.A. Alexeeva (Bogdanova, Alekseeva, 2011), E.A. Fedorova and Yu.V. Timofeev (Fedorova, Timofeev, 2015), E.V. Shirinkina (Shirinkina, 2015), J. Legault (Legault, 1987) are used exclusively for manufacturing industries. A more universal methodology, suitable for enterprises of various industries, is the model of W. Beaver (Beaver, 1966). However, its application complicates the assessment of the probability of bankruptcy of enterprises in the industries, since it uses a limited set of indicators and does not assume the calculation of an integral indicator. In addition, the methods under consideration differ in the level of accuracy of the forecast. The five-factor model of E. Altman (2) is considered to be the most reliable for the Russian economy, with a forecast accuracy of 95% and more:

$$Z = 1.2\times1 + 1.4\times X2 + 3.3\times X3 + 0.6\times X4 + X5, \quad (2)$$

where X1 – ratio of working capital to the sum of all assets of the company;

X2 – ratio of retained earnings to total assets of the enterprise;

X3 – ratio of operating profit to the sum of all assets of the enterprise;

X4 – ratio of market value of shares to the sum of all liabilities;

X5 – ratio of revenue to the sum of all assets of the enterprise.

The main advantage of this model is that it takes into account factors reflecting various aspects of the organization's activity, which makes the methodology more universal and allows obtaining a more accurate forecast of the probability of bankruptcy compared to other methods. At the same time, it is worth noting that Altman's model is applicable only to companies whose securities are traded on the stock exchange, and this limits the possibility of applying the model in the study of the probability of bankruptcy of industrial enterprises, since not all enterprises are joint-stock companies. Exclusion of factor X4 from the model will allow more reliably estimating the probability of bankruptcy of industrial enterprises, since the sample of observations will include not only large, but also medium and small non-equity enterprises. We will use the modified Altman methodology (without the variable X4) to assess the probability of bankruptcy of each enterprise separately, at the next stage – to calculate the average level of this indicator for large, medium and small enterprises. The weighted average value of Z in the Altman model for all enterprises will allow estimating the probability of bankruptcy of each industry sector as a whole. When interpreting the results, it is assumed to use not the standard threshold values of E. Altman, but the values calculated using standard deviations from the geometric mean for all enterprises of the industry for the whole period under consideration from 1999 to 2022. The high level of probability of bankruptcy of the enterprises of the industries will be observed at the values of Z-statistics below the geometric mean by one standard deviation. The increased level of probability of bankruptcy will be observed at the enterprises of the industries with the value of Z-statistics below the geometric mean,

but at the same time not exceeding one standard deviation from the geometric mean. Moderate level of probability of bankruptcy of enterprises will be observed at the values of Z-statistics close to the geometric mean, and the values exceeding it will indicate normal financial stability and low level of probability of bankruptcy. Calculation of Altman statistics in dynamics for the period from 1999 to 2022 will allow identifying the industries most exposed to bankruptcy risks.

The fourth stage of the methodological approach involves the construction of regression models that assess the impact of internal and external environmental factors (*Tab. 4*) on the dynamics of the probability of bankruptcy of industries to assess the bankruptcy risks of enterprises in the industries. The factors that have a negative impact will be considered by us as the key risks of bankruptcy of enterprises and will be used as "controlled variables" in the design of forecast scenarios.

The review of the scientific literature shows that studying factors influencing the bankruptcy risks of enterprises is not given enough attention. The works focus on assessing the impact of internal factors, such as asset turnover (Karas, Reznakova, 2015; Alifiah, 2014), term liquidity (Petersen, Plenborg, 2012), current liquidity (Zmijewski, 1984), return on sales (Fedorova et al., 2016). Among external factors, the influence of unemployment rate (Kloster, Jacobsen, 2005), inflation (Wadhwani, 1986), interest rates on loans (Kangari, 1988), lending volumes (Fedorova et al., 2016). Our research assumes a significant expansion of the range of assessed internal and external factors (see Tab. 4). They were selected based on the availability of official statistical data for the period under consideration. The model does not include such a variable as gross regional product as a factor, since this indicator reflects the volume of all goods produced in the constituent entities of the

Table 4. System of internal and external factors concerning change probability of bankruptcy of industrial enterprises

	External factors		Internal factors
Ri	Inflation rate in the region, %	La	Absolute liquidity
Rc	Interest rate on bank loans for legal entities in Russian rubles, %	Lu	Urgent liquidity
		Lc	Current liquidity
Qc	Quotes of foreign currencies (dollar), rubles	Lm	Liquidity in mobilizing funds
Ru	Unemployment rate in the region, %	Pc	Working capital provision
Eap	Economically active population in the region, people	Fi	Financial independence level
		Rde	Debt and equity ratios
Ifc	Investments in fixed capital, rubles	Tca	Turnover of current assets
Da	Depreciation of fixed assets, %	Tfa	Fixed assets turnover
Eia	Expenditures on innovation activities of organizations in the region, million rubles	Ti	Inventory turnover
		Tap	Accounts payable turnover
Dt	Volume of developed advanced production technologies, units	Tr	Receivables turnover
		Pa	Profitability of core activities, %
Ut	Volume of used advanced production technologies, units	Ps	Profitability (unprofitability) of sales, %
		Pnca	Profitability of non-current assets, %
Et	Export volume of technologies and services of technical nature, rub.	Pca	Profitability of current assets, %
		Fs	Inventory availability
It	Volume of imports of technologies and technical services, rub.	Ff	Availability of functioning capital
		Fo	Provision of total capital

Source: own compilation.

Russian Federation, services rendered and in our case is a resultant feature in modeling the socio-economic consequences of bankruptcy of industrial enterprises in the region. This indicator cannot be used as a factor sign in modeling the probability of bankruptcy of enterprises in a particular industry.

We propose to form regression models for large, medium-sized and small enterprises separately to build reliable forecast scenarios of changes in bankruptcy risks of industries. This will improve the homogeneity of the data sample and obtain more reliable results, to assess the differentiated influence of the factors under consideration.

We assume to conduct autoregressive modeling of the dynamics of factors presented in Table 4, using a moving average (ARIMA / ARMA) to project the forecast scenarios of changes in the bankruptcy risks of industrial enterprises in the region **at the next (fifth) stage**. Formation of inertial forecast of the development of the dynamics of factors using this method will help to forecast the most probable scenario of changes in the dynamics of bankruptcy risks of enterprises of industries **at the next stage**, taking into account the preservation of established trends. The marginal forecast values obtained as a result of autoregressive modeling of factor dynamics will be used to form extremely optimistic and pessimistic scenarios of bankruptcy risk development of enterprises in the industries.

The seventh stage involves regression analysis of the relationship between the level of bankruptcy probability (Altman Z-statistics for all industries in the aggregate) and such indicators of socio-economic development of the regions as the volume of GRP, unemployment rate, population income, etc. to assess the socio-economic consequences from the implementation of the designed scenarios of changes in the bankruptcy risks of enterprises in the industries. Separately, we plan forming a model of dependence of these indicators on the bankruptcy risks of enterprises of each industry. This will make it possible to identify the industries whose bankruptcy risks will have the greatest negative impact on the socio-economic development of the regions.

The economic-mathematical dependencies established in the course of modeling **at the next stage** will be used to forecast socio-economic consequences for the region from the possible implementation of projected scenarios of changes in the risks of bankruptcy of enterprises in the industries. The values of the probability of bankruptcy of enterprises (Altman Z-statistics), calculated as a result of the formation of forecast scenarios at the sixth stage of this methodological approach, will be used as factor attributes in the construction of these forecasts.

The industries identified in the course of modeling, which are most exposed to bankruptcy risks and have the most negative impact on the dynamics of socio-economic development of regions, as well as the built forecast scenarios of changes in bankruptcy risks will allow determining the sectoral priorities of state financial support to ensure the optimal vector of development of the real sector of the economy in the region, and selecting the optimal mechanisms of its implementation **at the final stage**. The development of a whole system of forecast scenarios of changes in the risks of bankruptcy of industrial enterprises due to the use of "controlled variables" in scenario modeling (factors concerning internal and external environment), as well as appropriate mechanisms of state support will help to form a system to prevent the implementation of negative scenarios for socio-economic development of the region and determine the optimal measures of state support of the real economy to reduce the bankruptcy risks of enterprises.

Research results

The Sverdlovsk Region is an industrially developing region with a powerful machine-building complex. The production of machinery and equipment is one of the key industries in the region, its share in the structure of manufacturing industries in 2022 was 10.4%[1]. The largest machine-building enterprises in the region (with annual revenues of over 2 billion rubles) are PJSC Uralmashzavod, Mashine-Building Holding JSC, PSM-Hydraulics, JSC Pnevmostroymashina, OOO Uraldomnoremont-Yekaterinburg, Mechanical Engineering Company Technex, Uralhimmash and AO AMZ Ventprom. They have liquid assets, their structure according to the data of 2022 is dominated by cash and short-term financial investments (22.1%), quick-realizable assets (31.3%). The enterprises have solvency, liquidity indicators slightly, but slightly exceed the normative values (*Tab. 5*). At the same time, term liabilities of the enterprises are not covered by production stocks, liquidity at mobilization of funds throughout the period did not reach the normative value.

Table 5. Dynamics of indicators of financial position and sustainability of enterprises producing machinery and equipment in the Sverdlovsk Region

Indicator	Size	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Absolute liquidity (norm: > 0.2)	Large	0.02	0.03	0.03	0.03	0.02	0.06	0.07	0.06	0.06	0.09	0.42
	Medium	0.17	0.07	0.07	0.09	0.07	0.14	0.16	0.10	0.14	0.16	0.16
	Small	0.13	0.08	0.07	0.13	0.08	0.11	0.15	0.14	0.13	0.16	0.34
Urgent liquidity (norm: > 1)	Large	0.37	0.62	0.45	0.38	0.39	0.48	0.74	0.48	0.64	0.73	1.01
	Medium	0.62	0.70	0.66	0.76	0.76	0.75	0.84	0.80	0.84	0.84	0.87
	Small	0.54	0.59	0.56	0.62	0.60	0.52	0.61	0.71	0.69	0.84	0.97
Current liquidity (norm: > 1-2)	Large	0.79	1.16	0.74	0.70	0.67	0.74	1.09	0.87	1.05	1.22	1.43
	Medium	1.28	1.30	1.22	1.22	1.32	1.28	1.39	1.28	1.32	1.30	1.27
	Small	1.28	1.21	1.16	1.22	1.03	0.98	1.12	1.19	1.14	1.43	1.45
Liquidity in mobilizing funds (norm: > 0.5)	Large	0.41	0.53	0.28	0.24	0.27	0.24	0.36	0.39	0.40	0.49	0.41
	Medium	0.63	0.60	0.56	0.46	0.53	0.46	0.55	0.48	0.49	0.45	0.40
	Small	0.71	0.60	0.57	0.56	0.41	0.45	0.50	0.47	0.44	0.57	0.46
Working capital provision (norm: > 0.1)	Large	-0.68	-0.44	-0.68	-0.82	-0.82	-0.70	-0.63	-0.53	-0.33	-0.27	0.04
	Medium	0.22	0.22	0.15	0.15	0.21	0.20	0.18	0.15	0.14	0.12	0.13
	Small	0.15	0.08	0.04	-0.02	-0.10	-0.12	-0.04	-0.04	-0.08	0.23	0.14
Financial independence (norm: > 0.5)	Large	-0.06	0.19	0.11	0.02	-0.03	-0.03	-0.02	-0.07	0.00	0.05	0.28
	Medium	0.25	0.25	0.21	0.21	0.27	0.26	0.28	0.27	0.27	0.26	0.24
	Small	0.47	0.44	0.48	0.42	0.31	0.29	0.35	0.32	0.30	0.33	0.25
Debt and equity ratio (norm: < 0.7)	Large	-18.6	4.4	7.8	43.3	-34.1	-33.4	-52.2	-15.7	-874	20.2	2.54
	Medium	3.01	2.95	3.78	3.70	2.69	2.84	2.61	2.67	2.66	2.79	3.12
	Small	1.09	1.27	1.10	1.39	2.21	2.40	1.84	2.15	2.29	2.01	2.99
Balance sheet liquidity assessment	Large	БН	БН	БН	БН	БН	БН	БН	БН	БН	БН	ТЛ
	Medium	ПЛ	ПЛ	ПЛ	ПЛ	ПЛ	ТЛ	ТЛ	ТЛ	ПЛ	ПЛ	ПЛ
	Small	ПЛ	ПЛ	ПЛ	БН	БН	БН	БН	БН	БН	ПЛ	ПЛ

[1] Federal State Statistics Service. Available at: https://rosstat.gov.ru/storage/mediabank/Region_Pokaz_2023.pdf (accessed: February 6, 2024).

End of Table 5

Indicator	Size	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Fixed assets turnover rate per year	Large	2.54	1.89	1.31	1.27	1.64	2.02	2.29	2.34	3.49	3.83	2.47
	Medium	64.4	31.2	23.3	21.6	24.2	23.9	16.2	12.4	10.4	11.9	12.9
	Small	3.76	6.97	3.33	3.12	4.39	5.39	5.28	4.60	4.65	4.53	10.4
Turnover of current assets per year	Large	1.04	1.04	0.78	0.76	0.88	0.87	0.87	0.73	0.88	0.85	1.39
	Medium	1.33	1.17	1.46	1.38	1.67	1.63	1.53	1.64	1.61	1.68	1.41
	Small	1.72	2.74	1.41	1.25	1.39	1.42	1.41	1.25	1.18	1.27	1.17
Inventory turnover per year	Large	1.24	1.29	1.23	1.43	1.77	1.81	2.00	1.54	1.52	1.49	0.85
	Medium	2.80	1.78	2.14	2.71	3.07	3.27	3.00	3.02	3.11	3.77	3.73
	Small	2.39	4.04	2.01	1.95	2.26	2.31	2.51	2.26	2.15	1.51	2.44
Accounts payable turnover rate	Large	1.48	1.81	1.92	2.25	3.07	3.00	2.87	2.72	2.57	2.09	1.30
	Medium	2.45	2.39	2.62	2.44	2.62	2.77	2.61	2.85	2.64	2.78	2.41
	Small	2.82	4.55	2.10	1.95	1.94	1.80	2.16	1.91	1.68	1.42	2.39
Receivables turnover rate	Large	1.94	2.06	1.46	1.44	1.80	1.73	1.59	1.53	1.81	1.61	1.17
	Medium	2.90	2.94	3.02	3.04	3.19	3.61	3.33	3.30	3.17	3.62	3.13
	Small	6.02	8.11	3.46	3.29	3.14	3.05	3.87	3.09	2.53	1.93	2.85
Profitability of core activities, %	Large	-5.4	-2.7	-11.0	-5.4	0.5	10.5	11.2	5.7	5.6	6.7	15.1
	Medium	4.0	6.9	5.6	7.6	8.7	5.0	6.7	7.0	9.7	8.1	8.7
	Small	7.1	7.5	6.3	4.4	5.3	5.1	6.7	7.7	8.4	7.3	9.3
Profitability of sales, %	Large	-5.7	-2.8	-12.3	-5.7	0.5	9.5	10.1	5.4	5.3	6.0	13.1
	Medium	3.9	6.5	5.3	7.0	8.0	4.8	6.3	6.5	8.8	7.5	8.0
	Small	6.6	7.0	6.0	4.3	5.0	4.9	6.3	7.1	7.8	6.8	8.5
Return on non-current assets, %	Large	-47.9	-26.8	-15.5	-19.8	-13.7	-4.6	1.5	-17.6	-17.3	10.2	36.7
	Medium	70.3	66.4	46.7	83.0	105.1	66.6	54.9	39.4	51.7	49.9	58.3
	Small	9.0	18.3	5.0	1.0	4.9	4.9	3.0	7.7	8.1	33.0	45.1
Profitability of current assets, %	Large	-28.3	-20.8	-13.8	-17.0	-10.6	-3.0	0.9	-7.6	-5.6	3.4	12.4
	Medium	3.2	3.3	3.8	6.2	8.3	5.6	7.0	6.6	9.8	9.7	8.7
	Small	5.6	11.7	4.1	0.7	3.0	2.9	1.8	4.1	4.4	5.2	6.8

Note: CL – current liquidity, PL – prospective liquidity, IBS – illiquid balance sheet. Source: own compilation based on SPARK data. Available at: spark-interfax.ru

The structure of their liabilities is dominated by the most urgent liabilities (51% of all liabilities), and this forms serious risks for their financial stability. The situation is complicated by the fact that the enterprises are not provided with their own working capital (see Tab. 5). The dynamics of financial independence, the ratio of borrowed and own funds shows that the enterprises have a high level of crediting, the volume of borrowed capital is 2.5 times higher than its own. For a long period of time the enterprises were on the verge of bankruptcy, had illiquid balance of assets, the volume of their non-current assets exceeded the available capital and reserves, and the most urgent and short-term liabilities were not secured by liquid assets. The financial situation of machine-building holdings in the region has slightly improved in 2022, this was facilitated by the reduction of accounts receivable from 23.9 to 5.1 billion rubles in 2022 as compared to 2021, short-term liabilities – from 37.1 to 8.6 billion rubles, long-term liabilities – from 20.5 to 3.1 billion rubles, increase of turnover of current assets – from 0.8 to 1.4 times during the year (see Tab. 5),

improvement of profitability of production activities – from 6.7 to 15.1%, sales – from 6 to 13.1%, utilization of non-current assets – from 10.2 to 36.7%. At present, they have financial stability, have liquid assets and, unlike medium and small enterprises, are characterized by high profitability, which indicates a low probability of their bankruptcy.

Medium-sized enterprises of the machine-building industry, with proceeds from the sale of products from 0.198 to 2.0 billion rubles per year, unlike large ones, throughout the period had the necessary amount of current assets, but their structure was dominated by hard-to-realize assets. This had a negative impact on their absolute and immediate liquidity, their available resources were insufficient to repay short-term liabilities and accounts payable. Like large enterprises, throughout the period under review they felt a serious dependence on borrowed capital. The level of working capital required for production activities was maintained through short-term lending. As a result, the accumulated level of short-term liabilities exceeded long-term liabilities by 9.4 times and formed a threat of solvency loss. At present these enterprises do not have a liquid balance sheet and can become solvent only in some perspective. Insufficient provision with inventories, functioning capital throughout the period contributed to the decline in their financial stability. Despite the low liquidity of assets, solvency problems, these enterprises are in a better financial position than large machine-building holdings, their working capital is actively turned over during the year. Thus, in 2022, the inventory turnover rate of medium-sized enterprises was 4.3 times higher than that of large enterprises, the turnover rate of accounts payable – 1.9 times, accounts receivable – 2.7 times, fixed assets – 5.2 times. Therefore, the probability of bankruptcy of medium-sized enterprises is lower.

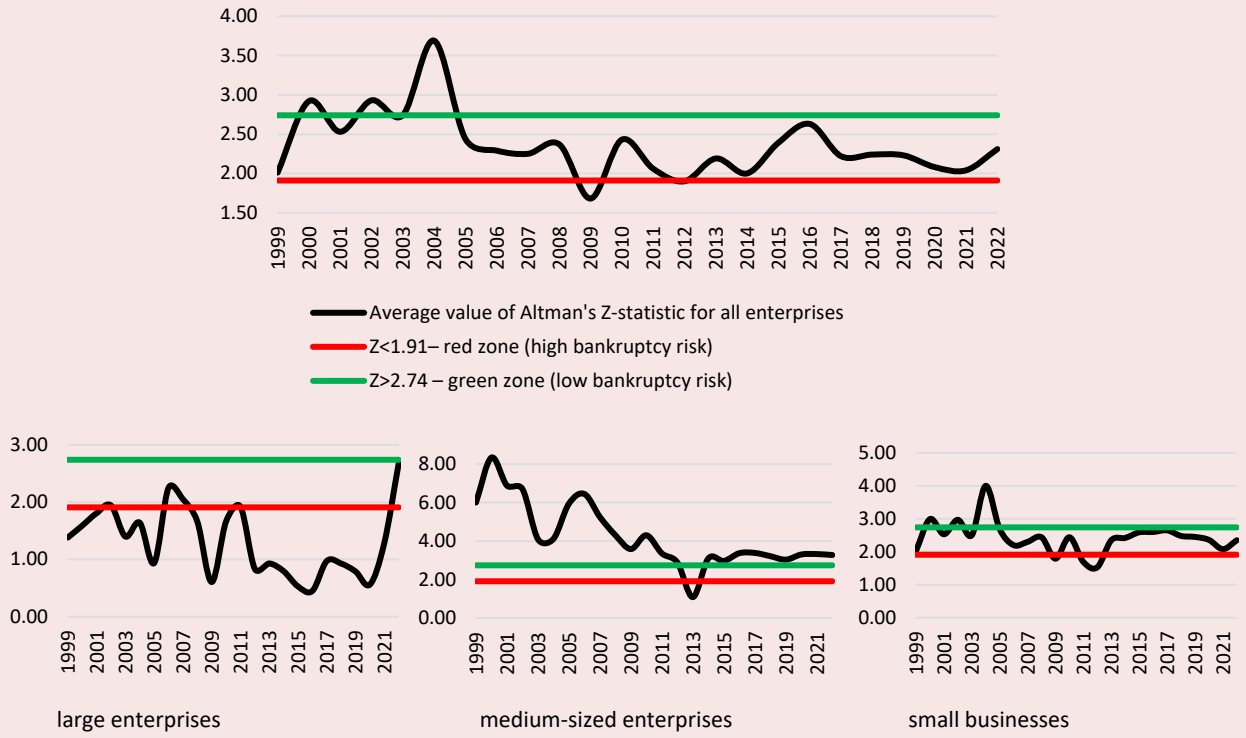
Small enterprises of the industry with proceeds from the sale of products less than 0.198 billion rubles per year, as well as medium-sized enterprises, have sufficient working capital to maintain the continuity of production processes, but it is also formed at the expense of borrowed funds, i.e. the enterprises do not have financial independence. They are characterized by a low level of solvency and prospective liquidity of the balance sheet due to the insufficiency of quickly realizable assets to repay the most urgent obligations. The low level of resources turnover also worsens the financial position of small enterprises. Due to the high level of crediting, it is difficult for enterprises to attract borrowed capital for renewal of available stocks and fixed assets. Accounts payable and accounts receivable turnover rates are lower than those of medium-sized enterprises. All this significantly hinders the financial development of small machine-building enterprises in the Sverdlovsk Region and increases the probability of their bankruptcy.

In the course of the study, we determine the threshold values for assessing the probability of bankruptcy of machine-building enterprises in the Sverdlovsk Region using geometric mean and standard deviations: below 1.91 – high level of bankruptcy probability ("red" zone), from 1.91 to 2.74 – average level ("gray" zone) and values above 2.74 – low level of bankruptcy probability of enterprises ("green" zone).

The calculation of the values of Altman statistics shows that at present the machine-building industry in the Sverdlovsk Region is characterized by a stable financial situation. After 2009, the indicators are in the "gray" zone, and this indicates a weak probability of bankruptcy of enterprises engaged in the production of machinery and equipment (*Fig. 2*).

During the periods of increasing crisis phenomena in the economy (in 2012, 2014, 2020–2021), the values of Altman *Z*-statistics approached the

Figure 2. Dynamics of changes in the probability of bankruptcy of the machine-building industry in the Sverdlovsk Region as a whole and by type of enterprises



Source: own compilation.

"red" line, the financial situation of machine-building enterprises in the Sverdlovsk Region worsened, but no such crisis as in 2009 was observed. During the period of the coronavirus pandemic, the Altman curve came as close as possible to the "red" line, the probability of enterprises' bankruptcy increased sharply, but thanks to the targeted government financial support of individual enterprises of the machine-building industry in the region managed to maintain financial stability. The increased sanctions pressure on the enterprises, the collapse of the established logistics chains for the supply of resources and finished products, the sharp rise in prices for raw materials and supplies, the difficulty of importing advanced production technologies and foreign-made equipment in 2022 form new risks of bankruptcy of machine-building enterprises in the region. The most vulnerable in this situation are large holdings, which are characterized by high capital intensity and dependence on imported equipment. Large enterprises have been fine-tuning the channels of supply of raw materials for years, and any change in logistics chains leads to serious disruptions in their production processes. The Altman curve for large machine-building enterprises in the region showed that they are the most sensitive to any negative manifestations in the economy (see Fig. 2). The economic recessions of 2008–2009, 2012, 2014, 2020–2021 were accompanied by an extremely high probability of bankruptcy of these enterprises. Large machine-building holdings of the region were in the "red" zone with high bankruptcy risks for a very long period and only in 2022 improved their

Table 6. Results of regression modeling of dependence of bankruptcy probability (Altman Z-statistic) of machine-building enterprises of the Sverdlovsk Region on external internal factors

	Large	Medium	Small
	Regression coefficients		
Const	-8.07 (2.3)***	7.14 (2.19)***	3.02 (0.21)***
La – absolute liquidity	2.28 (0.9)**		
Pc – working capital provision	1.06 (0.4)***		
Tfa – fixed assets turnover, times per year		0.01 (0.005)*	
Ti – inventory turnover, times per year		0.09 (0.03)***	
Tar – accounts receivable turnover, times per year	0.24 (0.09)**		
Poa – current assets profitability, %	0.02 (0.01)**	0.16 (0.04)***	
Ln (lfa) – logarithm of the volume of investment in fixed assets	0.87 (0.2)***		
Da – degree of depreciation of fixed assets in the region, %		-0.09 (0.04)**	
Ln (It) – logarithm of the volume of imported technologies			-0.16 (0.1)***
Parameters for assessing the quality and reliability of the models built			
R-square	0.79	0.83	0.52
F-Fisher statistics	13.87***	23.24***	10.25***
The Durbin – Watson statistic	1.88	2.52	1.87
P-value of the Breusch – Pagan test (H0: no heteroscedasticity)	0.52	0.20	0.07
P-value of the test (H0: errors are normally distributed)	0.25	0.18	0.91
P-value of the Chow test (H0: no structural changes)	0.28	0.21	0.52
P-value of the Breusch – Godfrey test (H0: no autocorrelation)	0.88	0.08	0.96
P-test value (H0: no ARCH processes)	0.87	0.60	0.99
P-value of the Quandt test (H0: no structural changes)	0.28	0.2	0.63

Note: * – statistical significance at the 10% level, ** – statistical significance at the 5% level, *** – statistical significance at the 1% level. The standard errors of the regression parameters present in parentheses.
Source: own compilation.

financial position. The value of Altman Z-statistic moved to the zone of uncertainty, in which it is very difficult to predict the further dynamics of the change in the probability of bankruptcy without the use of regression analysis tools. Similar dynamics of change in the probability of bankruptcy was observed in the group of small enterprises in the machine-building industry. The financial and economic crisis of 2008 and its second wave in 2012 significantly affected the financial stability of enterprises, the values of Altman Z-statistics were in the "red" zone, which indicated a high probability of bankruptcy of enterprises. The economic recession of 2014–2015 and the pandemic of coronavirus infection had a negative impact on the financial position of enterprises, but it was not so critical. At present, they, as well as large enterprises, are in the zone of uncertainty.

Medium-sized machine-building enterprises of the region are in the most stable financial position. The economic recessions that have been observed in the country during the last eight years have not had such a negative impact on them as on large and small enterprises. Medium-sized enterprises are provided with a sufficient amount of current assets to cover their liabilities, their resources are actively turned over during the year. That is why the values of Altman *Z*-statistics for this group of enterprises during the last eight years were in the "green" zone, and this indicates a low probability of their bankruptcy.

The data on the dynamics of the calculated Altman Z-statistics for large, medium and small enterprises of the machine-building industry in the Sverdlovsk Region for the period from 1999 to 2022 were used for regression analysis (*Tab. 6*).

Time series were evaluated for stationarity using the Dickey – Fuller test, for multicollinearity by constructing pairwise correlation matrices and VIF analysis. When assessing the reliability of the model, we checked for the presence of autocorrelation of residuals, structural shifts in the dynamics of the key variable, heteroscedasticity in the model, and normality of error distribution.

As a result of regression modeling, we have found that the dynamics of the probability of bankruptcy of large machine-building holdings in the Sverdlovsk Region is influenced by the absolute liquidity of enterprises, provision of their own working capital, turnover of accounts receivable, profitability of working capital use, as well as the volume of investments in fixed assets attracted by the region's enterprises (see Tab. 6). Large enterprises of the industry are poorly provided with working capital, funds are not quickly enough turned around and are inefficiently used. The enterprises are fund-intensive and attract significant investments in fixed capital for modernization of production. Negative dynamics of these factors form bankruptcy risks.

The study showed that the dynamics of the probability of bankruptcy of medium-sized enterprises are influenced by the turnover of fixed assets and inventories, the profitability of current assets and the degree of depreciation of fixed production assets. These enterprises are insufficiently provided with stocks and other most liquid assets to repay term liabilities and formed accounts payable, they experience serious problems with solvency, in the structure of their capital are dominated by borrowed funds, and only a high level of turnover of accounts receivable and accounts payable, fixed and current assets, stocks, efficiency of their use support financial stability. Negative dynamics of these indicators can significantly increase the bankruptcy risks of enterprises. According to the results of regression analysis, the probability of bankruptcy of small enterprises is influenced by the volume of imported technologies. These enterprises have insufficient resources to develop and implement their own advanced production technologies and are forced to import them. Significant growth in the cost of imported technologies in conditions of limited working capital forces enterprises to attract borrowed capital, and this negatively affects the level of their financial independence, solvency, and forms the bankruptcy risks.

We applied autoregressive modeling using moving average to forecast the dynamics of key factors concerning change in the probability of bankruptcy of enterprises. In the course of the study, we have determined that the optimal method of this analysis is ARMA-modeling due to the lack of linear trends in the dynamics of indicators. *Table 7* presents an example of the formed models for one of the key factors promoting bankruptcy probability of large machine-building enterprises of the Sverdlovsk Region.

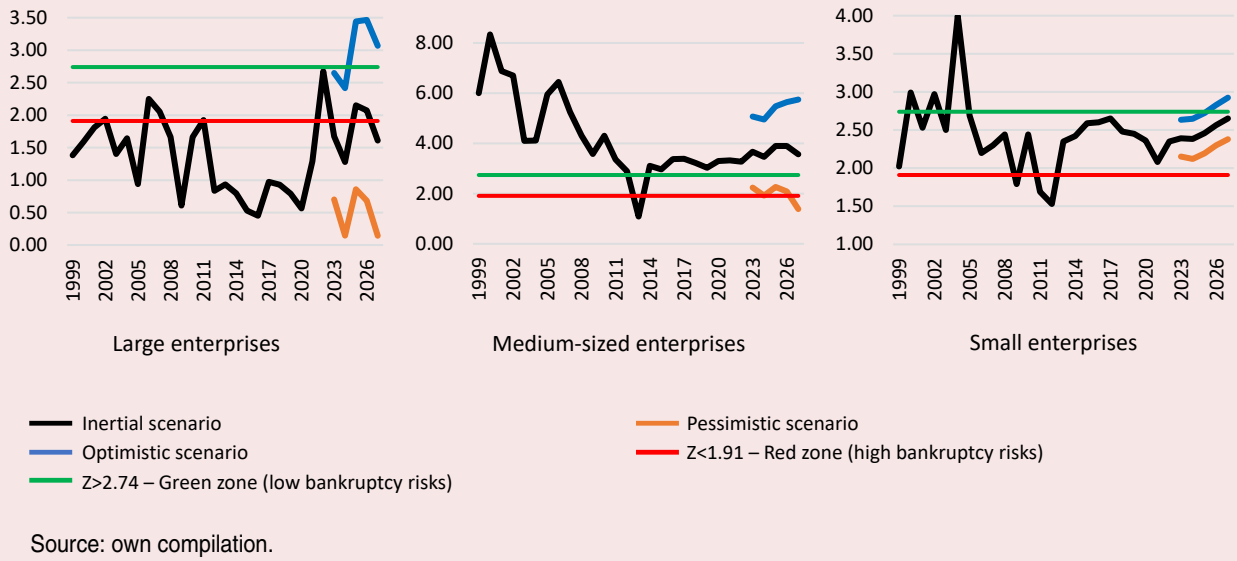
We used the 95% confidence interval to build forecast scenarios reflecting the dynamics of changes in the key factors regarding the probability of bankruptcy of enterprises, the lower and upper limits of this interval were used to form pessimistic and optimistic scenarios. The parameters of autoregressive models were used to develop the most probable, inertial forecast scenario of their change for the next five years, taking into account the preservation of the noted trends of the past. The forecasted values of the dynamics of these factors, as well as the constructed models formed the basis for the design of forecast scenarios of changes in the probability of bankruptcy of large, medium and small machine-building enterprises (*Fig. 3*).

Table 7. ARMA-model of dynamics of profitability of current assets of large machine-building enterprises in the Sverdlovsk Region for the period from 1999 to 2022

Estimated using AS 197 (MLE)				
Standard errors are calculated on the basis of the Hessian				
	Coefficient	St. error	*z*	*P*-value
const	-5.58245	0.632170	-8.831	1.04e-018 ***
*phi*_1	1.68253	0.0985203	17.08	2.16e-065 ***
*phi*_2	-1.56825	0.187601	-8.360	6.30e-017 ***
*phi*_3	1.68300	0.105349	15.98	1.90e-057 ***
*phi*_4	-0.992345	0.0125970	-78.78	0.0000 ***
*theta*_1	-1.72673	0.303976	-5.680	1.34e-08 ***
*theta*_2	1.50863	0.513391	2.939	0.0033 ***
*theta*_3	-1.72673	0.549006	-3.145	0.0017 ***
*theta*_4	0.999998	0.320964	3.116	0.0018 ***
Average of dependent variable	-4.388445	Standard deviation of dependent variable	9.352900	
Average of innovations	0.745540	Standard deviation of innovation	3.970934	
R-square	0.843937	Corrected R-square	0.775660	
Log. plausibility	-73.56009	Akaike criterion	167.1202	
Schwartz criterion	178.9007	Hennan – Quinn criterion	170.2456	

Note: * – statistical significance at the 10% level, ** – statistical significance at the 5% level, *** – statistical significance at the 1% level.
Source: own compilation.

Figure 3. Forecast scenarios of changes in the probability of bankruptcy of large, medium, and small machine-building enterprises in the Sverdlovsk Region up to 2027



Source: own compilation.

The research shows that further reduction in the volume of imported new technologies (up to 10 million rubles per year) will positively affect the probability of bankruptcy of small machine-building enterprises. The cessation of parallel import of technologies, equipment and transition to the introduction of domestic developments will contribute to the improvement of their financial stability and elimination of the technological risk of bankruptcy. If the optimistic scenario is realized, the Altman statistics will reach the green zone by 2027. The growth in the volume of imported technologies will increase the probability of bankruptcy of enterprises, but it will not reach critical values, the Altman curve will remain in the "gray" zone of uncertainty. Moreover, the realization of the pessimistic scenario is unlikely due to the sanctions pressure and the impossibility of legal import of technologies. Preservation of the trends noted over the last decade and achievement by 2027 of the level of inventory turnover (3.4 times per year), fixed production assets (65.3 times per year) and return on current assets (8.6%) will contribute to a further reduction in the probability of bankruptcy of medium-sized enterprises, the values of which are already in the "green" zone. The increasing level of depreciation of fixed production assets, inflation growth, reduction of inventory turnover, fixed assets, business activity of enterprises, profitability of current assets at higher rates will contribute to the realization of the pessimistic scenario and will lead to a significant increase in the probability of bankruptcy of these enterprises. Altman Z-statistic will be in the "red" zone, reaching the value of 1.4.

Large machine-building holdings in the Sverdlovsk Region are most exposed to bankruptcy risks. These enterprises have been in the risk zone since 2012 due to the lack of own working capital and poor efficiency of its use, low level of solvency and insufficient level of receivables turnover. Further preservation of the negative dynamics of these factors will contribute to the realization of the inertia scenario, in which by 2027 there is a high probability of bankruptcy of this group of enterprises. In case of a more significant decrease in the solvency of enterprises (up to 0.1), turnover of accounts receivable (up to 0.7), provision of enterprises with working capital (up to 0.01), profitability of their use (to a negative value of 13.5%), a more pessimistic scenario is possible: the Altman curve will reach the value of 0.14, exceeding the level observed in 2009. The bankruptcy risks of machine-building holdings are also increased by the declining dynamics of investment in fixed assets since 2012. Large holdings are dependent on the state of fixed assets and, in order to ensure the continuity of production processes, are forced to attract borrowed resources for their modernization. A significant reduction in investments in fixed assets (by 9.6%) by 2027 will be one of the triggers for the realization of the pessimistic scenario in the dynamics of the probability of bankruptcy of machine-building holdings. Under the conditions of limited current assets and low turnover of accounts receivable, it will be difficult for enterprises to find resources to restore the production equipment that has failed.

Scenario forecasting of bankruptcy risks has shown that the machine-building industry of the Sverdlovsk Region is currently in a stable financial position. The most exposed to bankruptcy risks are large machine-building holdings. To improve their financial stability, the state support is required today, since the machine-building industry is the key industry in the region, and the dynamics of development of related industries depends on its financial position.

Conclusion

The study developed a methodological approach to the scenario modeling and forecasting of bankruptcy risks of enterprises in industries, the novelty of which is the accounting of data

from primary accounting and annual reports of enterprises operating in the regional system according to their industry affiliation, as well as the systematic use of regression and autoregressive modeling methods. This approach allows us to more accurately and objectively assess the threats of loss of financial solvency of enterprises of various industries in the region.

As a result of the study, we found that the machine-building industry in the Sverdlovsk Region is currently in a stable financial situation. Large machine-building holdings of the region are exposed to bankruptcy risks, which are insufficiently provided with working capital, are characterized by a low level of solvency and have a significant debt load. Medium-sized machine-building enterprises of the region are in the most stable financial position. They have a sufficient amount of current assets to cover short-term and long-term liabilities, their resources are actively turned over during the year. Decreasing profitability of current assets utilization, turnover of fixed assets and inventories, as well as increasing degree of depreciation of fixed production assets form the risks of bankruptcy of these enterprises. The sustainable financial position of small enterprises is influenced by the volume of imported technologies and technical services. Due to their size, small companies do not have sufficient resources to develop and implement their own advanced production technologies and are forced to import them from other countries. Restricting the import of foreign technologies and switching to the implementation of Russian developments will contribute to improving their financial stability and eliminating the technological bankruptcy risk.

The developed approach to assessing and forecasting the probability of bankruptcy of enterprises is supposed to be further tested in other industries of the region in order to assess the socio-economic consequences of their possible bankruptcy and to identify the sectoral priorities of state financial support.

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Received February 14, 2024.

DOI: 10.15838/esc.2024.2.92.10
UDC 614.2, LBC 51.1:51.9

Conceptualizing the Notion of "Socially Significant Diseases" in Strategic Planning

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Abstract. The paper investigates how the legally formalized categories such as "socially significant diseases" and "diseases that pose a threat to others" are applied in public administration, primarily in strategic planning. First, we focus on the presence and description of the most common formats for the use of the term "socially significant diseases" in strategic documents adopted for implementation in modern Russia at the federal level and at the level of constituent entities of the Russian Federation; second, we consider limitations related to the use of the discussed category of indicators in the practice of monitoring observations. The aim of the research is to identify the possibilities and limitations concerning the use of the list of nosological units under consideration in strategic planning at the national level and the level of RF constituent entities. The information base for the analysis includes data from the RF Ministry of Health and the Federal State Statistics Service, as well as strategic documents on the socio-economic development of the country and its constituent entities. The article analyzes the dynamics and structural and quantitative characteristics of population morbidity for a number of important socially significant diseases (malignant neoplasms, tuberculosis, HIV infection) in the period from 2000 to 2021. Based on these data, a conclusion is made about the difficulties of interpretation when dealing with the enlarged categories such as "socially significant diseases" and "diseases that pose a threat to others" when formulating strategic development goals for the country and its regions. We put forward a number of recommendations to address such problems. The novelty of the study lies in a critical understanding

For citation: Kalashnikov K.N. (2024). Conceptualizing the notion of "socially significant diseases" in strategic planning. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 187–201. DOI: 10.15838/esc.2024.2.92.10

of the possibilities and limitations related to the use of the terms "socially significant diseases" and "diseases that pose a threat to others" in program documents due to the fact that their list is significantly heterogenous and includes fundamentally different nosological units. Practical significance of the work consists in clarifying the practices of using the discussed category of indicators as the indicators of regional development.

Key words: socially significant diseases, diseases that pose a threat to others, morbidity, nosological units, socio-economic development strategies, RF constituent entities, state program.

Introduction

From the economic point of view, epidemiological well-being should be understood as a public good, the production and supply of which is ensured by the coordinated functioning and interaction of executive authorities, subordinate organizations in cooperation with civil society and business (Von Heimburg et al., 2022). The epidemiological picture can and should be assessed as an indicator of the quality of life (Kuvshinnikov et al., 2023) and the quality of public administration, socio-economic development of the country and its regions, as an important feature of their socio-cultural image (Peters et al., 2008). The main indicator is the prevalence of diseases that have a strict correlation with socio-economic factors. In international practice, although far from universal, such diseases are called social diseases. In Russia, they are called "socially significant". There is also a category of "diseases that pose a danger to others". It has a number of common features with socially significant diseases and is often regarded as related to them[1]. The study of the relationship between these groups is a separate research task, but they both attract attention due to the pronounced negative impact of their spread on public health. It is no coincidence that the categories of "SSD" and "DTPDTO" are officially established in the regulatory field of contemporary Russia, including in aspects of the organization of the penitentiary system (Shugaeva et al., 2022). Proposals to compile and approve the list of SSD of criminal and legal significance are voiced (Zvonov, Yakovlev, 2020). They appear in documents of socio-economic development of the country and regions that go beyond departmental target programs and purely sectoral issues.

There is no doubt that the use of the terms "SSD" and "DTPDTO" in legal matters and in aspects of the implementation of social guarantees requires legal precision. However, in the context of strategic management, where they are used rather for actualization of epidemiological challenges and elaboration of territorial development directions, there are many facts of neglecting the rigor and normative force of the discussed categories. This contradiction is rarely taken into account by researchers, and its analysis is not sufficiently reflected in modern academic literature. Within the framework of the article we aim to show that in official strategic documents the terms in question are applied arbitrarily, unsystematically and inconsistently. This makes it difficult to adequately understand the acuteness of the current situation and its actualization by the authorities, as well as the essence and content of the implemented activities and policy in general, which emphasizes the need for research in this area.

[1] In the following, for ease of presentation, both the expanded names of the categories – "socially significant diseases" and "diseases that pose a danger to others" – and the abbreviations "SSD" and "DTPDTO", as well as the common abbreviation "SSD and DTPDTO" will be used. In the title of the article, only the term "socially significant" is used for brevity.

This is of particular concern in modern Russian conditions, when, first, the epidemiological situation remains tense, and second, there is a wide territorial differentiation in the level of morbidity (Leshchenko et al., 2022). In connection with the pandemic caused by a new coronavirus infection, the list of the DTPDTO was supplemented with a new nosological unit – 2019-N CoV, so further arbitrary operation with the discussed terms can lead to problems in interpreting the development guidelines declared by the authorities. For example, readers of strategic documents who do not find the category of "DTPDTO" in the texts may wonder whether the prevention of coronavirus infection will receive sufficient attention from the authorities in the near and distant future.

The aim of the study is to analyze the possibilities and limitations of using the categories of "SSD" and "DTPDTO" and the list of their constituent nosological units in the assessment of socio-economic well-being of Russia in strategic documents and in general in the system of strategic planning for the development of the country and individual regions.

The novelty of the undertaken research lies in the critical understanding of the application of the categories of "socially significant diseases" and "diseases that pose a danger to others" in strategic documents for the development of the country and regions.

The first part shows the internal heterogeneity of SSD and DTPDTO in terms of prevalence and epidemiological dynamics, as well as regional differentiation, which, among other things, illustrates the difficulty of using the categories "SSD" and "DTPDTO" for analytical purposes and shows the inevitability of their fragmentation into separate nosological units. The second part discusses the problems of conceptualization and application of the categories of "SSD" and "DTPDTO" in strategic planning documents using the examples of strategies of socio-economic development of Russian regions.

Theoretical aspects

The spread of socially significant diseases is closely related to the socio-economic conditions of the population, but this relationship is probably two-way. On the one hand, low living standards and poor quality of life create conditions for the emergence of disease centers. On the other hand, the mass incidence of morbidity causes socio-economic damage to the territories due to the loss of working capacity, costs of detection and treatment, disability and mortality of the population (Budilova, Migranova, 2020). Hence the frequent use of this category in documents of socio-economic development of the country and regions.

Diseases belonging to this category negatively affect a person's social environment within a close radius, lead to the loss of family, friends, work, and livelihood (Boyarkina, 2019). Scientific literature recognizes the mutual causality of these diseases: alcoholism and drug addiction can lead to infection with sexually transmitted infections and human immunodeficiency virus (HIV) (Petrosyan, Shakhmardanov, 2018), as well as the emergence of diseases associated with high blood pressure (Vasiliev, Streltsova, 2018), which, however, does not apply to all diseases in these groups.

In foreign scientific and epidemiological practice, the spread and socio-economic effects of morbidity and mortality from these types of diseases are more often studied specifically for individual nosological units, such as tuberculosis (Jilani et al., 2023; MacPherson et al., 2020) or sexually transmitted infections (Ginocchio et al., 2023; Van der Pol, 2016). At the same time, the social conditionality of a number of infectious (Rasanathan et al., 2019), mental illnesses (Ni et al., 2020) is emphasized, while a similar Russian formulation is not widely used. Moreover, leading researchers and experts have documented the social determinacy of

health in general and, consequently, of inequalities in public health (Solar, Irwin, 2010), so it is debatable whether the category of "socially significant diseases" should be emphasized in the context of this issue. Of interest is the question of whether such mainstreaming will be based solely on arguments of greater social causation of SSD and DTPDTO than other disease categories. Will the argument of a greater magnitude of risks be taken as a basis?

Meanwhile, the term "social disease" still exists in the English language. The Collins English Dictionary gives two meanings of "social disease": the first is as a euphemism for venereal diseases (we should note that in other dictionaries, primarily American, this variant of interpretation is the most common and is given as the only meaning), the second meaning is close to the one used in Russian: a disease common among certain social groups due to predisposition caused by unfavorable conditions[2]. It is interesting to note that the dictionary gives as an example a disease that in Russian practice is not included in the category under discussion – dental caries. Another authoritative source, the Merriam–Webster dictionary, cites tuberculosis as a typical example of a social disease, which is already fully consistent with the Russian approach to the interpretation of SSD.

The Soviet epidemiological tradition was rooted in the term "social diseases", which primarily referred to dangerous infectious diseases that threatened widespread, rapid spread and significant economic losses (Orlov, 2009). It should be considered the predecessor of the term "socially significant diseases" used in Russia today. However, the SSD today includes not only infectious but also non-infectious diseases, which in modern epidemiological conditions pose an almost equal threat to the well-being of the country, so their proximity in a single list is more than justified; although, as we will see below, it creates significant difficulties in the use of a single unifying term.

Epidemiological observations that revealed an increase in the incidence of socially significant diseases in Russia and the countries of the former Soviet Union, its connection with economic and social upheavals, demographic and behavioral factors, served as the basis for the compilation of a list of socially significant diseases. In accordance with Article 41 of the "Fundamentals of the Legislation of the Russian Federation on the Protection of Citizens' Health", the Government of the Russian Federation adopted Resolution 715, dated December 1, 2004 "On approval of the list of socially significant diseases and the list of diseases that pose a danger to others" (the Resolution was amended on July 13, 2012, no. 710, and on January 31, 2020, no. 66). The criteria for inclusion in the list of diseases are defined by Article 43 of Federal Law 323-FZ, dated November 21, 2011 "On the protection of citizens' health" – they include a high level of primary disability and mortality and a reduced life expectancy of the diseased.

This list includes diseases characterized by high blood pressure, diabetes mellitus, malignant neoplasms, disease caused by human immunodeficiency virus (HIV), tuberculosis, hepatitis, sexually transmitted infections, mental and behavioral disorders.

The group of diseases posing a danger to others included 15 types of diseases, of which some were also included in the list of SSD (disease caused by HIV, tuberculosis, hepatitis B and C, sexually transmitted infections), as well as malaria, cholera, plague, anthrax and some others. The list of such diseases is not permanent, but is supplemented depending on the scale of the threat of spread, including fatalities. An example is COVID-19 infection, which was added to the list on January 31, 2020.

[2] Collins English Dictionary. HarperCollins Publishers. Available at: https://www.collinsdictionary.com/dictionary/english/social-disease

Even a superficial acquaintance with the composition of both categories of diseases makes us pay attention to their overlap in a number of nosological units (see the middle column of Table 1). Diseases united in the zone of intersection of these two sets are called socially dangerous (SDD), are both socially significant and dangerous for others (Semenov et al., 2011). It is believed that the principal characteristic of socially significant diseases is their ability to spread widely (mass spread), while diseases that pose a danger to others are characterized by high infectiousness and, therefore, the risk of rapid spread. However, this distinction is not absolute, since both groups have infectious diseases that are highly contagious. At the same time, there are a number of diseases that occur frequently (such as neoplasms or diabetes), and in conditions of unfavorable socio-economic conditions the situation is even more aggravated, but they are endogenous, so their spread is not associated with contacts between individuals (*Tab. 1*).

In spite of the variety of diseases grouped under the acronyms "SSD" and "DTPDTO", it is impossible to ignore among them such as tuberculosis and HIV infection. They are stably associated with these groups, having become typical examples of socially significant diseases. However, this should not be a reason to ignore other nosologies from these lists. The practice, present even in the academic environment, of applying the characterization "socially significant" to diseases that are not officially such, or advocating the need to include certain diagnoses in the discussed categories, requires a special discussion (Chronic obstructive pulmonary disease..., 2019). On the one hand, such a revisionist approach has some justification, since the attribution of a nosology to the SSD category is not strictly verifiable (it is not a question of whether there are sufficient grounds for the presence of specific diseases in the approved lists, since the peremptory nature of governmental decrees is in itself a sufficient argument in favor of this; however, the absence of a number of nosologies in the SSD and DTPDTO may well be a subject for discussion), can be constructive, if it is based on a balanced analysis and convincing arguments. On the other hand, it can be seen as a kind of disregard for the existing regulatory architecture, which leads to at least some confusion in the use of accepted terminology.

Table 1. Composition of lists of socially significant diseases and diseases that pose a danger to others

Specific units of socially significant diseases	Units common to categories of socially significant diseases and diseases that pose a danger to others (socially dangerous diseases)	Specific units of diseases that pose a risk to others
– C 00 – C 97 malignant neoplasm – E 10 – E 14 diabetes mellitus – F 00 – F 99 mental and behavioral disorders – I 10 – I 13.9 hypertensive heart disease	– B 20 – B 24 human immunodeficiency virus disease (HIV) – A 15 – A 19 tuberculosis – A 50 – A 64 sexually transmitted infections – B 16; B 18.0; B 18.1 hepatitis B – B 17.1; B 18.2 hepatitis C	– A 90 – A 99 arthropod-borne viral fevers and viral hemorrhagic fevers – B 65 – B 83 helminthic diseases – A 36 diphtheria – A 30 lepra – B 50 – B 54 malaria – B 85 – B 89 pediculosis, acariasis and other infestations – A 24 glanders and melioidosis – A 22 anthrax – A 00 cholera – A 20 plague – B 34.2 coronavirus (2019-N CoV)
Source: own compilation.		

The effective fight against socially significant diseases, prevention and reduction of their spread through the organization and implementation of a set of measures to expand access to prevention, diagnosis and treatment is one of the most important tasks of the activities of sectoral bodies and institutions of the Russian Federation.

Materials and methods

The information base of the research includes the following sources: 1) strategic documents at the federal level (National Security Strategies of the Russian Federation; Unified Plan for Achieving the National Development Goals of the Russian Federation for the period up to 2024 and for the planning period up to 2030) and at the level of the Northwestern Federal District regions (texts of strategies for socio-economic development up to 2030/2035); 2) data from the Federal State Statistics Service, Ministry of Health of the RF, Unified Interdepartmental Information and Statistical System (EMISS), as well as documentary sources of the federal government and the RF Ministry of Health. The morbidity of the population is characterized by the number of cases of diseases detected (or patients taken under dispensary observation) during the year when applying to medical and preventive organizations or during preventive examinations. Primary morbidity is registered when a patient is diagnosed with a disease for the first time in their life. Indicators of morbidity of the population with socially significant diseases and diseases that pose a danger to others (below we will use the abbreviation "SSD and DTPDTO") are given in accordance with the lists approved by RF Government Resolution 715, dated December 1, 2004 (as amended by Resolutions 710, dated July 13, 2012 and 66, dated January 31, 2020) for 2019, 2020 and 2021 for the country and constituent entities of the RF.

The main focus of the paper is on identifying the dynamics of morbidity of the Russian population with SSD and DTPDTO for the period from 2000 to 2021, which allows critically assessing the reduction in the presence of measures to prevent the discussed diseases in program documents of the federal level and the level of constituent entities of the Russian Federation, and describing the opportunities and limitations of using this group of indicators in the practice of strategic planning and assessment of the quality of management. In the latter case, we selected data series for RF constituent entities for 2021 (the most recent official data available at the time of manuscript preparation).

Results and discussion

Socially significant diseases and diseases that pose a danger to others in contemporary Russia: general epidemiologic picture

The incidence of SSD and DTPDTO in Russia in the period 2000–2021 had multidirectional dynamics (*Tab. 2*). For a number of nosological units there was a significant improvement of the situation. The number of newly detected cases (in terms of population) of active tuberculosis decreased by 65% (from 89.8 to 31.1), mental disorders – by 56% (from 83.1 to 36.9). Particularly impressive was the positive dynamics in the fight against acute viral hepatitis B and C: the decrease in registered cases amounted to 141 (from 42.3 to 0.3 cases) and 35 (from 21.0 to 0.6) times, respectively. All of this was largely due to the development of tools for disease detection and diagnosis, the development of pharmaceutical technologies, and the close and relentless control of the state over the spread of these diseases.

Notable progress was made in the fight against sexually transmitted diseases (STD) during the analyzed period. The incidence of syphilis decreased by 11 times, trichomoniasis by 13 times, and

Table 2. Dynamics of primary morbidity of the RF population in the SSD and DTPDTO, number of first-time diagnosed diseases per 100,000 people

Disease	2000	2005	2010	2015	2020	2021	2021 / 2000, % / times
Registered patients diagnosed for the first time in their lives							
Active tuberculosis	89.8	83.7	76.9	57.7	32.4	31.1	-65
Diabetes mellitus	111.3	175.3	226.8	240.6	219.8	237.2	2.1 (p)
Hypertensive heart disease	298.7	542.6	609.5	898.3	934.0	992.4	3.3 (p)
Predominantly sexually transmitted infections							
syphilis	164.5	68.8	44.6	23.5	10.5	14.5	-11 (p)
gonococcal infection	120.9	71.5	42.4	18.5	6.7	7.4	-16 (p)
trichomoniasis	318.1	214.8	125.9	62.9	26.5	24.7	-13 (p)
Registered patients with first-time diagnoses in life							
Malignant neoplasms	293.7	311.1	335.7	358.1	322.6	337.0	15
Mental and behavioral disorders	83.1	67.3	52.0	42.8	34.5	36.9	-56
Registered cases of disease							
Acute viral hepatitis B	42.3	8.7	2.2	1.1	0.3	0.3	-141 (p)
Acute viral hepatitis C	21.0	4.5	2.1	1.4	0.7	0.6	-35 (p)
Disease caused by the human immunodeficiency virus (HIV)							
Registered patients, total	54.0	164.9	261.0	397.3	575.1	583.9	11 (p)
Registered patients diagnosed for the first time in their lives	38.1	23.0	40.1	59.6	41.1	40.3	6
Source: Vologda Region Medical Information and Analytical Center.							

gonococcal infection by 16 times. Identification of the reasons for the positive dynamics requires additional in-depth research. Presumably, a positive role was played by the efforts of the authorities and medical services, the spread of private medical centers, and the improvement of the general and sanitary culture of citizens. The question of the minimum level of morbidity in modern Russia, to which it is necessary to strive, is still debatable. There is still territorial differentiation among RF constituent entities in terms of STD prevalence, the most acute situation remains in regions with a low level of socio-economic development. Finally, the use of conventional rather than standardized morbidity indicators is associated with some limitations in the interpretation of their dynamics.

At the same time, during the period under consideration, the primary morbidity of the country's population increased markedly with diabetes mellitus (by 2.1 times), diseases characterized by high blood pressure (by 3.3 times), malignant neoplasms (by 15%) and HIV infection (by 6%). The reasons for the spread of HIV infections are generally related to the low sanitary culture and responsibility of citizens and the insufficient use of personal protective equipment during sexual contacts. The increase in the primary morbidity rate of non-communicable diseases is probably also related to demographic factors – an increase in life expectancy from 65.4 to 72.9 years and an increase in the proportion of the population over 60 years old from 18.5 to 21.3%, as well as the strengthening of the system for diagnosing diseases.

The morbidity parameters also differ significantly in spatial dimension, reflecting significant differences between the regions of the Russian Federation, which also indicates the inappropriateness of any generalization of

quantitative indicators by groups of SSD and DTPDTO in the analysis of the current situation. Confirmation of the inexpediency of rating RF constituent entities by indicators of SSD morbidity on the basis of a single integral index can be found in the recently published work of Russian demographers E.V. Budilova and L.A. Migranova. The constituent entities that were "leaders" and "outsiders" in the classification system of the authors in terms of the relative number of persons registered in medical and preventive organizations in connection with the diagnosis (in total for a number of SPZ), nevertheless showed a wide variation in morbidity rates for individual causes (Budilova, Migranova, 2020).

Presence of the category "SSD and DTPDTO" in strategic documents

To date, the formalization of the tasks of prevention and minimization of morbidity of the population with socially significant diseases is extremely fragmented. On the one hand, the relevance of epidemiological problems and the importance of their solution for the future of the country and well-being are reflected in the most important strategic documents of the federal level and the level of RF constituent entities. On the other hand, the reference to this category of diseases is carried out without a unified logic and sequence.

As an example, we can consider the "Concept of long-term socio-economic development of the Russian Federation for the period until 2020", which due to a number of circumstances, including those of an objective nature, was not implemented. The authors of the document did not refer to the term "DTPDTO", but the text of the Concept contains two references to the term "socially significant diseases" – in the description of objectives and expected results (thematic section "2. Health care development"). When specifying one of the key objectives of the sector development, namely "Improving the efficiency of the system of organization of medical care", the need to "develop the system of primary health care and increase the role of preventive treatment of persons at risk of socially significant diseases" is indicated. It is noted that the solution of the set tasks will eventually allow, among other things, "reducing by 1.5 times the incidence of socially significant diseases". If the first formulation, despite some nuances and possible clarifications, seems adequate, the second one causes significant problems of understanding and interpretation. Concretization of the result in reducing the incidence of SSD looks unreasonable, since this category combines 20 nosological units, diseases of a very different nature. If we assume that the value "1.5", according to the idea of the authors of the document, who put into the planned values of indicators such an impressive decline in morbidity, concerned the dynamics of only a number of diseases, it is not a reason to recognize such a simplification and generalization as acceptable. The calculation of arithmetic mean values of the morbidity indicator for this group, which, however, the authors of the document most likely did not mean, in general is not only uninformative, but also methodologically incorrect.

In the text of the current National Security Strategy of the Russian Federation, approved by Presidential Decree 400, dated July 2, 2021, the terms "SSD" and "DTPDTO" are not used at all. This cannot be explained solely by the specifics of the document itself, as it touches upon aspects outside the problems of international and geopolitical interaction between countries, relating exclusively to epidemiological security within the country. Within the framework of achieving the goals of state policy in the sphere of preserving the people of Russia and human development, the task of ensuring the sustainability of the health care system, its adaptation to new challenges and threats, including those related to the spread of infectious diseases, is defined. In general, the

task formulations contain only the categories of "occupational diseases" (mentioned once) and "infectious diseases" (mentioned four times, of which two are accompanied by the qualifying word "dangerous"), which are much less informative than the terms "SSD" and "DTPDTO" discussed here.

On the contrary, in the text of the "Unified Plan for Achieving the National Development Goals of the Russian Federation for the period up to 2024 and for the planning period up to 2030", we find the most specific sources of epidemiological threats – individual nosological units from the list of SSD (tuberculosis, hepatitis C, HIV infection). Accordingly, the corresponding morbidity indicators (item 1.2.3 "Ensuring the sustainability of the health care system and improving the safety of the population")[3] are among the indicators that allow identifying the factors for achieving the national development goal "Population preservation, health and well-being of people" at the federal level in terms of the indicator "Increasing life expectancy up to 78 years". It is worth noting that non-communicable socially significant diseases are present in item 1.2.1 "Reduction of mortality", but are not designated as such.

Achievement of planned values of indicators for selected infectious diseases, tuberculosis, hepatitis C, HIV infection, as well as indicators of mortality from socially significant non-communicable diseases of the cardiovascular system and neoplasms, is formalized by the state program "Health Development"[4]. At the same time, the indicators of regular medical check-up observation and treatment are fixed in the federal project "Combating Cardiovascular Diseases".

The situation is contradictory. The composition of the categories of "SSD" and "DTPDTO" is regulated, but they are referred to and used arbitrarily. There are no examples in the strategic documents of how to set the task of combating and preventing SSD and DTPDTO in a consistent manner: there would be an appropriate section where the authors of the documents would discuss the problems or formulate development objectives, based on the approved structure and classification of nosologies, albeit dividing them into infectious and non-infectious. In reality, the categories of "SSD" and "DTPDTO" can be either simply ignored, as we see in the National Security Strategy, or split into a number of nosological units, as in the case of the Unified Plan. Such an approach to categorization significantly reduces the informative value of the documents in these aspects and, moreover, the very informational value of the terms discussed.

The State Program "Health Development" begins with the actualization of a new epidemiological threat – COVID-19, included in the group of diseases that pose a danger to others, as well as listing the most important causes of mortality – diseases of the circulatory system and oncological diseases, which, let us recall, are classified as socially significant. In the text of the Program itself, the term "DTPDTO" is never mentioned, while the wording "socially significant diseases" is present in one fragment of the Program, where it refers to the success of the fight against infectious diseases, which is a separate but quite typical example of the general inconsistency in the use of the terms discussed, which is inherent in almost all relevant strategic documents in Russia. Let us examine the essence of our remarks to their authors. This fragment of the Program text raises the problem of the spread of infectious diseases, noting the high level of sensitivity of the authorities to these threats, which is expressed in the development of vaccines and prevention (specific nosologies are not

[3] On the national development goals of the Russian Federation for the period until 2030: Presidential Decree of the Russian Federation 474, dated July 21, 2020.

[4] On Approval of the State Program of the Russian Federation "Health Development": Government Resolution of the Russian Federation 1640, dated December 26, 2017.

mentioned). Then a sharp transition is made to the discussion of the group of interest "SSD" with the words "As for socially significant diseases, in 2022, the coverage of preventive medical examinations to detect tuberculosis continued to grow, it amounted to 74.2%". We can see how difficult it is here to understand which line of presentation is developing. Next, the main trends in the spread and control of HIV infection and chronic viral hepatitis C are consistently and briefly recorded. The other nosological units receive almost no attention. From the logic of the presentation it becomes clear that the fragment under discussion deals exclusively with infectious socially significant diseases, which is evidenced in no small measure by the reference to the appendix, which regulates the procedure for calculating subsidies for the provision of medical care to citizens of the target category. Thus, discussions of SSD are often reduced to mentioning a limited number of diseases, which, as we noted above, can be called typical examples of this group. This would be justified if such an approach were routinely and universally applied; but in reality, the category of SSD is referred to in a wide variety of descriptions, and a unified, albeit controversial, line of use of the basic terms has not emerged.

The analysis of the content of the socio-economic development strategies of Russian regions allowed identifying different variants of the use of the terms themselves and the contexts of their application. Admittedly, in most documents the categories of "SSD" and "DTPDTO" are neglected (as examples from a long series, let us cite the development strategies of the Tyumen, Yaroslavl, Orel and Kemerovo regions). It has become a popular practice to consider such socially significant non-communicable diseases as malignant neoplasms and cardiovascular diseases outside the SSD category, which in itself does not seem surprising. There are rare exceptions to this rule (we will discuss the example of the Samara Region development strategy below). The situation is different for tuberculosis. Despite the fact that there are examples of this nosological unit being mentioned outside the general system of SSDs and DTPDTOs, it is nevertheless firmly associated with this category.

In the Strategy for Socio-Economic Development of the Samara Region for the period until 2030 we find an example of frequent reference to the term "SSD", but analysis of the context of each of the variants shows how unsystematic it is[5]. One of them reveals a specification that is exceptional for the general and the above-mentioned practice: "... increasing measures to combat socially significant diseases, including oncological and cardiovascular diseases". In another fragment of the Strategy text the clarification is made in favor of other nosologies: "A significant problem of the region is the high level of spread of socially significant diseases, in particular HIV infection, tuberculosis and drug addiction". Further in the document there is an example of the use of the category "SSD", which actually crosses out the above specification on cancer and heart and vascular diseases: "The solution of the task to reduce mortality and improve public health includes: development of the system of prevention of diseases, especially cardiovascular diseases, neoplasms, socially significant diseases, prevention of their development factors". It turns out that in this case socially significant diseases are separated from their private examples.

As another example of non-systematic use of the category "SSD" let us consider the Strategy for Socio-Economic Development of the Vologda Region[6]. The term "SSD" is not mentioned in a number of key health problems, but in one of the

[5] Strategy for socio-economic development of the Samara Region for the period up to 2030. Approved by Samara Region Government Resolution 441, dated July 12, 2017.

[6] Strategy for Socio-Economic Development of the Vologda Region for the period up to 2030. Approved by Vologda Region Government Resolution 920, dated October 17, 2016.

paragraphs separate nosological units from the discussed categories of diseases are highlighted: "High risk of spread in the region of cancer, cardiovascular diseases, HIV infection, tuberculosis, drug addiction, alcoholism". In the tasks, the category "SSD" is specified directly, with examples of diseases and the use of the indefinite phrase "and others"[7]. A number of other tasks are focused on the prevention and treatment of specific groups of diseases from the discussed "SSD" category – cardiovascular and oncological diseases. First, it is the development and introduction of innovative methods of diagnostics, prevention and treatment, as well as the creation of the basis for personalized medicine, primarily for diseases of the circulatory system and oncological diseases. Second, increasing the volume of high-tech medical care in the region, including through the development of regional vascular and oncological centers. Reducing the prevalence of drug addiction diseases is singled out as a separate task: "Increasing the availability of medical care for drug addicts, including alcoholism patients, introduction of new methods of treatment for alcoholism patients, improving the quality of diagnostics". Thus, there is arbitrariness in the use of terms, first of all the category of "SSD", which have a composition fixed by the relevant decree. It should not be overlooked that the category "DTPDTO" is excluded from the relevant section of the Strategy.

The Strategy for Socio-Economic Development of the Komi Republic for the period up to 2035 states that the implementation of the priority area "Improving the efficiency and accessibility of specialized and high-tech medical care" provided "a significant reduction in the incidence of alcoholism and socially significant diseases and diseases that pose a danger to others"[8]. Regarding this wording we will make two important remarks. First: there is no reason to separate the disease "alcoholism" from the category "SSD", since it is part of it. Second: generalization of the success of the implementation of these measures for both categories, each of which combines a variety of nosological units, is groundless. However, the very fact of using the so often neglected term "DTPDTO" can only be welcomed. In the same document there is an attempt to clarify the content of the category "SSD", when as a measure to improve the efficiency and accessibility of specialized and high-tech medical care is fixed improvement of the organization of medical care for patients with socially significant diseases. Specific groups of diseases are indicated in parentheses: "circulatory systems, neoplasms, tuberculosis, HIV infection, diabetes mellitus, viral hepatitis, drug addiction disorders and others". Despite the important and uncommon for similar documents attempt to specify the composition of the SSD, and thus the directions of development, it looks extremely unconvincing in such a context. The fact is that specialized and high-tech medical care is provided in accordance with strict protocols and accompanying regulatory procedures, so generalizing such a broad category of diseases (solely on the basis of the fact that a disease is included in its composition) as a target category seems unreasonable.

There are cases of using terms outside their strict meaning, for example, the wording "the most socially significant diseases" (Strategy for Socio-Economic Development of the Pskov Region[9]). Here the word "most" indicates a broad and

[7] Here is the fragment under discussion: "Improving the effectiveness of prevention and control of socially significant diseases in the Vologda Region (HIV infection, viral hepatitis B and C, etc.)".

[8] Strategy for Socio-Economic Development of the Komi Republic up to 2035 (amended by Komi Republic Government Resolution 671, dated December 29, 2021 and Komi Republic Government Resolution 387, dated August 11, 2023).

[9] Strategy for Socio-Economic Development of the Pskov Region up to 2035. Approved by Pskov Region Administration Order 670-r, dated December 10, 2020.

evaluative context rather than a strict formalized basis of the term. Moreover, this is supported by the extremely widespread use of the term "socially significant" in the texts of strategies in relation to a variety of objects. Here are just a few of them: "socially significant initiatives", "socially significant projects", "socially significant events", "socially significant categories of population", "socially significant routes", "socially significant tasks" and "socially significant patriotic values", "socially significant food products", "socially significant institutions", etc. The use of such abbreviated terms as "social diseases" (found in the text of the Strategy for Socio-Economic Development of the Republic of Altai up to 2035) and "dangerous diseases" (in the text of the Strategy for Socio-Economic Development of the Republic of Adygea up to 2030) in a number of strategic documents at the level of a constituent entity of the Russian Federation makes it difficult to understand what nosologies we are talking about. This, in our opinion, played not the least role in turning the term "socially significant diseases" into a kind of cliché.

In general, the use of the categories of "SSD" and "DTPDTO" in strategic documents becomes uninformative and most often solves the problem of raising the general problem of population morbidity and prevention. The reasons for this are both the extremely full and complex composition of nosological groups, and the lack of a systematic approach to the interpretation of the discussed categories on the part of the authorities and representatives of the professional community. The extent to which this is a really urgent and, at the same time, difficult problem to solve, is shown by the experience of implementation in the period from 2006 to 2012 of a separate federal target program "Prevention and Control of Socially Significant Diseases (2007–2012)", adopted by RF Government Resolution dated May 10, 2007, the purpose of which was "to reduce morbidity, disability and mortality in socially significant diseases, to increase the duration and quality of life of people suffering from these diseases". The fact that the program included specific subprograms affecting activities on individual nosologies ("Diabetes mellitus", "Tuberculosis", "Oncology", "Sexually transmitted infections", "Viral hepatitis", "Arterial hypertension", "Mental disorders") does not cancel a number of questions regarding the reasons for the exclusion of a number of nosologies from the document and, on the contrary, the inclusion of diseases that do not formally belong to the "SSD" category.

Conclusion

The categories of "socially significant diseases" and "diseases that pose a danger to others" are of interest not only from the perspective of analyzing the epidemiological situation in the country, but also in the context of monitoring assessment of the quality of public administration. This is due to the fact that the prevalence of key socially significant diseases serves as a reliable sign of social disadvantage, including low living standards, poor nutrition, harsh living conditions (tuberculosis), or, on the contrary, the spread of the disease is the basis for predicting high demographic and, in general, economic losses. It is no coincidence that the tasks of prevention of socially significant diseases are reflected in the National Security Strategy of the Russian Federation. At the same time, it is impossible not to detect related problems of both methodological and instrumental nature. The analysis of socio-economic development strategies adopted at the level of constituent entities of the Russian Federation clearly demonstrates the difficulties of operating with the normatively fixed terms "SSD and DTPDTO" when actualizing the problems and developing measures to detect, prevent and control diseases from the official lists. The range of diseases under discussion is quite broad, but, most importantly, extremely diverse

and heterogeneous. It includes both infectious (tuberculosis, HIV, hepatitis, STDs) and non-infectious (mental disorders) diseases, which implies a fundamental difference in the choice of strategies to prevent and control the spread of these diseases); diseases that cause a high risk of mortality (malignant diseases, diseases characterized by high blood pressure); and diseases whose negative consequence is not so much mortality as disability and reduction in the quality of life (diabetes mellitus) or temporary, but, due to the pandemic nature of the spread, widespread temporary disability of the country's citizens (COVID-19), current diseases (hepatitis) and those that have been practically defeated today (plague). On the one hand, the category of "SSD and DTPDTO" has strict normative support, it is included in the system of state obligations and social guarantees declared by the government (provision of benefits, restrictions on employment or service in the armed forces, etc.). On the other hand, in the practice of public administration, both at the sectoral and territorial levels, and strategic planning, there are serious problems with the application of the categories of "SSD" and "DTPDTO", especially in setting development objectives and formulating measures for their development and implementation. The problem is complicated by the fact that diseases from this group differ significantly from each other in the severity of the epidemiological situation and the effectiveness of resistance to their spread. For example, the morbidity of one nosological unit shows an upward trend; while with regard to the prevalence among the Russian population of another nosological unit, we can observe a significant decline, which in itself excludes the expediency of their generalization for the actualization of scientific and applied research and implementation of measures to counteract their spread. Examples of such dichotomy in the dynamics of morbidity indicators of SSD and DTPDTO are given and described in this article. All of the above is due to the discrete and sporadic nature of the use of the category of "SSD and DTPDTO" itself. Most often there is a fragmentation into nosological units, which, if not devalues the category itself, then reduces its analytical value in the context of strategic planning and implementation of government programs.

Based on the above arguments, a conclusion should be made about the need for a more thoughtful and consistent application of the categories in strategic planning documents for socio-economic development of Russia and its regions. We are not talking about the exclusion of the category "SSD and DTPDTO" from analytical summaries and strategic documents. On the contrary, socially significant diseases and diseases that pose a danger to others are best suited for this purpose. They should be used responsibly. For example, when referring to the SSD category, accompanying methodological comments and clarifications should be provided, primarily on which specific nosologies are meant. The best solution would be to devote separate sections to these groups of diseases, in which it would be appropriate to update the issues by category (e.g. infectious and non-infectious diseases with further specification by nosological units) and further detail the assessment, formulation of objectives and, most importantly, specific activities and their expected outcomes.

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Received February 20, 2024.

DOI: 10.15838/esc.2024.2.92.11
UDC 331.5, LBC 65.24

Platform Employment Specifics in Russia: What the Data of Workers' Online Profiles Indicate

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Abstract. The article discusses platform employment issues and aims to systematize and provide an overview of current knowledge about the state and structure of platform employment in Russia. It also aims to assess the position and status of platform workers based on previously published research, new official statistical data, and the results of our own empirical research using data from the digital platform Profi.ru for Moscow and the Moscow region as of 2023. To achieve this goal, the following tasks were addressed: systematizing available estimates of the platform labor market in Russia, analyzing the primary statistical data from Rosstat on platform employment, and creating a profile of a typical Russian employed person in this segment. Approaches to studying employment on digital platforms were also tested by downloading open data on platform workers directly from the platforms' websites in order to enrich statistical data and gain a better understanding of platform employment specifics. We conclude that the

For citation: Baimurzina G.R., Chernykh E.A. (2024). Platform employment specifics in Russia: What the data of workers' online profiles indicate. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 202–219. DOI: 10.15838/esc.2024.2.92.11

platform employment structure is institutionalized within social practices and is gradually approaching the general employment structure in terms of basic socio-demographic characteristics. However, it still has its own unique features. For example, the average age of platform workers is lower than that of the overall employed population. Platform workers are predominantly male and urban residents. At the same time, platforms, particularly those providing physical services on a local level, are characterized by a predominance of traditionally vulnerable groups in the labor market, such as women aged 20-29 and 30-39 with young children, students, and young people without work experience. Migrants and individuals without professional qualifications are also overrepresented among platform workers. Data from the Profi.ru website indicates that these workers are mainly employed in the informal economy. More than 10% of the profiles on the platform in question are "false", that is, they belong to organizations, teams, or groups of performers (formal or informal) rather than individuals.

Key words: digital labor platforms, platform employment, platform worker, portrait of a platform worker, platform employment risks.

Acknowledgment

The article was prepared with support from the Russian Science Foundation, project 23-18-00775 "Informal employment in Russia's regions: social risks and opportunities".

Introduction

Platform employment in Russia emerged as a result of the rapid development of the digital economy and technology, as well as changes in consumption and production patterns (Abdrakhmanova et al., 2023). It has become popular due to the fact that it provides flexible employment opportunities and access to additional earnings (Brancati et al., 2019). In addition, platforms effectively synchronize the demand and supply of services, which is attractive to businesses and consumers (De Stefano et al., 2021; Berg et al., 2018). At the same time, platform work is changing the perception of the role of labor (turning labor into a commodity) (Aloisi et al., 2023; Kullman, 2021) and has several features related to algorithmic control (Piasna, 2023).

The history of the development of digital labor and platform employment in Russia is believed to begin in the mid-2000s, when platforms related to freelancing appeared on the Russian market[1]. Further growth of platform employment was associated with the development of online stores, commercial platforms (Avito.ru, AliExpress, etc.), and cab services (Yandex, Uber, Gett, etc.).

Due to digitalization in Russia, the platform employment development in terms of information technology and the platforms themselves is one of the most successful examples in the world: the contribution of digital platforms to the country's GDP ranges from 2 to 5%[2]. Russia is considered to be one of the most advanced countries in regulating remote employment (provisions for which were introduced into the Russian Labor Code back in

[1] The path at the age of 16. How freelancing developed in Russia. *FL.ru*. Available at: https://www.fl.ru/freelance-history/ (accessed: December 5, 2023).

[2] Digital Transformation of the Labor Market: Platform Employment in Russia. *Garant*. Available at: https://www.garant.ru/news/1631366/#:~:text=%D0%92%20%D0%A0%D0%BE%D1%81%D1%81%D0%B8%D0%B8%20%D0%BF%D0%BB%D0%B0%D1%82%D1%84%D0%BE%D1%80%D0%BC%D0%B5%D0%BD%D0%BD%D0%B0%D1%8F%20%D0%B7%D0%B0%D0%BD%D1%8F%D1%82%D0%BE%D1%81%D1%82%D1%8C%20%D0%BE%D1%82%D0%B4%D0%B5%D0%BB%D1%8C%D0%BD%D0%BE,%D0%BF%D1%80%D0%B8%D0%BD%D1%8F%D1%82%20%D0%B7%D0%B0%D0%BA%D0%BE%D0%BD%D0%BE%D0%BF%D1%80%D0%BE%D0%B5%D0%BA%D1%82%20%E2%84%96%20275599%2D8 (accessed: February 5, 2024).

2013). However, labor and social security guarantees and standards, liability of the parties for failure to fulfill contractual obligations, etc., as well as tax control are still more often left out of regulation (Bobkov, Chernykh, 2020; Chernykh, 2020; Aloisi, 2022).

It is important to know the scale and key features of the development of the new segment of the labor market for effective regulation of platform employment. Significant steps have been made in this direction. Special questions have been introduced in the Rosstat sample labor force survey program since 2022, which make it possible to assess the approximate scale and structure of those employed in the platform economy by gender, type of settlement, level of education, and nature of employment (main or additional). At the same time, many parameters of employment quality (income level, labor safety, social security, job satisfaction, etc.), data on the share of migrants among platform workers, employment status (dependent/independent; formal/informal) are not yet available.

Discussions on the legalizing role of labor platforms and the relationship between formal and informal employment of platform workers remain relevant (Daugareilh et al., 2019).

Academic studies and projects by international organizations[3] (see, for example, Sinyavskaya et al., 2021; De Stefano et al., 2021; Berg et al., 2018; Hauben et al., 2020; Abraham et al., 2019; Daugareilh et al, 2019) note that digital work platforms (DWPs) may expand precarization because work on them is characterized by the absence of labor standards and social protection mechanisms and takes place outside the formal legal framework (in the work (Aloisi et al., 2023), this property of platforms is referred to as the "pandemic of precariousness"). There is an alternative view (Strebkov, Shevchuk, 2022; Shevchuk, 2023; Piasna et al., 2022; Weber et al., 2021) that DWP contribute to the reduction of informal employment by offering procedures, standards and rules through algorithmic control and management. It is worth noting that formalizing employment relations through DWP does not necessarily mean withdrawing workers from the shadow sector and including them in statistical reporting and taxation ("platforming informality")[4].

Assessment of the scale of platform employment in Russia is difficult due to a number of reasons: there are no complete and reliable official statistical data, platform workers may have different employment status. Information on the volume, structure and main qualitative characteristics of platform employment can be obtained indirectly, for example, by conducting sample surveys or polls, as well as by assessing particular components of the platform workers' category. Household surveys, administrative data or big data can serve as a complement, with each source having its own advantages and disadvantages. The choice of method for estimating the volume and dimensions of platform employment depends on research objectives and available resources of statistical agencies or researchers[5].

The structure remains unclear and the variety of forms and types of platform employment is not described, despite the existence of a number of works devoted to the classification and typolo-

[3] European Parliament (2017). The Social Protection of Workers in the Platform Economy. *Study for the EMPL Committee*. IP/A/EMPL/ 2016-11. Available at: http:// www.europarl.europa.eu/supporting-analyses

[4] Shevchuk A.V. (2023). The Role of Digital Labor Platforms in Employment Transformation: An Economic and Sociological Analysis: *Doctor of Sciences (Sociology) thesis* 22.00.03. Moscow: NIU VSHE. Available at: https://www.hse.ru/data/2023/10/11/2063291963/Резюме_Д_Шевчук_09.10.23_fin.pdf (accessed: March 7, 2024).

[5] Handbook on Measuring Digital Platform Employment and Work. *OECD*. Available at: https://www.oecd-ilibrary.org/sites/8ab9e151-en/index.html?itemId=/content/component/8ab9e151-en (accessed: December 15, 2023).

gization of this type of employment (for instance, Howcroft, Bergvall-Kåreborn, 2019). There is no single definition of platform employment in the literature. According to the OECD, platform workers are defined as those employed who use an app or website to find customers, wanting to provide a service (rather than goods) for money[6]. At the same time, it is known that the key categories of workers on platforms are self-employed, private entrepreneurs, individuals performing work on the basis of civil law contracts, service performers for whom platform employment is not the main employment, as well as people who are not classified as employed by official statistics (Chernykh, 2021). According to Strategy Partners research (online survey), 89% of *self-employed* respondents said that their work is based to some extent on the use of online services and platforms[7]. The number of self-employed (which is a category that overlaps with, but is not numerically equal to, platform workers) exceeded 9 million in 2023, with 7,500 people becoming self-employed every day[8]. Experts caution that these data cannot be the basis for estimating the size of the platform economy in Russia, as only a small number of platform workers are registered as self-employed or private entrepreneurs. Many self-employed people work with the help of their established customer base or seek new ones through personal connections (Sinyavskaya et al., 2021; Sinyavskaya et al., 2022).

The aim of our research is to systematize and characterize the current knowledge about the state and structure of platform employment in Russia, to assess the position and status of platform employment on the basis of previously published works, new data from official statistics, as well as the results of an empirical study of data from the digital platform Profi.ru. We consistently solve the following tasks to achieve the aim:

– to systematize available estimates of the platform labor market in Russia;

– to analyze Rosstat's first statistical data on platform employment and forming a profile of a Russian employed in this segment;

– to approve approaches to studying employment on digital platforms by parsing (downloading) open data on performers (platform workers) directly from the sites of digital platforms, to enrich statistical data and obtain new knowledge about the features of platform employment.

The practical and theoretical value of our work lies in the fact that it contributes to the confirmation of existing hypotheses and the formation of new ideas about platform employment. The scientific novelty of the study consists in the use of big data (information from Profi.ru digital platform workers' profiles) and comparing them with the data of official statistics and other surveys, as well as in the application of our methodology for recovering data on the age and education level of workers. We expand the understanding of platform workers as a result of the structuring of data on Profi.ru platform workers by service areas, types of employment (online and offline; requiring or not requiring high qualifications).

Research methodology

The paper systematizes and compares secondary data previously obtained by other researchers with the new Labor Force Survey (LFS) data obtained by Rosstat as a result of the introduction of questions on platform employment in 2022. Despite the high level of reliability of the LFS results, we should note that the obtained scale of platform employment is still difficult to assess as accurate due to the

[6] OECD (2019). Measuring Platform Mediated Workers. *Digital Economy Papers*. April 2019. No 282. Paris: OECD Publishing.

[7] Strategy Partners' study "Self-Employment. Entrepreneurship and stable partnership with platforms". *Garant*. Available at: https://www.garant.ru/files/6/6/1631366/samozanyatost_predprinimatelstvo_i_stabilnoe_partnerstvo_s_platformami.pdf (accessed: October 5, 2023).

[8] Number of self-employed has reached 9 million people. *Nalog.gov.* Available at: https://www.nalog.gov.ru/rn77/news/activities_fts/14056407/ (accessed: March 20, 2024).

volatility of quarterly data (for example, aggregated data on the education level of platform workers differ significantly by quarter). At the same time, these data served as a reference point and a basis for interpreting the results of the pilot empirical study based on the collection and analysis of open data from an Internet source using methods applied to big data: downloading, parsing, extraction and structuring, textual analysis, formation of a dataset for analysis using sociological methods.

The basis for the empirical study is data from the Profi.ru platform, a service for searching for specialists. The Profi.ru digital platform is one of the most popular, widespread throughout Russia, covering a variety of activities and services: those requiring and those not requiring high qualifications and the physical presence of the performer in a particular place.

We analyzed random 1,000 profiles from about 460 thousand downloaded html-pages with characteristics of specialists working in Moscow and the Moscow Region (we considered it as one region). These territories account for almost half of all registered performers on the platform. As of January 2024, the regions (sections) with the largest number of performers also included Saint Petersburg (128.8 thousand), Krasnodar and the Krasnodar Territory (30.8 thousand); Yekaterinburg and the Sverdlovsk Region (24.6 thousand); Novosibirsk and the Novosibirsk Region (20.6 thousand); Kazan and the Republic of Tatarstan (18.7 thousand); Rostov on Done and the Rostov Region (15.8 thousand); Nizhny Novgorod and the Nizhny Novgorod Region (14.6 thousand); Samara and the Samara Region (11.1 thousand); Krasnoyarsk and the Krasnoyarsk Territory (10.7 thousand); Voronezh and the Voronezh Region (10.4 thousand); Chelyabinsk and the Chelyabinsk Region (10.3 thousand); Ufa and the Republic of Bashkortostan (10.1 thousand). Each of the other regions has less than 10,000 registered performers.

The data was collected during 2023 by downloading data from the profiles of performers registered on the platform. First, the sitemap.xml of a certain section of the site was downloaded (formed by region), in our case – for Moscow and the Moscow Region. A list of links to profiles is formed from the sitemap, and then the process of downloading profiles from the list is started.

Data were extracted from the received html files and converted into linked tables in csv format using a specially written program in Python programming language. The tables contain the following structured data about the performer: unique identifier of the performer, gender, region of work performance, types of services, cost per unit of services, information about education, work experience, achievements, rating, feedback on the performer (not more than 10 pieces – site limitation), business card (text about yourself), date of last presence on the site and other characteristics that are available in the downloaded html-page. As a result of multi-stage processing of random 1,000 profiles and preparation of data for analysis, 902 performers remained in the sample. Profiles pertaining to an organization rather than an individual performer; those with very little data were excluded from analysis.

Platform employment in Russia: estimates by researchers and Rosstat

According to Rosstat estimates, 3.502 million people will work on platforms in 2022 and 3.415 million in 2023, i.e. approximately 4.6% of the total number of working citizens. In different quarters of 2022–2023, the share of platform employment in total employment ranged between 4.5–7%. For 95–96% of platform employment is the main job[9].

Based on earlier calculations, the number of platform workers in Russia ranges from 7 to 10

[9] Results of the sample labor force survey. *Rosstat*. Available at: https://rosstat.gov.ru/compendium/document/13265 (accessed: November 25, 2023).

million people (Sinyavskaya et al., 2022) and even reaches 15.5 million people, 3.5 million of whom earn income through digital labor platforms on a regular basis, and for 1.7 million the income from this activity is the main[10].

The Institute for Social Policy estimates (a sample of 12,000 people aged 18–72, based on VCIOM's probability online panel by self-completion) that 14.7% of Russians aged 18–72 have experience of platform employment in April 2022, including 11.6% in the format of occasional part-time work, 1.6% in the format of regular part-time work in addition to their main job, and 1.6% were employed on DWP as their main job. Among the employed, the share of those who indicate employment on platforms as their main job is 2.4% (Sinyavskaya et al., 2022).

According to a study by the Center for Strategic Developments 2022 (based on a quota sample), 62% of Russian platform workers are men, for whom platforms are the main source of income. As in other countries, platform employment in Russia is more popular among young people: the average age of platform workers is 31. For more than 85% of platform workers, platform work is the main source of income, and almost 70% of workers receive tips. In addition, Russia has a relatively high share of foreign platform workers (32%)[11].

Freelancers are a separate category of platform workers (but also not identical to them). Freelancers are engaged in skilled labor and perform tasks remotely, using online platforms (in ILO terminology, these are crowdwork platforms – platforms of mass work on which many performers can perform tasks for large organizations and private customers[12]. The largest platforms for freelancers in Russia are considered to be FL.ru (more than 6.3 million users (Strebkov, Shevchuk, 2022)), Kwork.ru, Freelance.ru, Advego.com (3 million users) and Etxt.ru (about 1.5 million users), bringing together more than 14 million accounts in total. However, it is important to realize that the number of accounts does not mean the number of service providers. For a very rough estimate, this figure can be divided in half, as there can be both customers and performers (platform workers) among them.

There are platforms for finding specialists in various fields (not only for freelancers), including YouDo (3.5 million performers13), Profi.ru (2.6 million performers14), a special section of Avito (2.8 million performers) and other smaller platforms, which together employ about 9 million people. And taking into account courier services, food delivery and transportation (cabs) working with the help of aggregators, the total number of people employed through platforms may exceed 16 million. However, if we take into account that platform workers can be simultaneously registered on several platforms, we tend to believe that 15–16 million people is the upper limit of the approximate scale of platform employment in Russia. The lower limit is 3.5 million (according to Rosstat).

The research (Chernykh, 2021) notes that Russian platform workers are younger and more educated compared to average wage earners, and platforms have a gender shift toward men. However, the current dissertation study by A.V. Shevchuk makes the following conclusion: due to the fact

[10] Digital transformation of the labor market: Platform employment in Russia. *Garant*. Available at: https://www.garant.ru/news/1631366/ (accessed: October 5, 2023).

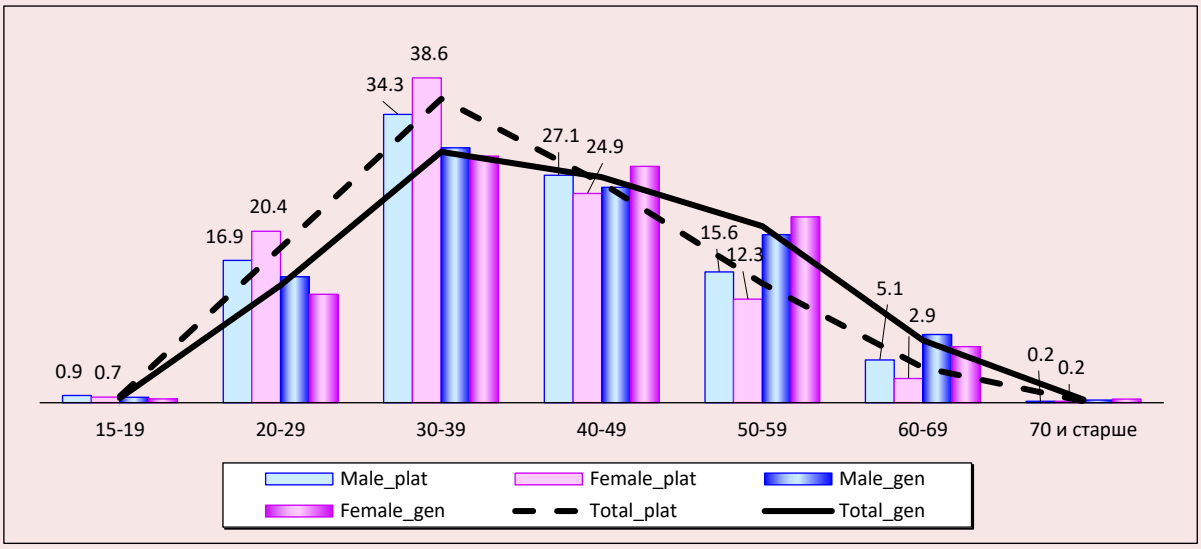
[11] Platform employment: Challenges and possible solutions. *CSR*. Available at: https://www.csr.ru/upload/iblock/6ca/krk89ha0yxx3ystja243obvc7ly8bntv.pdf (accessed: October 5, 2023).

[12] The second type of platforms are location-based platforms (local platforms) – delivery services, cab services, face-to-face services, distribute work to workers in a specific geographical area. Perspectives on Employment and Social Protection in the World: The Role of Digital Labor Platforms in Transforming the World of Work (2021). Technical Support Unit on Decent Work and the ILO Office for Eastern Europe and Central Asia. Moscow: ILO.

[13] YouDo. Available at: https://youdo.com/about (accessed: March 15, 2024).

[14] Profi.ru. Available at: https://profi.ru/about/ (accessed: February 15, 2024).

Figure 1. Structure of platform employment and overall employment at the main job by age group and gender, %



Source: own compilation based on data from the Population Survey on Employment Problems, Rosstat, 2023.

that platform employment is spreading more widely, the socio-demographic characteristics of platform workers are becoming less specific, and the gender bias is gradually leveling off. At the same time, the employment forms and labor strategies chosen by platform workers are linked to the so-called "value profiles" of the workers[15]. In other words, platform workers seek to find a job that is consistent with their perceptions of their values and desired lifestyle.

We made calculations based on Rosstat data for 2022–2023 to build a profile of a modern Russian platform worker.

The available data show that the structure of platform employment is indeed slightly skewed toward younger ages (*Fig. 1*). We should note that among platform workers in the age groups 20–29 and 30–39, the share of women is higher than that of men. One of the explanations for this fact may be that women at the age of 30–39 are often on maternity leave or are actively involved in the upbringing of minor children, and platform work (if it is carried out remotely) allows combining this with employment in the presence of high self-organization and necessary home conditions. The share of platform workers in the middle age group (40–49 years old) is about the same as in the whole sample of employed people, while it is smaller in older age groups. The latter suggests that at older ages, workers favor traditional employment forms and/or lack the necessary (digital) skills for platform work. Thus, the earlier conclusions (Chernykh, 2021) that the average age of a platform worker is lower than that of an average employed person are confirmed.

Rosstat data do not contradict other studies. In particular, in (Sinyavskaya et al., 2022), youth participation in platform employment on an episodic basis, as a part-time job, is estimated at 27.2% among 18–24 years old and 25.7% among 25–34 years old; on a regular basis, including as a main job, at 9.1 and 12.3%, respectively. The 25–

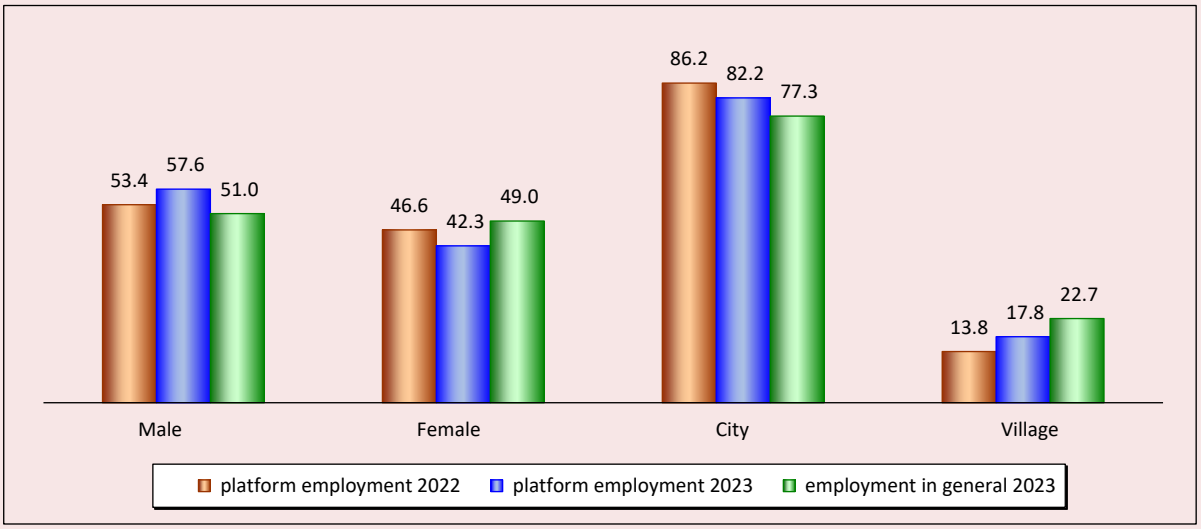
[15] Shevchuk A.V. (2023). The role of digital labor platforms in employment transformation: Economic and sociological analysis: Doctor of Sciences (Sociology) thesis 22.00.03. Moscow: NIU VShE. HSE.ru. Available at: https://www.hse.ru/data/2023/10/11/2063291963/Резюме_Д_Шевчук_09.10.23_fin.pdf (accessed: March 7, 2024).

34 year old group makes the largest contribution to both occasional and regular employment in DWP.

The calculations prove (*Fig. 2*) that among platform workers in general men predominate (53–57%). Platform workers are also more often represented among city residents (82–86%).

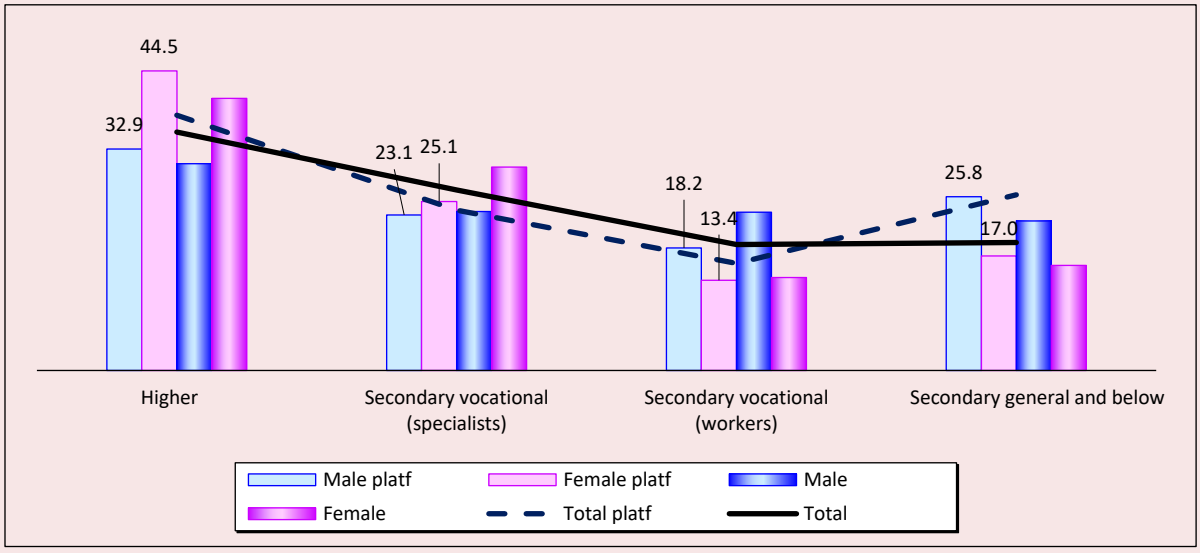
At first sight, the structure of platform employment by education level does not differ much from the overall employment structure. Both segments have almost identical shares and gender ratios of workers with higher education; women have a higher share of holders of higher education than men (*Fig. 3*).

Figure 2. Structure of platform employment and overall employment in the main job by gender and place of residence, %



Source: own compilation based on data from the Labor Force Survey, Rosstat, 2022, 2023.

Figure 3. Structure of platform employment and overall employment by gender and education level, 2023, %



Source: own compilation based on data from the Labor Force Survey, Rosstat, 2023.

However, the platform segment has a noticeably higher share of persons with no professional education – 26.1% in 2023, while in the total employment structure their share was 19.0%. In our opinion, this is due to the fact that platforms provide ample employment opportunities (often informal) for people without professional education as couriers, cab drivers, domestic staff, handypersons, etc. Statistics, thus, objectively reflects the existence of segmented labor markets of specialists and executors of orders depending on the skill level.

In general, the structure of platform employment does resemble the general structure of employment and perhaps aspires to it, but still has its own features. The dynamics of changes in this structure is an interesting object for further analysis.

A separate issue for further study is platform employment of labor migrants in Russia. This category requires additional research, but the leading motive for choosing employment for these workers is obviously the opportunity to earn income. After the coronavirus pandemic, the delivery sector (courier work), which previously employed mostly migrants, began to actively "pull" labor resources (also predominantly represented by migrants) from the housing and utilities sector[16].

Features of employment on Profi.ru platform

Employment platform Profi.ru is one of the popular sites for remote workers (freelancers) and offline self-employed people looking for work via the Internet, its history dates back to 2005 (the site started as a service "Your Tutor"). Currently, the platform helps to quickly connect supply and demand for a variety of services throughout Russia, as well as Kazakhstan and Belarus. Job seekers register for free on the site, fill out special forms, choose the categories of services they can offer, and pay a small commission in case of a successful transaction. In total, 2.6 million performers are registered on the site, as of March 1, 2024.

Table 1 presents a description of the categories of services offered by specialists (executors) on the Profi.ru service. The table shows that some of the

Table 1. Main categories and types of services on Profi.ru platform

Category	Types of services
Repair	Minor repairs, plumbing, heating, electrical work, drywall, complex repair, ceilings, floors, construction, interior design, planning and design, estimation work, engineers, drafting, furniture assembly, furniture manufacturing, painting and plastering, painting walls, wallpapering, application of liquid wallpaper, windows, tilers, doors, installation/dismantling of air conditioners, high-rise works.
Artists	Singers, presenters, event management, catering, shows, live statues, children's shows, theater performances, painting, artists, embroidery and decorating, art painting, handicraft training, music, musical groups, DJs, instrumentalists, florists, event decor, hall decoration, photo zone, wedding bouquets, artists, portraitists, landscapers
Beauty	Massage, cosmetology, eyelash extensions, hair extensions, lamination, manicure, pedicure, makeup, tattooing, facial cleansing, piercing, tattoos, styling, haircuts, coloring, hair removal
Household staff	Housekeepers, drivers, cleaning, dog walking, cooking, sober driver
Photography, videography	Photographer, exit photo shoot, children's, wedding, romantic, corporate photography, photo processing, portfolio, videographers, photo processing, video editing, inscriptions on the photo, video training, portrait photography, photo shoot in the studio

[16] The gig economy: why janitors go into couriers. *RBC*. Available at: https://www.rbc.ru/economics/13/01/2024/659fe8be9a79472b662bab51 (accessed: March 7, 2024).

End of Table 1

Category	Types of services
Pet services	Canine training, service dog training, "controlled city dog", dog behavior correction, puppy training, pet boarding, veterinary care, pet cabs
Driving instructors	Driving (automatic transmission), driving (manual transmission), recovery of lost skills, driving, parking, preparation for the exam in the traffic police, lessons at the site, practicing the exam route, driving in the city
Other	Couriers, handymen, trucking, moving, waiters, knitting
Sport	General physical training, soccer, yoga, hatha yoga, kundalini yoga, fitness yoga, jiu-jitsu, kendo, kobudo, self-defense, fencing, fitness, bodybuilding, powerlifting, hockey, boxing, physical therapy, tennis, stretching, children's gymnastics, judo, sambo, kickboxing, freestyle wrestling, stretching, rhythmic gymnastics, children's gymnastics, aerobic training, Latin American dances, sports dances, figure skating, body shaping, strength training, functional training, nutrition counseling, choreography, wedding dances, bodyflex, pilates
Tutors	Basic state examination, Unified National Examination, Russian, English, French, Spanish, Chinese, math, physics, music, school preparation, drawing
IT-freelancers	Layout designers, design project visualization, web page layout, programming, DBMS, computer literacy, programming languages, transcribing, SEO, marketing, software installation/configuration, computer repair, windows installation and configuration, designers, logo development, graphic design, corporate identity development, computer repair, copywriters, editors, contextual advertising, typesetting, word processing, internet marketing
Accountants, lawyers	Lawyers, drafting of statements of claim, representation in court, drafting of documents, enforcement proceedings, accountants, tax consultants, submission of accounts, accounting and tax accounting in full, preparation of declarations

Note: cells with predominantly remote work format are grayed out.
Source: own compilation based on the data of employee profiles from Profi.ru website.

services can be provided remotely (categories of tutoring, accounting and legal services, IT, advice on proper nutrition, fitness, etc.); some of them only offline, as they require the physical presence of a specialist in a particular place. On the platform, both highly qualified specialists and performers without professional education con be found.

According to the data of our uploaded dataset from Profi.ru for Moscow and the Moscow Region (902 people), the longest work experience on this platform is observed among tutors, show business representatives and photographers, the shortest – among IT freelancers, accountants and lawyers (*Tab. 2*). In the sample as a whole, the average period of work on the platform is 3.9 years, i.e. almost 4 years. One fifth of the performers' profiles were registered on the site more than 5 years ago. It is worth noting that there are no such profiles at all in the categories of performers "other" and "driving instructors". People consider these types of work rather as temporary part-time jobs or leave the site after gaining their client base.

Modern methods of big data analysis and machine learning make it possible to study a large number of text documents (including websites, forums) using statistical and graphical methods; to assess the popularity (or acuteness) of phenomena or concepts in the media, scientific literature and social networks; to identify attitudes toward them through the assessment of the tone of texts; to identify the main themes, norms and values associated with the phenomena under consideration. *Figure 4* shows a "word cloud" of all types of services provided on the Profi.ru platform by a random sample of

Table 2. Features of a random subsample of Profi.ru (Moscow, Moscow Region)

Category	Total in the sample, people	Share in the sample, %	Female share, %	Average duration of work on the platform, years	Share of employees working for more than 5 years, %
Repair	244	27.1	5.7	3.3	18.0
Tutors	239	26.5	74.5	4.8	33.0
Beauty	109	12.1	86.2	4.4	16.0
Household staff	71	7.9	64.8	3	11.0
IT-freelancers	60	6.7	38.3	2.5	8.0
Other	42	4.7	21.4	3.4	0.0
Artists	40	4.4	35.0	5.4	40.0
Sport	34	3.8	50.0	4.2	30.0
Photography, videography	28	3.1	42.8	4.7	29.0
Accountants, lawyers	25	2.8	64.0	2.7	13.0
Pet services	6	0.7	83.3	4	29.0
Driving instructors	4	0.4	25.0	3	0.0
Total (average)	**902**	**100**	**47.6**	**3.89**	**21.20**
Source: own research data.					

Figure 4. Word cloud on services provided on Profi.ru platform in Moscow and the Moscow Region

Source: own compilation based on the data of employee profiles from the Profi.ru website.

performers working in Moscow and the Moscow Region, built using the Python programming language[17]. "Word cloud" is an image composed on the basis of text. Different size and color depend on the frequency of occurrence of the word in the text. Thus, it is possible to evaluate the variety of services at a glance. It can be seen that the most frequently offered services are repair and related services, help in learning languages and in preparing for the Unified national exam, massage, design services, etc. These words are obviously grouping words for more specific types of services written in small letters.

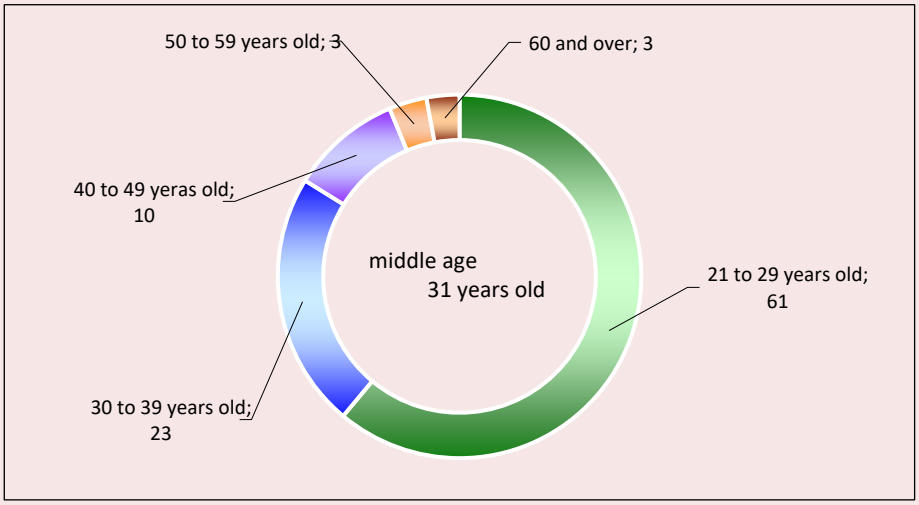
In the course of the analysis, we identified several unusual services offered by platform workers, such as "interlocutor for an hour" and "pet cab". An interesting trend is when one worker offers services in several spheres at once – for example, as a tutor, an au pair and an online promotion specialist (about 5–7%).

The gender composition of employees in our sample is balanced – 47.6% of all platform workers are women. However, in the context of occupational groups of occupations, there is gender inequality in a number of occupations and a clear division of employment spheres into "male" and "female". For example, among tutors and beauty workers (manicure, hairdressing, cosmetology) women prevail (74.5 and 86.2% respectively). A similar gender shift in favor of women is observed in the sphere of household staff, mainly represented by cleaners, cooks and nannies. Among them, 64.8% are women. Men in this platform mainly work as drivers or security guards. Women prevail among representatives of accounting and legal services (64%), as well as among those working with pets (83.3%).

The feature of collecting (extracting, filling in) data from the Profi.ru website is that the identification of some information about performers requires logical analysis of texts and special calculations, for example, about the level of education, age, price for certain types of services. For instance, in the absence of direct markers of age, we used algorithms to calculate the minimum age of the performer by identifying the year of the beginning of the career. For example, if information was available on the year of enrollment in a higher professional education institution, 4 years were added to it. Next, the minimum age of the performer was calculated based on the assumption of the average age of career start, which is 22 years. In the absence of data on education, data on the length of service on the platform could be used: assuming a possible start of a career on the platform at the age of 20 (after secondary vocational education or after the army), 20 years were subtracted from the current year, as well as the number of years of work on the platform, resulting in the minimum age of the performer. Thus, we obtained an approximate estimate of the average age of a platform worker on the Profi.ru service – 31 years (*Fig. 5*). According to Rosstat, the approximate average age of platform workers in their main job is much higher – 39.5 years (men – 40.4 years, women – 38.2 years). It should be borne in mind that Rosstat takes

[17] Visualization of the results of text processing in the form of a word cloud is preceded by text handling procedures: division into tokens, i.e. elementary units of text – sentences, word combinations or separate words (tokenization); reduction of words to their initial morphological form with the help of the dictionary and language grammar (lemmatization); reduction of the dictionary, i.e. removal of stop words (particles, conjunctions, prepositions, pronouns, interjections, digits and introductory words that do not carry a meaningful load). i.e. removing stop words (particles, conjunctions, prepositions, pronouns, interjections, numbers and introductory words that do not carry a semantic load), cleaning the text from punctuation marks, too frequent and superfluous words, specific and rare words; "normalization" of words by discarding endings and switching to stems, i.e. grammatical forms of words (stemming).

Figure 5. Distribution of performers employed on Profi.ru platform in Moscow and the Moscow Region, by age, %



Source: own compilation on the basis of data from the Profi.ru website for Moscow and the Moscow Region.

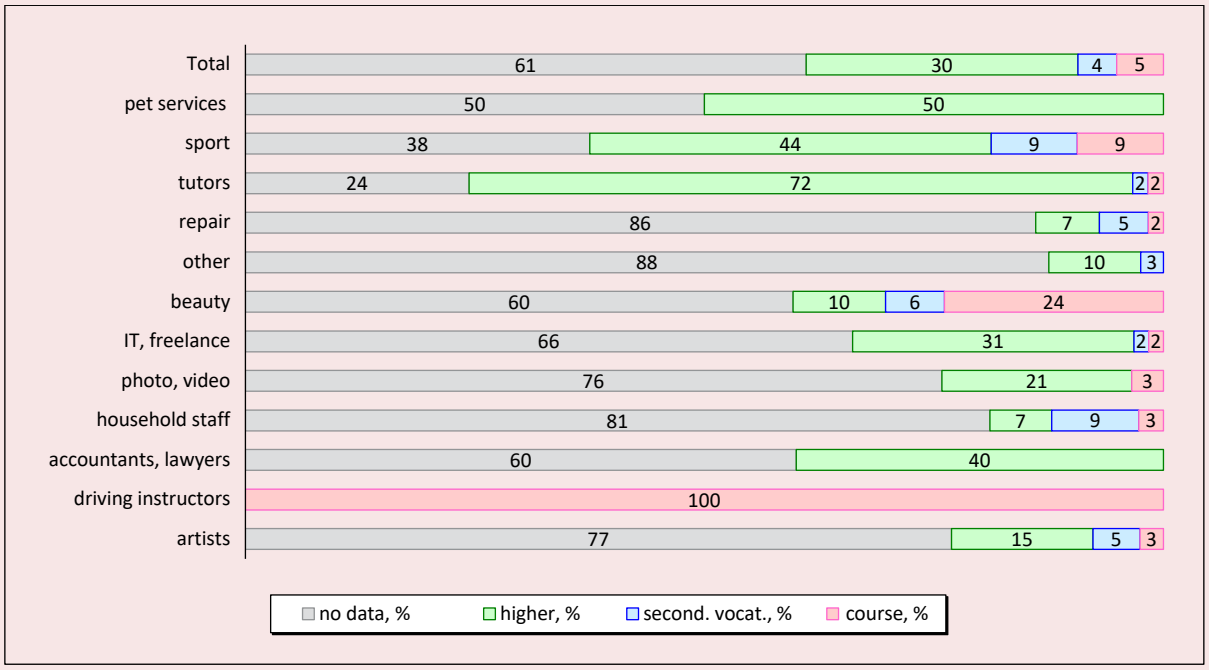
into account all types of employment through various platforms, including courier services and transportation (cabs). Profi.ru has no such services. The presence of younger respondents of performers on Profi.ru can also be explained by the demand for Unified national exam preparation services, which are often provided by students. The platform also provides opportunities for more or less permanent or one-time part-time work for the period of study, and for finding a permanent job.

The paper analyzed information about the performer, and achievements to obtain information on the level of education, various text fields describing education. However, only 351 people out of 902 performers (39%) could be identified as having a minimum education level. This is partly due to the fact that performers do not always consider it important to specify this information, especially if the work does not require confirmation of the skill level and it is sufficient to mention only existing certificates (housekeepers, drivers who help with animals, confectioners, some artists, fitness trainers, beauty industry workers).

When analyzing the level of education of platform workers (*Fig. 6*), we identified the following problematic aspects. First, the absence of information about higher education in the profile does not always indicate its real absence. Sometimes workers cannot find employment in their specialty or receive low wages at their current place of work, get another specialty, often unrelated to their basic education, or engage in simpler but income-generating activities. In this case, we can talk about the mismatch of education with the requirements of vacancies, which is one of the reasons for the shortage of personnel in the modern labor market. In addition, it can be assumed that some workers have excessive level of education when they perform work requiring less qualification than they have.

Second, the modern market actively offers short-term (from a few weeks to a few months) courses in a variety of areas (eyelash extension, manicure, programming and many others), after which people are given certificates, promises quick employment with high wages.

Figure 6. Information on the education level of service providers on the Profi.ru platform by activity category, %



Source: own compilation on the basis of employee profiles from the Profi.ru website.

Unfortunately, the uploaded data do not allow reliably judging the level of education of platform workers on the portal we are interested in. However, we can note that the presence of higher education as a competitive advantage is important primarily for tutors, in other areas its value is less or other markers of skill (signals on the labor market) work – a portfolio of work, achievements, work experience or customer feedback. Quite a high share of those who directly or indirectly indicated their level of education is noted among lawyers and accountants (40%), in sports (44%), among those offering services for pets (50%, it is important to note that there are 6 people in this category in total), representatives of IT and freelancers (31%), as well as those earning money from photography and videography (21%). In the beauty industry the most popular marker of professionalism is certificates, higher education was indicated by only 10%, secondary professional education – 6% of performers. None of the four driving instructors indicated the level of education, but it is obvious that all of them have taken driving courses, so we marked them as having specialized training.

During the analysis of advertisements about services posted on the Profi.ru website, we found no phenomena confirming the thesis about the legalization of platform employment. In the random sample considered, we met information that the service is provided by a private entrepreneur only once, and once – that the work is provided under a contract. We can state that employment provided through the Profi.ru platform is almost entirely related to the informal economy. Some profiles are seen to be registered not to specific performers (although this is prohibited by the platform's policy), but to intermediaries or representatives of organizations engaged in providing the necessary

specialists. But even in this case, there are no signs that the performers are registered self-employed, private entrepreneurs or work under a civil law contract.

Conclusion

The study proves that platform employment as a socio-economic phenomenon is gradually expanding and institutionalizing, formalizing into widespread social practices, but is still far from legalization. Platform employment can be both formal and informal, performed within the framework of labor relations or on the basis of independent partnership. However, the feature of this employment form is that it develops primarily in the sphere of services: physical (massage, cleaning, manicure, etc.) or cognitive-emotional, associated with the provision of advice, lessons, creativity, production of intangible values.

It is positive that platform employment is reflected in state statistical surveys. At the same time, it is obvious that the data of researchers and Rosstat regarding its scale do not agree yet. This indicates the need for its further study, identification of its structural elements, clarification of the terms and criteria used.

At present, the socio-demographic structure of platform employment is converging with the structure of general employment, but still has its own features. There are still more young platform workers: a rough estimate of the average age of a platform worker on the Profi.ru service is 31 years; according to Rosstat data for 2023, the average age of platform workers in their main job is noticeably higher – 39.4 years (men – 40.2 years, women – 38.4 years). Among platform workers, on average, the predominance of men remains, but in the age groups 20–29 and 30–39, the share of women is higher than men. Platform workers are more often residents of cities. The platform segment has a noticeably higher share of persons without professional education – 26.1% in 2023, while in the total employment structure their share was 19.0%. In our opinion, this is due to the fact that platforms provide ample employment opportunities (often informal) for persons without professional education as couriers, cab drivers, household staff, handymen, etc., as well as to the fact that they are more likely to be employed in urban areas.

The results of the previous studies, as well as our empirical analysis, indicate that there is a large share of migrants (workers with citizenship of another country, mainly the CIS) among low-skilled workers in DWPs. Russian legislation imposes different requirements for the procedure of labor activity for citizens of different CIS countries, and for many of them working through the platform is the only possible way of employment.

Textual and statistical analysis of profiles on the Profi.ru platform showed that the most frequently offered services are repair and related services, help in learning languages and preparing for the Unified national exam, massage, and design services.

The empirical study revealed the following trend. A significant part (at least 10%) of personal registered accounts hide either small companies, or collectives (groups) of workers, or individual entrepreneurs with hired employees, or simply intermediaries redistributing orders between performers. The analysis showed that some profiles are disguised as personal, although in reality they are not. Some of them are openly positioned as team/company profiles, but are labeled as personal profiles. In a large number of cases, accounts are duplicated: some performers have both personal profiles and are listed in "teams" with intermediaries, often with several of them. At the same time, we can see the opposite trend: several specialists work under one account. Thus, it is difficult to determine the volume of the real offer of services. Often, if a master themselves cannot take an order at the moment, they offer to give the contact of their colleague. This indicates the

presence of a developed informal community of masters in certain areas. This situation is typical for show business services, various repair services, and cab services. To solve the issue of "false" personal profiles that actually belong to companies or collectives, it is necessary to make changes to the rules of posting information on the platform, to conduct a more thorough check of profiles. In case a performer presents his/her passport (there is a box in the profile whether the passport of the performer is checked or not), it is necessary to check that the services are provided by the person who is registered on the platform.

In early 2023, a bill was introduced in the State Duma to amend the law "On Employment in the Russian Federation" to include platform employment in the legal field. In March 2023, this bill 275599-8 was passed in the first reading, it was assumed that the very principles of regulation of platform employment will be specified in the "satellite laws"[18]. Lawmakers proposed to introduce quite tangible control over platforms and their employees: to oblige companies to register in special registers, to keep a rating of platform employment, to inform performers about all the terms of the order, etc. The main issue of the draft law on platform employment is how to distinguish between partnership/market relations and labor relations and who should be given immunity from reclassification of these relations as labor relations[19]. There is a discussion among experts as to which platforms should be subject to special regulation. It is believed that these should be technologically mature platforms, but the criteria for this category have not yet been developed. It was assumed that "platform" workers would be subject to mandatory norms of work and rest, payment, access to social guarantees and pensions, but by the second reading of the bill, the provisions on the regulation of platform employment were excluded[20].

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Received March 21, 2024.

DOI: 10.15838/esc.2024.2.92.12
UDC 316.346.32-053.9:304.4, LBC 60.54:66.3(2Rus),4

Prosperous Old Age: From Scientific Theories to the Fundamentals of Its Programming

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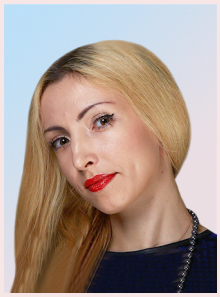

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For citation: Belekhova G.V., Natsun L.N., Soloveva T.S. (2024). Prosperous old age: From scientific theories to the fundamentals of its programming. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 220–238. DOI: 10.15838/esc.2024.2.92.12

Abstract. In most countries, due to changes in the age structure of their population caused by the global process of demographic aging, discussions have been held for many decades about the essence of the aging process itself and the mechanisms of adaptation of society to the ongoing changes. The multidimensional nature and complexity of aging, in which biological, age-related, socio-cultural, economic and psychophysiological transformations are intertwined, are repeatedly emphasized. A universal understanding of aging cannot be developed, but each country needs its own aging concept in order to provide for a full-fledged and decent life of older adults. The aim of the study is to generalize conceptual approaches to understanding aging and systematize its factors; this will allow us to conceptualize prosperous old age as a basis for effective public policy in the field of aging. Theoretical basis of the study includes foreign and Russian works on demographic aging. We elaborate on the conceptual framework used in the research and on the relations between key categories; generalize relevant aging concepts and highlight a theoretical basis for our approach; systematize factors contributing to the process of successful aging; provide our own view of the term "prosperous old age" and the conceptual framework of governmental policy on its basis. Scientific novelty of the research consists in the fact that we elaborate on the concept of prosperous old age and substantiate ways to formalize it in modern institutions and tools of social policy. The results obtained can provide a theoretical basis and contribute to the further development of Russian research on successful aging.

Key words: aging, old age, prosperous old age, successful aging, concept, successful aging factors, programming old age.

Acknowledgment

The research was supported by Russian Science Foundation grant 23-78-10128, https://rscf.ru/project/23-78-10128/.

Introduction

The demographic situation in the world has undergone significant changes since the second half of the 20th century. The vast majority of developed and developing countries have experienced a number of qualitative transformations in their population structure in addition to the tremendous growth of the global population. One of the most important and pronounced has been demographic aging, which is manifested in an increase in the share of older people. Similar processes are typical for the Russian Federation. According to many classifications (the demographic aging scale of J. Beaujeu-Garnier – E. Rosset, the UN aging scale, etc.) Russia is among demographically old countries, and the process of demographic aging is increasing, while depopulation is deepening (Dobrokhleb, 2022). On January 1st, 2022, the share of the population above working age in the country was 24% (or 35.2 million people), and the number of people aged 65+ reached 23.4 million people (or 16%)[1].

Old age is a natural and organic stage of the human life cycle, so it is no surprise that everyone wants to live it with dignity and fullness. At the same time, modern scenarios of life "after 60" are much wider and more diverse than 10–20 years ago because the rapid development of medical technologies, the spread of new forms of employment and social activity (Grigoryeva et al., 2023), widespread digitalization, the lengthening of the period of both labor activity and life outside

[1] Demographics. Population size and composition (showcases). Rosstat. Available at: https://rosstat.gov.ru/folder/12781 (accessed: March 11, 2024).

of labor relations today form wider opportunities and high claims of the population regarding a prosperous life at an older age. Essentially, well-being is the main component of the value system in modern society. According to sociological surveys, the majority of Russians (57%) consider well-being to be their life priority, even more important than starting a family (48%) and being able to travel the world (36%). Well-being is especially valued among people over the age of 40, i.e. those who had a conscious experience of life in the USSR[2]. However, the understanding of the essence and criteria of prosperous and (or) successful aging and old age, despite decades of research on this topic, remain rather vague and are the subject of scientific debate. Recently, both the extreme breadth of the definition of successful aging and the ignoring of structural inequalities that do not allow all population groups to "age equally successfully" have been criticized (Evseeva, 2020b). This reflects the complex combination of physiological, social, economic, and personal changes that occur at this stage of human life. However, studying aging and identifying the problems faced by older people will allow the best adaptation of public administration and the population's own life strategies for a prosperous old age.

The aim of the research presented in the article is to summarize the conceptual approaches to understanding aging and systematize its factors, which will allow defining the vector of research of this process and conceptualize its final result – successful aging as a basis for effective public policy in the field of aging. It is worth noting that this review is not exhaustive, but, in our opinion, it can become a theoretical basis and contribute to the further development of Russian research on the subject of prosperous (successful) aging. The paper consistently reveals the used conceptual framework and the correlation of key categories; summarizes the relevant concepts of aging, identifies the theoretical basis for our approach; systematizes the factors contributing to the process of successful aging; substantiates our view of the concept of "prosperous aging" and defines the conceptual framework for building public policy on its basis. The scientific novelty of the study consists in the elaboration of our own concept of prosperous old age, relevant to the emerging demographic, socio-economic and socio-cultural trends, and the substantiation of ways to formalize it in modern institutions and tools of social policy.

Conceptual framework

One of the important issues in studying the old age and the development of public policy in the field of healthy aging is the definition of the target group – the circle of persons to whom regulatory measures are addressed. In practice, there is no unanimity in this issue, as evidenced by numerous studies on the boundaries of the onset of old age (Antonov et al., 2023; Kozlova, Sekitski-Pavlenko, 2022). Let us turn to the essence of the concepts that are most often used in scientific works and major program documents and define both the aging process itself and the relevant population groups.

Aging at the biological level is a gradual, continuous and irreversible process of change in the organism under the influence of damaging effects of various external and internal factors, leading to a decline in physical and mental capabilities of the organism; in the context of society, aging is associated with changes in labor, leisure, social and other spheres of human life.

Old age is the final stage of an individual's life cycle; "a legitimate final period of age-related individual development" (Sadykova, 2017).

Older persons (people of old age) are people whose age corresponds to the generally recognized (in a given society or within a particular study) boundaries of older age, encompassing persons

[2] Financial well-being has surpassed the creation of a happy family in the list of life goals of Russians. Available at: https://www.gazeta.ru/social/news/2023/11/13/21700447.shtml?updated (accessed: March 11, 2024).

with different levels of cognitive and physical ability (active and energetic or requiring support and care).

Population above working age are persons whose chronological age exceeds the legally established upper limit of working age.

The elderly are a part of the population of older age, encompassing persons at the initial stage of old age, who by psycho-physiological and socio-economic characteristics are mostly different from people at later stages of life (old-age and long-lived persons); the boundary itself may shift under the influence of changing public opinion, accepted measurement frameworks, etc.

Pensioners are persons who have and exercise their statutory right to receive pension benefits on one or more grounds.

Older generation is a community of people changing in its composition over time, united by close or identical calendar (chronological) boundaries of the onset of old age as the final stage of the life cycle.

The basis for distinguishing such categories as "older generation", "elderly", "older persons" is a conditionally chosen age boundary. The classification attribute in distinguishing the categories of "pensioners" and "population above working age" is the compliance of the characteristics of individuals with the legally established norms: in the first case, it is the presence of pension payments among the sources of an individual's income, and in the second case – the compliance of the chronological age of an individual with the officially established boundary of working age.

If we talk about the correlation of the above categories, the concept of "older generation" is the most general one, reflecting chronological, generational, normative and socio-cultural facets of the phenomenon. The other categories should be regarded as more specific, which are more often used in socio-economic research. The category "older persons" is more extensive than the others, as it intuitively combines different classification bases (primarily age and normative status). The category "elderly" often characterizes quite a certain period of life – from 60/65 to 75 years and allows separating the old and long-livers proper from the initial period of old age. The category of "population above working age" is in many respects a terminological analog of the category of "older persons". At the same time, they overlap, but do not coincide completely with the category of "pensioners" because, on the one hand, a pension can be granted not only upon reaching a certain age, but also on other grounds, and on the other hand, not all citizens who have reached the upper limit of working age immediately apply for pension payments and, accordingly, do not immediately acquire the status of pensioner.

The coexistence of these categories, perhaps, does not contradict the research logic due to the complexity and multilayered nature of the aging process itself. Since the research is supposed to focus on regulatory influences, it seems promising to focus on chronological and normative boundaries of old age (which does not exclude the possibility of in-depth study of cultural and social aspects of aging).

The concept of "aging" in scientific discourse

The academic community has been focused on studying the problems of aging and its consequences, well-being of the older generation for quite a long time. Accordingly, this term is considered from the position of various sciences. For instance, *from the point of view of demography*, the key theory is the concept of demographic transition, according to which the aging process is an objective result of changes in the nature of population reproduction due to a decrease in mortality and high birth rate (Notestein, 1945; Vishnevskii, 1976). In this case we are talking about demographic aging.

In economic science, aging is studied through the prism of the concepts of generational economics and the second demographic dividend (Barsukov, 2019). The theory of generational economics is

based on the concept of demographic dividend as a phenomenon when there is a decline in fertility and growth of the working-age population (the first dividend). The emergence of the second dividend becomes possible when the older age groups of the working-age population have a significant incentive to accumulate assets. Thus, the benefit of this dividend is prolonged and transformed into an even more significant amount of assets, leading to an increase in national income. The adaptation of the economy to the consequences of the aging process has led to the formation of the concept of the "silver economy", focused on the production of goods and services for the older generation (Goroshko, Patsala, 2021).

The problems of aging are most widely studied in the context of *sociological and gerontological concepts*. *In the first case*, the objects of attention are the structure of the elderly population, intergenerational interaction, social roles and status of older people, their lifestyles, etc.[3] *In the second case*, the lifestyle and living conditions, mental processes, the situation of older people in relation to the biology of aging are brought to the forefront.

For several decades, the socio-gerontological literature has been dominated by the ageist view of old age, as a result of which researchers focused on the negative aspects of aging (deteriorating health, discrimination in labor due to age, reduced social ties, additional social costs, etc.). The proposed theories (modernization theory, theory of decreasing obligations by E. Cumming and W. Henry, activity theory by B. Newgarten, R. Havighurst and S. Tobin, theory of socio-psychological continuity by R. Atchley) considered the possibilities of adaptation of older people to the ongoing losses to achieve life satisfaction in old age (Sergeeva, 2012). Subsequently, under the influence of the processes of global population aging, the entry into the active phase of life of the demographic explosion generations and the increase in their requirements to the quality of life, there was a change of rhetoric from old age as "loneliness", "pre-retirement survival period", "period of loss of opportunities", "deserved rest" to understanding it as a special social resource and the need to ensure active and engaged aging (Vidyasova et al., 2024).

A large number of theories and concepts have emerged that try to answer the question of what conditions are necessary to improve the quality of life in old age and how to use them fruitfully (*Table*). Most of these socio-gerontological concepts are based on the provisions of functionalism of T. Parsons and the "activity theory" (Evseeva, 2011). The essence boils down to the following: effective aging consists in preserving the social activity of the elderly through adaptation as conscious adjustments in lifestyle as life circumstances change.

One of the most discussed is the paradigm of "successful aging". This concept was introduced in 1961 by R. Havighurst, who focused on the "natural" scenario of relationships between an elderly individual and society and defined "successful aging" as an inner feeling of happiness and satisfaction with present and past life (Havighurst, 1963).

Subsequently, successful aging was paired with other variations of "good" aging that predominantly emphasized the need to prevent disability and a high level of physical functioning as requirements for well-being, namely "healthy aging" (emphasis on physical health), "active aging" (long-term employment and involvement in society), "productive aging" (long-term employment as a benefit to society), "positive aging" (perception of aging and old age as positive phenomena full of positive meanings), etc. (Evseeva, 2020b). In particular, J. Rowe and R. Kahn's model of successful aging is based on three components: absence of disease and related disability, high

[3] Evseeva Ya.V., Yadova M.A. (Eds.). (2020). *Successful Aging: Sociological and Socio-Gerontological Concepts: Collection of Scientific Works*. Moscow: Tsentr sotsial. nauch.-inform. issled. otd. sotsiologii i sotsial. psikhologii.

cognitive and physical functioning, and active participation (involvement) in community life. In a situation where all three components overlap, successful aging is fully realized (Rowe, Kahn, 1987). The model of selective optimization and compensation of M. Baltes and P. Baltes determines successful aging as the result of adaptation to the reduction of biological, mental and social resources (Baltes, Baltes, 1990). The proactive model of successful aging by E. Kahana and B. Kahana suggests that older people on the basis of active behavioral adaptation should use internal (personal) and external (social) resources to mitigate the adverse impact of normative stressors (chronic illnesses, reduced social contacts, reduced work capacity) on their quality of life (Kahana, Kahana, 1996).

In 1990, J. Curb and colleagues proposed the term "effective aging" as an alternative to "successful aging" to emphasize the adaptation and rehabilitation that can occur even as older adults develop health deficits (e.g., chronic illness, disability) (Curb et al, 1990; Strizhitskaya, Petrash, 2017). The concept of "optimal aging", which reflects an individual's psychological flourishing and well-being, has also become widespread (Ryff, Singer, 2008). Close to this direction is the concept of "positive aging", the essence of which is to maximize the benefits of old age and maintain a good attitude toward life (Bowling, 1993). At the same time, the role of various components of positive functioning in the period of aging is ambiguous, the most significant characteristics include the spheres of health and occupational satisfaction (Golovei et al., 2014).

The concept of "productive aging" encompasses the various activities that older persons engage in. The productive aging model emphasizes the participation of older people in paid work, volunteering, education, physical activity, leisure and travel, political action, consumption, etc. (Kerschner, Pegues, 1998). Some researchers note the limitations of such activist concepts and models, as they limit prosperous (successful) aging to as long as

Major theories studying aging

Theory	Authors	Essence
Successful aging	R. Havighurst, J. Rowe, R. Kahn, M. Baltes, P. Baltes, E. Kahana, B. Kahana, E.A. Sergienko, N.E. Kharlamenkova, K. Tatarko, et al.	Absence of chronic diseases, ability to participate effectively in life processes from a physical, mental and social point of view
Effective aging	J. Curb, J. Guralnik, A. LaCroix, S. Corper, O.Yu. Strizhitskaya, et al.	Focus on what is possible to age effectively and in the presence of health deficits through adaptation and rehabilitation
Optimal aging	C. Ryff, B. Singer, K. Brummel-Smith, T.A. Nemchin, et al.	Ability to function in many areas to be satisfied despite health conditions
Positive aging	A. Bowling, T. Pocock, L. Golovei, A. Kriulina, et al.	Maximizing the positive effects of old age and a good attitude to life
Productive aging	H. Kerschner, J.A. Pegues, S. Devis, E.G. Kalabina, et al.	Aging effectively by optimizing the realization of opportunities for older people
Active aging	WHO, A. Wolker, K. Aspalter, I.A. Grigoryeva, K.A. Galkin, et al.	Optimizing opportunities for health maintenance to improve quality of life and well-being
Harmonious aging	J. Liang, B. Luo, R. Hopkins, et al.	Aging as a balance based on differences rather than sameness
Conscious aging	H. Moody, R. Dass, M. Schlitz, et al.	Aging as a stage of life with its own purpose, vitality and meaning
Healthy aging	WHO, K. Stevens, M. Menassa, R.V. Vorob'ev, A.N. Il'nitskii, et al.	Developing and maintaining functional capacity to ensure well-being in old age
Active longevity	L. Foster, A. Sidorenko, A. Zaidi, M.G. Kolosnitsyna, E.V. Vasil'eva, et al.	Formation of an active life position, maintenance of health, labor and social activity
Source: own compilation based on review of scientific literature.		

possible employment, i.e. they focus on maximizing the economic contribution of the elderly (Evseeva, 2020a; Boudiny, 2013).

Another notion related to aging is the concept of "active aging". According to the World Health Organization (WHO) definition, "active aging is the process of optimizing opportunities for health, participation, and security in order to enhance the quality of life as people age". This model retains the condition of socially beneficial activity and introduces the need to maintain health. However, it is not clear how old age will be perceived among those older people who have health limitations, are not inclined to work, prefer passive leisure activities and communication with loved ones.

Influenced by philosophy and cross-cultural experiences, a discourse of "harmonious aging" has also emerged, which characterizes a balanced attitude toward old age (maintaining a calm mind, cultivating a sense of harmony with oneself and one's environment, gaining wisdom in problem solving, and adapting accordingly) (Liang, Luo, 2012). There is a similar concept of "conscious aging", according to which people should not ignore or fight physical aging, but recognize it and adapt to it (Moody, 2005).

The term "healthy aging" has been used at academic and policy levels to distinguish between sick and healthy older people based on their physical and mental characteristics. In 2015, WHO defined healthy aging as "the process of developing and maintaining the functional ability that enables well-being in older age"[4]. This concept explores the transformation of attitudes and behaviors in the context of age and aging, providing conditions for enhancing the realization of potential and providing comprehensive care taking into account the needs of the older generation (Golubeva, Soloviev, 2023).

A related theory to the problem of aging is the concept of active longevity, which is similar in meaning to "active aging", but has a more positive connotation (Sidorenko, Zaidi, 2013). In 2020, the team of the National Research University Higher School of Economics prepared a draft Concept of Active Longevity Policy[5] and defined the fundamental principles, priorities, mechanisms, stages and expected results of the implementation of this Concept.

The approach of "delayed aging" has become widespread in Russian science, based on the fact that the quality of life of the elderly largely depends on the ability to maintain autonomy in meeting needs and participation in society (Vidyasova, 2023). This concept is based on the theory of late adulthood and subjective perception of age (Galkin, 2023), when people, maintaining socio-economic independence, prolong their adulthood and postpone aging (Greve, Staudinger, 2015). This idea is consistent with the current realities, when the real aging of the population is constantly shifting, for example, by 15–20 years compared to the generation of the first post-war decades (Grigoryeva, Kesalev, 2017). Research in the field of "active aging and longevity" is developing, which emphasizes the importance of taking into account the differences of older persons in terms of their resource potential and, consequently, the need to develop differentiated regulatory measures and mechanisms in accordance with the capabilities and motivations of different groups of elderly and old people (Dobrokhleb, 2022).

Since the early 2000s, the most dominant gerontological concept of "successful aging", which promotes health and functionality, absence of disease and disability, active involvement in social

[4] World Health Organization. World Report on Aging and Health. 2015. Available at: https://apps.who.int/iris/bitstream/handle/10665/186463/9789240694811_eng.pdf?sequence=1 (accessed: April 11, 2024).

[5] Ovcharova L.N., Morozova M.A., Sinyavskaya O.V. (Eds.). (2020). *Concept of Active Longevity Policy: Scientific and Methodological Report to the 21st April International Scientific Conference on the Problems of Economic and Social Development.* Moscow: Izd. dom Vysshei shkoly ekonomiki.

interactions as key components of successful old age, "has been criticized for the risk of marginalization of broad layers of elderly and old people who, due to various circumstances" do not meet these criteria (Dobrokhleb, 2022; Liang, Luo, 2012; Nizamova, 2020). Some researchers express the opinion that the paradigm of successful aging is a kind of "form of oppression" of "wrong" older people (Nizamova, 2020). In particular, H. Gibbons believes that "successful old age" imposes the standards of "mandatory youth" on people of all ages because the mandatory preservation and realization of working capacity, absence of disability, high cognitive and physical functions does not redefine old age as a time of health and functionality, does not remove ageism, eiblism and handicapism from it, but rather imposes new social standards of proper and good life in older age on people (Gibbons, 2016). In this logic, the presence of diseases and/or disabilities in older people, reduction and/or absence of labor and social activity is perceived as a personal choice and individual responsibility for their vulnerability, rather than as a result of biological changes, economic, political, socio-cultural factors (Gibbons, 2016; Rubinstein, de Medeiros, 2015). However, in our opinion, it is necessary to remember that serious illnesses and disabilities can occur at any stage of life, that people with disabilities, thanks to the creation of a "helping environment" for them, can fully participate in society, and that, in general, people in older age, taking into account their limitations, focusing on their own preferences and desires, using the resources available to them and the possibilities of the external environment, can live well in this period of life.

To summarize, we note that each of the above concepts describes the mechanisms for achieving well-being in old age and/or its components, is focused on both the process and the result, and reflects the relationship between subjective and objective perception of the aging process. All the considered concepts are similar in many respects and describe the best scenario of aging. In our opinion, successful aging is a multidimensional phenomenon that integrates the characteristics reflected in the content of other concepts. Its elaboration and adaptation taking into account Russian realities and challenges of socio-economic development will help to level the dichotomy of "normal" and "abnormal" aging, to harmonize the desires, opportunities and limitations of life activity of the population, to become the basis for an effective state policy on aging.

Successful aging factors

For the programming of successful old age, it is crucial to determine the list of its factors that can be corrected through management interventions. In Russian and foreign literature there are more widely presented works aimed at the study of factors promoting successful aging and active longevity. Taking into account the abovementioned relationship between successful aging, successful old age and active longevity, we can consider the classification of factors proposed in such works as a starting point for defining the list of determinants of successful old age.

According to the criterion of the ability to control the influence of factors, they can be divided into controllable and uncontrollable. For example, in the work of O.Yu. Strizhitskaya and M.D. Petrash devoted to the problem of constructing *productive old age*, factors are divided into easily modelable, conditionally modelable, complexly modelable and unmodelable (Strizhitskaya, Petrash, 2022). The first group includes lifestyle factors, cognitive factors and some health-related factors. The second group includes social factors based on personality traits. The third group includes sex, individual genetic and personality factors. Justifying their approach, the authors of the study note that they understand old age construction as a set of strategies for creating and realizing the image of the desired old age. It is in this context that they consider all factors from

the point of view of modelability. Modelability, in turn, is understood as the possibility of creating, managing or excluding certain mechanisms depending on their role in the construction of aging. However, the approach used in this study is applicable only at the level of individuals, and it is rather difficult to adapt it for use at the macro level.

Since it is possible to assess the degree of changeability of various factors under the influence of managerial impacts only by calculation, based on the data of mass sociological and statistical measurements, at the stage of developing the conceptual framework for the programming of healthy aging it is advisable to refer to the classification of factors by the nature of their sources. It is important to understand which factors of healthy aging depend on the characteristics of individuals themselves and fall within their "zone of responsibility", and which factors are derived from the established institutions of society and fall within the "zone of responsibility" of the state.

From the point of view of assessing the contribution of individual efforts of a person and the influence of environmental conditions on the achievement of a prosperous old age, all factors can be divided into *internal* and *external*. A similar approach was used in the study of active longevity factors, carried out at RAS Vologda Research Center in 2020–2022. The internal factors promoting active longevity included attitudes regarding the desired life span and life expectancy, motives and practices of longevity; the external factors promoting active longevity included infrastructure, social attitude and standard of living (Korolenko, 2022). Internal factors, in turn, are also interrelated with each other. In particular, it is shown that attitudes toward life expectancy and the expression of motivation for longevity are influenced by people's subjective feeling of their own usefulness for the family, society and the state as a whole (Natsun, 2022). To a large extent, the identified active longevity factors coincide with the favorable aging factors.

In Russian studies, the works characterizing the influence of individual-level factors on the achievement of active longevity and successful aging prevail. For instance, *behavioral factors* of a prosperous old age can be singled out as a special group, since at the level of individual behavioral strategies it is determined how people manage available resources and what results they achieve with regard to their own well-being in different spheres of life. Individual life scenarios form the actual collective image of old age. According to the results of the sociological study of the experience of long-livers of the Vologda Region, the preservation of activity until deep old age is associated with a number of *behavioral factors*. Among them, physical activity, balanced nutrition, proper daily regimen, absence of bad habits, involvement in social life, scope of social ties, high labor activity, absence of "welfare mentality", purposefulness, stress resistance come to the forefront (Kalachikova et al., 2016). Interpreting the obtained data in the context of the results of Russian and foreign studies, we can note that they confirm the correctness of the assumption about the higher (selective) survival rate of the most prosperous representatives of older generations. Among them, physical activity, balanced nutrition, proper daily regimen, absence of bad habits, involvement in social life, wide range of social ties, high labor activity, absence of "welfare mentality", purposefulness, stress resistance come to the forefront (Kalachikova et al., 2016). Interpreting the obtained data in the context of the results of Russian and foreign studies, we can note that they confirm the correctness of the assumption about the higher (selective) survival rate of the most prosperous representatives of older generations.

Demographic factors, such as sex, age, and the presence of other family members, influence not only the satisfaction of individuals with various aspects of their life, but also objective indicators characterizing individual components of active

longevity and quality of life in old age (Kasyanova et al., 2023). Demographic factors are practically impossible to adjust. As a rule, one can only reduce the risks that accompany their influence. For example, age is a risk factor for an increase in the number of chronic diseases. It is impossible to eliminate the influence of this factor, but it is possible to provide measures aimed at more timely detection of the first symptoms of dangerous diseases and their more effective treatment.

The psychological approach to the study of aging emphasizes the role of *personal factors* in achieving a prosperous old age. For example, we propose to consider successful aging as a result of realization by an individual of a strategy of adaptation to old age, including a range of supporting factors. These include social support, participation in joint activities, communication with friends and relatives, having common goals with other family members, acceptance of old age and conscious choice of ways to live this age stage, the ability to control one's life (Chereneva et al., 2021). The influence of personal factors on the psychological component of well-being is considered separately. For instance, the work of G.I. Borisov reveals the following factors promoting psychological well-being in old age: manifestation of a person's subjectivity, positive attitude toward other people and the surrounding world, desire for personal development, presence of life meaning, value of interaction (Borisov, 2019). We should note that in the framework of psychological research, the concept of "successful aging" is directly correlated with the concept of "subjective well-being" and is considered as the experience of an individual's positive experience of their own significance, satisfaction with the life they live and with themselves (Aleksandrova, 2000).

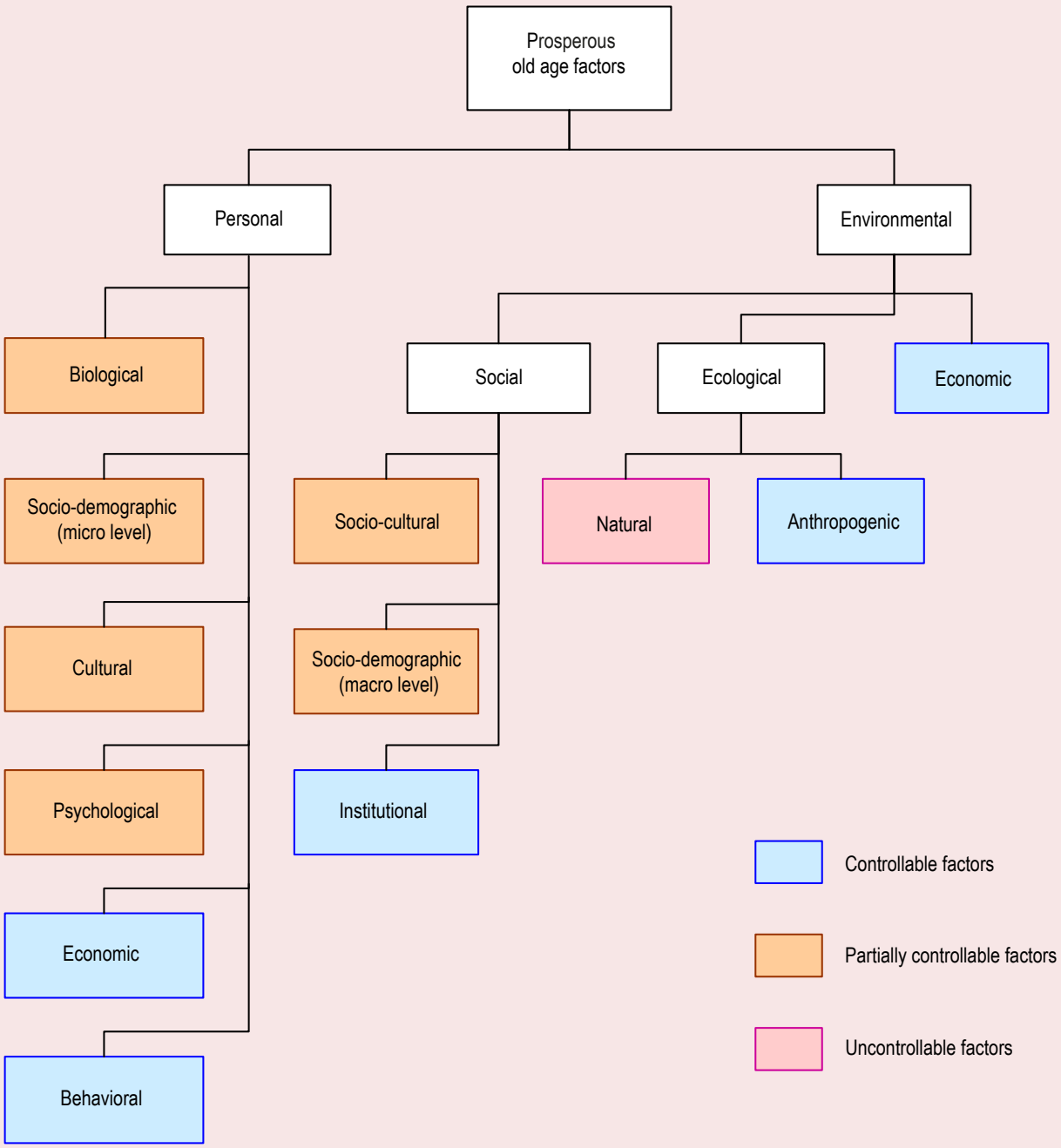
Despite the wide discussion of individual factors promoting active longevity and successful aging, only a few works by Russian authors are aimed at systematizing data on the strategies of active longevity implemented by individuals. Thus, the work of N.N. Chausov and N.Yu. Chausov proposes a situational matrix of active longevity strategies, developed on the basis of the provisions of the theory of management decisions and institutional approach, the practical application of which is possible within the framework of the implementation of the state policy of active longevity (Chausov, Chausov, 2020).

Correlations can also be observed between individual indicators of healthy aging. In particular, gerontological studies pay attention to the correlation between the *elderly's health* status and the *labor activity continuation* after reaching retirement age. Foreign authors have obtained empirical data on the positive relationship between labor activity and health of older workers (Minami et al., 2015). On the other hand, Russian sociological research shows that among pension-age workers self-assessments of health are higher compared to their non-working peers (Korolenko, Barsukov, 2017). This indicates that health determines the level of working capacity and preservation of professional skills, which directly affects the possibility of continuing labor activity after reaching retirement age (Anishchenko et al., 2022). Therefore, it is more correct to consider the state of health as a factor promoting the prolongation of labor activity in older age.

Based on the review of Russian and foreign studies, it is possible to classify the prosperous old age factors by their sources into individual factors, i.e. those that depend on the characteristics of specific individuals, and environmental factors, which include all external influences in relation to individuals (*Figure*). *Individual factors* include biological characteristics (current objective state of health and heredity), socio-demographic characteristics (sex, age, marital status, place of residence, level of education), psychological

characteristics (attitudes toward life expectancy, longevity motives, personality traits), behavior (medical activity, lifestyle, financial behavior), cultural characteristics (learned values and traditions), economic characteristics (sources of income), economic characteristics (sources of life expectancy, personal characteristics), and social and cultural characteristics.

Classification of prosperous old age factors



Source: own compilation.

Environmental factors include economic, social and environmental factors. *Economic factors* include the available jobs, organizations' demand for workforce, stratification of the population by income groups, development of consumer market sectors focused on the demand of older citizens, availability of infrastructure that takes into account the needs of older citizens, availability of products and services that facilitate the use of digital technologies by the older generation, budget (its sufficiency), inflation (availability of services). *Environmental factors* can be conditionally divided into natural (climatic and geographical conditions in the place of residence) and anthropogenic (construction development and landscaping in cities, noise level, quality of drinking water and atmospheric air in settlements). *Social factors*, in turn, include *institutional* (quality of the legal and regulatory framework governing social policy, quality and accessibility of services for the population in the areas of health care, social protection, education, employment promotion, sustainability of the pension system and the financial system as a whole), *socio-cultural* (society's attitude toward older citizens, social norms regarding the assessment of the contribution of the older generation to society) and *socio-demographic* (current ratio of population age groups, gender gap in life expectancy).

Prosperous old age concept

Before describing our concept of "prosperous old age", we should say a few words about well-being itself. The concept of "well-being" includes elements that ensure an individual's ability to live a life that is meaningful for them (Ryazantsev, Miryazov, 2021). It is common to distinguish five aspects of well-being: physical (physical health), material (income and well-being), social (social relations), emotional (absence of depression), development and activity (work and free time) (Kislitsyna, 2016). The filling of the concept of "well-being" will vary significantly from person to person.

"In modern society, aging becomes not only a socially conditioned process, but also to a large extent individually constructed" (Grigorieva et al., 2023). Therefore, the basis of our concept of "prosperous old age" is the allocation of two levels – prosperous old age of an individual and prosperous old age of society, i.e. the separation of personal and state responsibility. In this understanding, an individual's prosperous old age (micro level) is associated with satisfaction and realization of those spheres that are important for them (for one – it is work and recognition in society, for another – health and own hobbies, for another – life for the sake of family and relatives, sometimes to the detriment of their own condition). Prosperous old age is a person's life goal and implies not formal prolongation of life and surviving, but its qualitative filling with activities and meanings important for them.

Prosperous old age for society (macro level) consists in the effective use of "resources" for the benefit of public socio-economic development (continued labor activity of the elderly to produce an additional product; longer healthy life and, as a consequence, optimization of costs for social services and medical care; stimulation of active consumption of the elderly through the development of credit programs and special financial products, etc.). In this case, prosperous old age is the result of social policy. It is important to understand that prosperous old age at the macro level is not a direct identification of the sum of individual states; rather, it reflects the success/failure of the government's regulatory actions with regard to ensuring conditions for implementing people's opportunities in their life course.

Management of the process of achieving a prosperous old age at the individual level should be based on the efficient use of available resources. In this regard, the most appropriate model is the SOC model proposed by M. Baltes and P. Baltes (SOC – selection, optimization, compensation).

Baltes' model of selective optimization and compensation emphasizes that proactive activity aimed at preventing potential threats to life goals is a valuable strategy for healthy aging. Prosperous aging from the perspective of this approach is a "level of life activity that allows an individual to strive to achieve personal goals and maintain certain standards, which is largely the result of successful management of internal and external resources throughout their life" (Freund, 2008).

According to the model, a person selects the areas of life that are of priority importance for them and concentrates (evaluates, acquires, accumulates) their resources, maximizing their benefits and compensating for current losses to ensure optimal functioning. At the same time, goal setting (selection) plays a key role, since the choice of goals aimed at reconciling the available resources and needs in the conditions of reduction of the former and transformation of the latter determines the subsequent behavioral strategies for achieving a prosperous old age. A significant aspect of the optimization stage is the acquisition of new or activation of unused external or internal resources that contribute to the achievement of goals. Then strategies are used to compensate for losses in selected areas to adapt to the changes and create a favorable environment for life activity (Freund, Baltes, 2002). At the same time, the state and society make a major contribution to providing these conditions that facilitate optimization processes by providing opportunities for acquiring the resources people need and compensating for losses (Baltes, Carstensen, 1996).

The category of "healthy aging" is complex, as it includes not only ideas about extending the period of active, productive life of individuals, about their preservation of opportunities to realize their own human potential, but also assessments of individuals' satisfaction with various other aspects of their life in old age. The result of successful aging is the achievement of a prosperous old age.

Prosperous old age is the state of the most complete well-being in old age, which is determined by the ability of older generation representatives to optimally realize their life potential in the economic, social, socio-cultural and personal spheres of life in accordance with their own interests and taking into account the availability of necessary resources and opportunities of the external environment. This state is characterized by the preservation of the ability and possibility of social functioning and realization of human potential by individuals (when considering this concept at the individual level) or the older generation as a whole (when considering this concept at the macro level). The components of a prosperous old age are material well-being, physical well-being (good health and disease control in older age), social well-being (inclusion in social interactions), activity well-being (availability of abilities and opportunities to develop and realize one's human potential in various types of activities), psychological well-being (constructive perception of oneself and the surrounding reality, presence of a positive attitude toward longevity, feeling of control over one's own life, internal locus of control). The core of the concept of prosperous old age should be individuals' perceptions of their life and projective view of the future, which will allow taking into account the changing socio-economic context and the needs of the new generation of elderly citizens. This will ensure the synergy of individual responsibility and personal strategies in achieving their own well-being with the structural factors produced by public policy and determining the opportunities and resources for the implementation of these strategies.

Conceptual framework for policies on successful aging

Ensuring a prosperous old age for its citizens is one of the fundamental obligations of the Social State. Policies in the field of healthy aging should be evolutionary in the sense that they should ensure the possibility of long-term sustainable development

of socio-economic systems while preserving guarantees of well-being in old age for present and future generations. In turn, individuals' perceptions of well-being in old age are largely shaped by their expectations of state guarantees which they are entitled to upon reaching old age. At the same time, the "ideal" image of a prosperous old age, formed in the ideas of each new generation, is based on the experience of previous generations. Thus, the population's ideas about a prosperous old age are largely inertial. Therefore, any reduction in the volume of state guarantees in the sphere of healthy aging, as a rule, will meet a negative reaction from the population. This circumstance explains why it is necessary to avoid sharp and insufficiently substantiated reduction of state guarantees in this area.

To avoid possible costs associated with revision of the state policy in the field of healthy aging, it should include mechanisms for sharing responsibility for achieving healthy aging (between the state and citizens), tools that allow for flexible adjustment of the system of ensuring basic guarantees in the field of healthy aging, as well as elements of civil (public) control over the quality of public administration.

The programming of a prosperous old age as a process of ensuring prosperous aging of the country's population. The cycle of managing healthy aging can be divided into four stages. *The first stage is conceptualization of the state policy in the sphere of healthy aging*. At this stage, the goals of the state policy are formulated and its main objectives are set for the short-, medium- and long-term period, the list of target indicators for monitoring their fulfillment is defined, and the planned values of the selected target indicators are set. With regard to the topic of healthy aging, target setting implies selecting the criteria for healthy aging (and healthy old age) that will be acceptable not only for the country, but also for its citizens. This requires theoretical and methodological support of this process, which will be aimed at identifying the current social demand (in the context of individual generations and socio-demographic groups) for a prosperous old age, as well as at assessing whether the real situation of the modern older generation corresponds to it.

The second stage of management is the actual programming of a prosperous old age. If we talk about this process at the level of the population as a whole, then, within the framework of public policy, the programming of healthy aging involves the development of a step-by-step algorithm of actions aimed at a certain socio-demographic group achieving the most complete well-being in old age by regulating the impact of managed factors of healthy aging on it. The programming stage includes the preparation, public discussion and adoption of state programs in the field of prosperous aging at the federal and regional levels. The developed program documents should be aimed at the creation (or improvement) of mechanisms, environment and tools to correct the influence of factors of different nature on the target indicators of healthy aging.

Theoretical and methodological prerequisites for realizing this stage are identification of key controllable factors of healthy aging, development of a theoretical (conceptual) model of the impact of specific factors on the indicators of healthy aging, forecast of the response of controllable factors to corrective management actions, development of methodological tools for the comprehensive assessment of the main indicators of healthy aging.

Individuals carry out the programming of their own prosperous old age by themselves to a greater or lesser extent. The main differences are that individuals are guided by their own idea of the desired image of a prosperous old age, and they can react more flexibly to changing external conditions and more quickly reorganize their own line of behavior.

Obviously, target benchmarks in the programming of a prosperous old age at the national level and at the level of an individual can be radically different. Accordingly, there will be differences

in the programs themselves, which may create conditions for a conflict of interests. Potentially, there is a risk that none of the parties will receive the result of the implementation of their program that they had hoped for. For the state, the consequences of such an outcome can be economic and political costs, and for the individual – a decrease in subjectively perceived well-being due to dissatisfaction with various aspects of their life. In this regard, the most important condition for the effectiveness of public policy in the field of healthy aging is to take into account the desired image of a prosperous old age, which is formed by representatives of different generations.

The third stage of successful aging management is the implementation of previously developed state programs. The key objectives of this stage are to ensure the implementation of measures of state programs and achievement of the planned values of indicators of the population's prosperous aging, including ensuring the fullest coverage of its target categories by the relevant targeted measures of state programs. Analytical support of the discussed stage involves identification of the most demanded measures of state policy, identification of the reasons for the deviation of the level of coverage of the population by the measures of state policy from the set planned values, assessment of the relevance of the implemented measures to the current social demand in the field of healthy aging.

The fourth stage of management is control over the achievement of the set goal and fulfillment of the objectives of state programs. The main content of work at this stage is reduced to comparative assessment of planned and current values of target indicators of healthy aging, the result of which allows us to judge the success and effectiveness of the state policy. Based on the results of the current control, not only adjustments can be made in the process of implementation of state programs, but also the programs themselves can be subjected to substantive revision.

In our opinion, policies to manage the aging process (in the direction of ensuring a prosperous old age) should create conditions and opportunities for the realization of those needs that are important for older citizens, provide working mechanisms to improve living conditions and provide an alternative for those who for some reason are disadvantaged in health, employment, communication, etc. In addition, policies should not construct an unambiguous image of older people as either active, energetic individuals with a large number of activities and excellent health, or as passive recipients of social assistance. An important aspect is to take into account the human need to adapt to age-related changes, hence a forward-looking solution would be to develop aging management policies targeting all age groups. As K. Boudiny points out, there is a difference between "a policy agenda focused on aging and an agenda focused only on older people" (Boudiny, 2013).

Conclusion

Aging as a result of increasing life expectancy and declining birth rate is the main global demographic trend of our time and one of the key challenges for the economy and social development. Moreover, the rate of population aging is currently increasing. As a result, all countries face serious problems related to the growing burden on health care, social protection and pension systems, shrinking labor supply, slowing economic growth, etc. Globalization, urbanization, migration and other trends have a direct and indirect impact on the lives of older people. This, in turn, leads to the need for additional adaptation of this population category to both traditional and new challenges (epidemiological, digital, geopolitical, etc.).

Despite the fact that there are currently many different theories of aging, the discussion of the essence and criteria of aging in academic discourse continues. It seems that one of the most promising in terms of studying this phenomenon is the theory of healthy aging. It is in great demand by

international organizations and governments of different countries, as one of the consequences of its implementation in practice is the optimization of expenditures in the social sphere. In addition, successful aging is considered by experts as a fruitful modern methodology in terms of the level of tolerance and social culture. At the same time, given the new challenges, as well as the fact that in the near future the modern elderly population will differ significantly from the future older generations (in socio-cultural and professional senses), the theory of successful aging and the corresponding practical mechanisms and tools of social policy need further improvement.

The category of "successful aging" (and its target reference point – successful old age), introduced into scientific circulation in the second half of the 20th century, serves as a kind of organizing concept linking the economy, social support system, medicine, public health and gerontology, culture and society. At the same time, neither research nor managerial practice can deny the dual nature of the term "well-being"; it is a psychological side, reflecting the subjective perception of a person's place in the social structure, and the socio-economic side, reflecting the objective assessment of the population's life situation and formed as a result of the action of various institutions. In this regard, the development of appropriate social policy, taking into account modern aging scenarios and the conceptual framework of its construction outlined in the study, seems to be significant for managing the process of successful aging.

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Received March 25, 2024.

DOI: 10.15838/esc.2024.2.92.13
UDC 314.154, LBC 60.7

Demographic Policy Transformation in the Northeastern Provinces of China at the Present Stage

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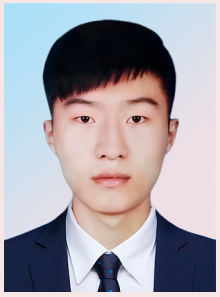

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For citation: Mishchuk S.N., Li Shuai, Wu Bin (2024). Demographic policy transformation in the Northeastern provinces of China at the present stage. *Economic and Social Changes: Facts, Trends, Forecast*, 17(2), 239–252. DOI: 10.15838/esc.2024.2.92.13

Abstract. The Northeastern provinces of China are strategic territories from a geopolitical point of view; this fact determines the importance and relevance of studying their characteristic fertility trends and family planning directions. The demographic processes taking place here correspond to the general trends in China, but most indicators are lower than in other areas. The main objective of the study is to identify the features of demographic processes and directions of demographic policy implementation in the Northeastern provinces of China (Liaoning, Jilin, Heilongjiang) in the 21st century. The study is based on the analysis of the results of the National Population Census of the People's Republic of China (2000, 2010 and 2020) and legal documents regulating the policy of fertility and family planning. We show that the Northeastern provinces have a maximum proportion of families with one child, and the proportion of families with two children is two times lower than the average in China. The number of women of fertile age has decreased by a third, and the average age of women who have entered into their first marriage is increasing. We reveal that after the liberalization of the two-child policy in China, the family planning system includes previously used measures to support the elderly and families with one child, as well as new methods of birth support. Despite the formation of a unified national model of fertility support, the differences at the provincial level primarily relate to the remuneration and social security system of the population. Longer periods of maternity leave have been defined for the Northeastern provinces, and additional payments for the birth of children in border regions have been introduced.

Key words: Northeast China, province, fertility, demographic policy, family policy, fertility support, family planning.

Introduction

At the 20th National Congress of the Chinese Communist Party, President Xi Jinping noted that "people are the primary element of development. Development of a country is inseparable from its people"[1]. A survey conducted by the National Health Commission of the PRC in 2021 indicates that the number of desired and expected children in China will continue to decline[2].

In Northeast China, demographic indicators were below the national average; negative birth rate trends were detected in the late 20th century. Since the implementation of the 2015 Program allowing families to have two children, birth rate in Northeast China has also been below the national average. The aim of the policy was to limit population growth in the long term, which explains the minor effect observed after the adoption of the Program (Van, 2018).

Taking into account specialization of Northeast China in agricultural production, Chinese authors note the negative impact of demographic processes on the long-term economic and social development of the region, as well as on national food security (Zhou, Zhang, 2022). S.B. Makeeva (Makeeva, 2023) notes that a range of reasons, including natural and climate conditions, industrial change and historical development features, influenced the development of negative demographic processes in Heilongjiang province.

In addition to natural population decline, Jiang Yu (Jiang, 2016) notes the negative impact of migration. Study of population mobility in Northeastern provinces of China with 593.4 thousand respondents, revealed migration gain in

[1] The 20th National Congress of the Chinese Communist Party. Available at: https://www.fmprc.gov.cn/web/ziliao_674904/zyjh_674906/202210/t20221025_10791901.html (accessed: December 12, 2023).

[2] Write a new chapter in the work on population in the new era. Available at: http://www.qstheory.cn/dukan/qs/2022-08/01/c_1128878530.htm (accessed: January 19, 2024).

Liaoning province together with migration outflow from Jilin and Heilongjiang provinces. Migration loss of working population leads to birth rate decrease in both provinces.

Hou Li identifies birth rate changes of ethnic minorities in this area as a reason for low birth rates. In 1989 the average birth rate of ethnic minorities in China was 2.88, in Northeast China – 1.93. According to family planning rules of Northeast China, only Jilin province permitted ethnic minorities to have two children, while Liaoning and Heilongjiang provinces did not have such exceptions (Hou Li, 2017).

Taking into account regional differences in demographic indicators in China, this research aims to identify the features of demographic processes and population policy directions in Northeastern provinces of China (Liaoning, Jilin, Heilongjiang) in the 21st century.

The research is based on the analysis of 2000, 2010 and 2020 Chinese Censuses as well as on major regional legal and regulatory acts of Liaoning, Heilongjiang, and Jilin provinces, focused on improving birth rates and family planning. The novelty of this research lies in a comparative analysis of relevant regulatory acts at the national level and at the level of China's Northeastern provinces at the beginning of the 21st century.

Methodologically, the research is based on the diversity concept. Proponents of the concept (M. Klupt, B. Wittrock) deny existence of a single universal law, explaining demographic processes. We share the view of B. Wittrock (Wittrock, 2002) that global processes and national rules and regulations interact in society. This conclusion is supported by examination of the family institution transformation in China. In 2010, M. Klupt observed that the processes of family forming in China resembled Western European trends. However, the policy for controlling population growth in China at that time was specific and did not consider the universality of demographic laws (Klupt, 2010). At the present stage, birth and marriage rates in China are in line with global trends. However, economic, social, and institutional features in a certain territory not only influence its demographic processes development but also determine a choice of measures for population policy.

Methods

The research is based on quantitative-statistical analysis and comparative analysis.

It consists of two parts. The first part considers main social and demographic indicators in Northeastern provinces of China at the beginning of the 21st century. The second one provides comparative analysis results of population policy in three provinces in question during 2020–2021. In contrast to other scientific studies that have focused on the analysis of demographic indicators within entire China (Bazhenova, 2019; Sivintseva, 2019; Babaev, 2023: Wang et al., 2023; Rusanova, Wang, 2023), this research examines regional nature of demographic situation and demographic policies specific to Northeastern provinces in comparison with all-China population indicators and policy measures. The distinctive feature of provinces in question can be attributed to their geopolitical significance, which provides cross-border collaboration with Russian territories. Demographic prosses observed in Northeast China are different from the national average, a factor that has attracted the attention of researchers, including Chinese and Russian authors, who have focused on studying this region.

Demographic situation in Northeastern provinces of China at the beginning of the 21st century

Over the years, birth rate in Northeast China has been declining. This has resulted in a corresponding decline in the overall population.

Between 1990 and 2000, natural population growth rate in Northeast China decreased from 11.46 to 4.33‰. Natural population growth in three Northeastern provinces was below the national average. This was attributed to birth planning policy and high migration loss. Migration loss was observed in Jilin and Heilongjiang provinces (Veremeichik, 2011).

The work (Zhang Liping, Wang Guangzhou, 2023) indicates that population of Northeast China is experiencing a period of continuous decline.

According to the Seventh National Population Census (2020)[3], the total population of Northeast China in 2020 was 98.51 million, i.e. 11.01 million less than in 2010. Among three provinces in question, Heilongjiang province experienced the most significant population decline, with reduction of over 6 million people, or 16.33%, between 2000 and 2020. In Jilin province a decline over the period was less obvious and reached 10.18% or 2.8 million people. Population growth of 1.79% (equivalent to 0.71 million people) was observed in Liaoning province[4].

Birth rate between 2000 and 2020 decreased in Heilongjiang province from 9.43% to 3.75%, in Jilin province from 9.53% to 4.84, and in Liaoning province from 8.46% to 5.2%[5].

The proportion of population over the age of 65 in three Northeastern provinces is increasing, while the proportion of children aged 0–14 is decreasing. In 2020, Liaoning ranked first among other provinces in population over the age of 65 (17%), while the proportion of children aged 0–14 was 11.12%. In Jilin province, the proportion of population belonging to these categories was approximately 15% and 11.96%; in Heilongjiang province – 15% and 11.71%[6].

Imbalance in population age structure affects consumer needs. Wu Yixiao, Jiang Shubo, and Ye Xin (Wu Yixiao, Jiang Shubo, 2022; Ye Xin, 2023) have observed that in Northeast China this has resulted in investment decline, profit reduction and in industry structure transformation of this region's economy.

Average annual number of newborns in Northeast China between 2000 and 2020 decreased by 58% to an average of 441,000 in 2020. Among three Northeastern provinces, Heilongjiang province experienced the most dramatic decline in birth rate. The number of births in the province declined by 67.5%, from 359,000 to 116,500. In 2000, birth rate in Heilongjiang was 9.43%, in Jilin – 9.53%, and in Liaoning – 8.46%, compared to the national average of 14.03%[7].

A slight increase in birth rate was observed during the twenty-year period under consideration in the late 2010s. In 2015, Northeast China experienced a rising birth rate after implementation of a two-child policy for certain couples in 2013[8] and a policy allowing all couples to have two children in 2015[9]. After the two-child policy the

[3] Paper of the Seventh Census of the National Bureau of Statistics of China 2. Population of the country. Available at: http://www.stats.gov.cn/tjsj/tjgb/rkpcgb/qgrkpcgb/202106/t20210628_1818821.html (accessed: December 29, 2023).

[4] Paper of the Seventh National Population Census 3. Population of the regions. Available at: http://www.gov.cn/xinwen/2021-05/11/content_5605779.htm (accessed: December 29, 2023).

[5] Ibidem.

[6] Ibidem (accessed: January 10, 2024).

[7] Paper of the Seventh National Population Census 3. Population of the regions. Available at: http://www.gov.cn/xinwen/2021-05/11/content_5605779.htm (accessed: January 10,2024).

[8] On November 15, 2013, the full text of the third plenum resolution of the Central Committee of the Communist Party of China, held on November 9–12, 2013, was published. It outlined a program to improve reform policy and stated that Chinese couples will be able to have two children if one of the partners was the only child.

[9] In October 2015, China officially announced that the one-child policy will be ended and will be replaced by a policy allowing two children per family.

proportion of population with average incomes, that accounted for the majority of births, entered a state of waiting. This is largely attributed to a desire to assess annually increasing expenses on having and raising a child (Zhou Xiaoyan, Zhang Jianhua, 2022). In 2020, birth rate in Heilongjiang was 3.75% in comparison to 2015, while in Jilin it was 4.84% and in Liaoning – 5.2%[10].

The data published in "Social Blue Book: 2022 China Social Situation Analysis and Prediction"[11] indicates that the ideal number of children in China is stable at 1.9–2.0. In 2021, the total birth rate per woman was 1.37 (Li Peilin et al., 2022). Female reproductive behavior is largely influenced by attitude toward marriage, which is shaped by a number of structural factors, including changing traditional roles of women, increasing level of education among women, competition in the labor market (Qiao Shuangping, 2024).

The rate value shows territorial variations. Northeastern provinces had the highest proportion of one-child families, with proportion of two-child families twice less than national average (*Tab. 1*).

Despite the two-child policy in 2015, Northeast China demonstrated a significant decline of one-child families and a slight decline of two-child families by 2020 (*Tab. 2*).

Table 1. Number of children in Chinese families in 2020

Region	Average amount of children per woman	0 children	1 child	2 children	3 children	4 children and more
China	1.37	22.46	28.19	40.28	7.8	1.27
North China	1.15	24.57	38.08	34.64	2.7	0
Northeast China	1.1	15.79	61.4	20.18	2.63	0
East China	1.29	24.56	28.21	41.04	5.64	0.55
South-central China	1.56	20.24	22.27	41.57	13.77	2.16
Southwest China	1.45	22.39	22.89	43.53	9.45	1.74
Northwest China	1.5	20.63	21.69	48.68	5.29	3.7

Source: Li Peilin, Chen Guangjin, Wang Chunguang et al. (2022). *Analysis and prediction of China's social situation in 2022*. Beijing: Social Sciences Literature Press.

Table 2. Distribution of families in Northeast China by number of children, %

Year	0 children	1 child	2 children	3 children	4 children and more
2010	0.02	77.67	20.38	1.74	0.19
2020	15.79	61.4	20.18	2.63	0

Source: paper of the Seventh National Population Census. Heilongjiang Bureau of Statistics. Available at: https://www.hongheiku.com/sjrk/1036.html (accessed: December, 30, 2023).

[10] The Seventh National Population Census. Available at: https://www.maigoo.com/zhishi/236839.html (accessed: January 10, 2024).

[11] Social Blue Book: 2022 China Social Situation Analysis and Prediction. Available at: https://www.hrssit.cn/info/2522.html (accessed: December 29, 2023).

One of the factors promoting birth rate decline is a reduction in the number of women of reproductive age. Between 2000 and 2020, the total number of women of reproductive age in Northeast China decreased by 31.3%. The majority of these women were born during the family planning policy, which led to a decline in the number of women of reproductive age at the beginning of the 21st century.

In terms of age structure, there was a decline in the proportion of women aged 15–24 and 25–39, while the number of women aged 40–49 increased. This resulted in an overall increase in the average age of women in the region (*Tab. 3*).

Sex structure of China's population is a crucial indicator reflecting the impact of the one-child policy. Earlier, due to absence of methods for determining the sex of a future child, families with a girl as the first child were more likely to have subsequent children than families that already had sons. With moving to one-child families, birth of boys became a primary concern. Previously, the sex of a baby was important only at birth of the second child. During the one-child policy, birth of a boy was a priority. Changes in family planning policy between 2011 and 2016 have affected the sex ratio. Both in China and in its Northeastern provinces there was a decline in the proportion of boys. The decline rate in provinces under consideration exceeded the national one. While the number of boys per 100 girls in Northeast China was higher than the national rate in 2000, the number of newborn boys in Liaoning and Jilin provinces was less than 100 by 2020 (*Tab. 4*).

Table 3. Age structure and average age of women in Northeast China

Year	Total, ten thousand	Age structure, %			Average age, years
		15–24	25–39	40–49	
2000	3186.63	24.48	48.14	27.39	32.88
2010	3147.9	24.95	41.47	33.58	33.99
2015	2866.81	19.16	44.8	36.04	34.15
2020	2188.4	18.49	44.41	37.08	34.73

Source: report on sample survey of data from the National Bureau of Statistics. Available at: https://data.stats.gov.cn/easyquery.htm?cn=E0103&zb=A0N09®-230000&sj=2021 (accessed: December 30, 2023).

Table 4. Sex ratio of newborn children in Northeast China, boys per 100 girls

Territory	2000	2010	2020
China	106.74	105.2	105.07
Liaoning	112.17	112.91	99.7
Jilin	109.87	115.67	99.69
Heilongjiang	107.52	115.1	100.35

Source: announcement of the Fifth Census in Northeast China of the National Bureau of Statistics. Available at: http://www.stats.gov.cn/tjsj/tjgb/rkpcgb/dfrkpcgb/200203/t20020331_30357.html (accessed: December 29, 2023); announcement of the Sixths Census in Northeast China of the National Bureau of Statistics. Available at: http://www.stats.gov.cn/tjsj/tjgb/rkpcgb/dfrkpcgb/201202/t20120228_30390.html (accessed December 29, 2023); press release of the Seventh National Population Census 4. Sex ratio. Available at: http://www.stats.gov.cn/english/PressRelease/202105/t20210510_1817189.html (accessed: December 28, 2023).

Currently, China is developing a new attitude toward women, their rights and opportunities for their participation in public life, education, entrepreneurship, sharing of housework with men (Wang et al., 2023). The role of women considers family maintaining and family education. Women's Development in China (2021–2030) outlines the main areas of female participation in society[12].

More active participation in social and economic life is reflected in increase in the age of first marriage. Currently the number of marriages in China has decreased and the age at which women marry and the age at which they give first birth both being postponed to later dates. By early 2020, the number of marriages in China decreased by 48.5% in comparison to the rate observed in 2013. The National Birth Rate Survey[13] indicates that the average age of the first marriage for women in China has increased from 23.6 years in 2006 to 26.5 years in 2016. Similarly, the age of first birth has risen from 24.3 to 26.9 years. By 2020 the average age of the first marriage for women was 28 years old. In Northeastern provinces it was lower than the national average. The minimum age in 2020 was recorded in Jilin Province (*Tab. 5*).

Despite the fact, China permitted families to have two children from 2016 until 2021, the total population of three Northeastern provinces declined. Birth rates continued to decline; marriage behavior has changed.

In 2021, China announced a policy to encou rage families to have three children. This article presents a more detailed analysis of proposed measures of the new family planning policy in comparison with Northeastern provinces in its next part.

Table 5. Average age of women during first marriage, years

Region	2000	2010	2020
China	23.22	23.8	27.95
Liaoning	22.6	23.6	27.6
Jilin	22.3	23.3	25.5
Heilongjiang	22.3	22.5	26.9
Source: China marriage and family report, 2022. Available at: http://yuwa.org.cn/ (accessed: January 31, 2024).			

[12] Women's Development in China (2021–2030). Available at: https://baijiahao.baidu.com/s?id=1712130632257540644&wfr=spider&for=pc] (accessed: January 19, 2024).

[13] The National Birth Rate Survey, 2017. Available at: https://xueshu.baidu.com/usercenter/paper/show?paperid=1k5a0eq0hv6v0ju0kv6e0e90sj172741&site=xueshu_se (accessed: December 29, 2023).

Overview of family planning policy in China in 2021–2022

The 2000 Fifth National Census revealed a relatively low birth rate of 1.22[14]. Despite this, China maintained a policy of limiting birth rate without adjusting it according to the current situation. Only in 2010, when the Sixth National Census indicated a further decline in the total birth rate to 1.18, Chinese government recognized a necessity to modify the family planning policy[15].

Over the past decade, China's family planning policy developed several stages:

1) November 15, 2013, the full text of the third plenum resolution of the Central Committee of the Communist Party of China, held November 9–12, 2013, was published. It outlined a program to improve reform policy and stated that Chinese couples will be able to have two children if one of the partners was the only child;

2) October 2015, China officially announced that the one-child policy will be ended and will be replaced by a policy allowing any family to have two children;

3) May 31, 2021, the Central Committee permitted residents to have three children.

Before analyzing measures to support birth rate in Northeastern provinces, it is necessary to examine the driver measures implemented in China between 2020 and 2022.

1. Many cities reduce requirements for maternity insurance, waiting time for receiving maternity benefits.

2. The procedure for applying for maternity benefits was changed. The benefit can now be received on a monthly basis.

3. Amount of maternity benefit increased. It is calculated from average industry pay for a previous year and duration of a leave. Currently, maternity leave for women is 98 days plus 15 days for those after caesarean section. In addition, for each subsequent child, the leave is increased by 15 days.

4. Incentive payment for parents with the only child is five yuan per month until the age of 18.

5. Childcare allowance for children born between September 1, 2013 and enrolled in elementary school is 25 yuan. This childcare allowance is also applicable to children born after 2014 until the age of six.

6. For parents with the only child, incentive payments are provided from birth and childcare allowance is paid from the seventh month of the child's birth. In case of a second birth, incentive payments for parents with the only child are not provided.

7. In 2022, the responsibility for paying daycare fees was transferred to employers, if parents live in this area and their children attend daycare. The average fee paid by employers is 130 yuan. It should be noted that this payment is non-obligatory, which may result in instances of non-payment[16].

This list is not full and mainly concerns childcare payments. However, China's birth rate maintenance and family policy consist of various aspects, including government financial support of daycares, compensation of school fees, social

[14] The Fifth National Census. Available at: http://www.stats.gov.cn/tjsj./tjgb/rkpcgb/qgrkpcgb/200203/t20020331_30315.html (accessed: December 29, 2023).

[15] The Sixth National Census. Available at: http://www.stats.gov.cn/tjsj./tjgb/rkpcgb/qgrkpcgb/201104/t20110429_30328.html (accessed: December 30, 2023).

[16] New rules for issuing childcare. Available at: https://zhidao.baidu.com/question/1869370841556041467.html (accessed: February 2, 2024).

assistance for poor families with children, etc. After two-child policy implementation, the existing support measures for the elderly and one-child families are preserved and new methods to maintain birth rate are introduced[17].

Birth rate support policy in Northeast China

N.K. Semenova, studying historical stages in the family planning policy in China, indicates ten periods and two stages. The period from 2013 to 2021 is determined as "new normal". During this period the birth limiting policy was ended (Semenova, 2022).

National regulatory acts serve as a basis for family planning measures within the whole country. Regulatory acts in each province serve as practical steps of its implementation, which is reflected in territorial features of birth rate improvement measures.

Regulatory acts of provinces in question meet Population and Family Planning Law of the People's Republic of China, dated August 20, 2021[18], in structure and ideological orientation, laws and administrative regulations, taking into account current situation in provinces.

To illustrate the structure and content of territorial regulatory acts, let us examine the Heilongjiang Province Population and Family Planning Regulations[19].

The act consists of five chapters: 1) general provisions; 2) population control; 3) technical family planning services; 4) organization and management; 5) benefits, support and social security.

General provisions indicate that family planning is a basis of country's national policy (Article 3). The second chapter on population control summarizes the necessity of introducing a birth registration system, promoting marriage and encouraging families to have three children.

Chapter "Technical family planning services" provides information on population access to family planning services and the necessity for the provision of quality birth control methods. It notes the necessity for development of a free premarital and maternity care system as a means of preventing or reducing birth defects and improving newborns health.

The mandatory system of premarital medical examination was declared invalid in October 1, 2003 with new "Regulations on Marriage Registration". This act emphasizes voluntary examination of future married couples[20].

Another chapter defines requirements for shaping a population policy, meeting national targets. Family planning and birth rates issues are included in tasks of all levels of government.

Article 29 indicates the necessity of directing the entire socio-economic system toward "developing a new reproductive culture" and "creating a scientific, civilized, and progressive concept of marriage and childbirth". Furthermore, mass media

[17] National rules for paying back childcare, 2022. Available at: https://zhidao.baidu.com/question/1765007956975547108.html?qbl=relate_question_6 (accessed: February 2, 2024).

[18] Population and family planning law of the People's Republic of China, dated August 20, 2021. Available at: https://m.baike.so.com/doc/5570371-5785579.html (accessed: January 15, 2024).

[19] Heilongjiang province population and family planning regulations. Available at: https://wenku.baidu.com/view/a56cf067322b3169a45177232f60ddccda38e6a2.html?_wkts_=1672410746319 (accessed: December 29, 2023).

[20] Ministry of Civil Affairs: New "Regulations on Marriage Registration" further protect the freedom of marriage and do not include mandatory provisions for premarital examinations, August 20, 2003. Available at: https://zqb.cyol.com/content/2003-08/20/content_718407.htm (accessed: January 30, 2024).

Table 6. Comparison of birth improvement measures in Northeastern provinces of China, 2021–2022

Heilongjiang	Liaoning	Jilin
Financial		
1. For families with two or more children registered and working in city, a monthly payment of one thousand yuan per child up to the age of three is paid after the second birth. In case of the third birth a one-time payment of twenty thousand yuan and a monthly payment of one thousand yuan shall be paid for children below three years. 2. Incentive payment of three thousand yuan is paid to families with a newborn child within three kilometers of the border line*. 3. Childcare allowance in border and old industrial districts may be higher than the provincial average.	1. A one-time payment of twenty thousand yuan is paid in case of the second birth. 2. Incentive payment of three thousand yuan is paid to families with a newborn child within three kilometers of the border line*. 3. Families with minor children have benefits when renting and purchasing accommodation.	1. Incentive payment of three thousand yuan is paid to families with a newborn child within 3 kilometers of the border line**. 2. For families with two or more children below three and six years, a subsidy system has been developed for children below.
Social		
1. Maternity leave for female workers is 180 days***, parental leave for men is 15 days. 2. Leave for married couples is 25 days (without a medical examination – 15 days). 3. Parents with children aged below three years can have a childcare leave of 10 days. Public holidays are paid.	1. Maternity leave is 158 days, parental leave for men is 20 days. 2. Couples with children aged below three years can have an annual childcare leave of 10 days. 3. Female workers with gestational period of less than four months can have 15 days of maternity leave. Those with gestational period of more than four months can have 42 days of leave. 4. In case of hospitalization of a couple who received "One-Child Glory (Honorary) Certificate" (population control measure during the one-child policy), their only child may take an annual family leave of 15 days.	1. Maternity leave is increased to 180 days and paternity leave is increased to 25 days. 2. Parents with a child aged below three years can take 30 days ah childcare leave. 3. Leave for married couples is 10 days more that the national average. 4. Women can have from three to six months of breastfeeding leave.
Institutional		
1. Governments at municipal and county levels form a subsidy system for families with two or more children. 2. Free premarital health examinations, checkups for pregnant women, newborn disease screening and other projects are available to the entire population. 3. Assisting women with children who in finding employment or learning a new profession. 4. Expanding the number of school places****.	1. Improvement of maternal and child healthcare system, prevention and control of diseases affecting women and children*****.	1. Prefecture governments are responsible for creating a childcare system. 2. Medical examination before marriage. 3. Discrimination against women, who gave birth to a girl, is prohibited. 4. Discrimination against women without children is prohibited.

* Policy of supporting newborn in border areas. Available at: http://xxgk.jl.gov.cn/zcbm/fgw_98077/xxgkmlqy/202202/t20220221_8398447.html. (accessed: January 19, 2024).

** Population and family planning in Jilin. Available at: http://www.jl.gov.cn/zw/yw/jlyw/202110/t20211030_8264419.html (accessed: January 19, 2024).

*** Duration of maternity leave in China is 98 days. According to the relevant policy, maternity leave for women is 98 days plus 15 days in the case of caesarean section; 15 days are added for each mew child.

**** Heilongjiang province population and family planning regulations. Available at: https://wenku.baidu.com/view/a56cf067322b3169a45177232f60ddccda38e6a2.html?_wkts_=1672410746319 (accessed: December 29, 2023).

***** Population and family planning in Liaoning. Available at: https://wsjsw.dandong.gov.cn/html/DDWJW/202112/0163918551872743.html (accessed: January 19, 2024).

should disseminate information on population and family planning. There is a strong emphasis on establishing "a reliable system of statistics on population, birth rate and family planning"[21].

The primary measures and directives of population policy to improve birth rate in Northeastern provinces of China are presented in *Table 6*. They are divided into three groups (financial, social, and institutional) to provide a more comprehensive representation of existing approaches in provinces.

Territorial features of family planning in provinces are more closely related to volume of financial resources for incentives and social security programs. Family planning and population regulations in provinces under consideration are focused on bearing three children per family. Under specific circumstances (such as disability of a child or living in border areas), the fourth child may be permitted.

Stabilizing the demographic situation in Northeastern provinces of China is important for their economic, innovative, social, and geopolitical position. For the border region under consideration, the link between population size and issues of security and stability is of a vital importance (Zaleskaya, 2021).

The authors (Yu Qiang, 2022) note that a narrow approach to solving the problem related only to population recovery is not sufficient. Instead, a set of measures must be developed to plan long-term and medium-term tasks in areas of innovations, logistics, and population settlement, including construction of four megalopolises (Dalian, Shenyang, Changchun, Harbin), etc. Stabilization of the demographic situation will be a response to structural transformations in the region's economic and social spheres (Turbanov et al., 2022).

Conclusion

Stabilizing population and birth rate, family planning policies are national tasks. Development of specific measures to improve birth rate is the responsibility of governments at municipal and county levels.

Over the past 60 years, data from 2023 first revealed a decline in China's population. However, demographic issues, including overall population reduction, low birth rate, transformation of the age structure of the population, increase in families without children were observed in Northeastern provinces of China (Heilongjiang, Jilin, and Liaoning) at an earlier stage.

Comparative analysis of demographic data from 2010 to 2020 revealed the following regional features among the provinces under consideration.

From 2010 to 2020, Heilongjiang experienced the largest population decline in the region, including the highest rate of decline in birth rate compared to other provinces in Northeast China. Furthermore, the proportion of male births in Heilongjiang is below the national average but greater than in Liaoning and Jilin. Jilin also registered a population decline. Additionally, the province has the minimum marriage age for women and the lowest number of boys born per 100 girls. In contrast, Liaoning demonstrates population growth from 2010 to 2020. This province is distinguished by a high proportion of population over the age of 65.

Current family planning and birth rate policies in China were introduced in 2021, this is why the implementation of the planned activities and birth rate improvement is at its early stage.

[21] Heilongjiang province population and family planning regulations. Available at: https://wenku.baidu.com/view/a56cf067322b3169a45177232f60ddccda38e6a2.html?_wkts_=1672410746319 (accessed: December 29, 2023).

Support measures at the level of provinces are designed to assist pregnant women and families with children. They are compatible with the proposed system of birth rate support at the national level and include medical care, subsidies and other forms of financial support, accommodation provision, institutional support measures (simplification of applying for maternity benefits, extended period of marriage and maternity leave, provision of preferential conditions for employment of women with children. A brief examination of birth rate support regulations in the Northeastern provinces revealed territorial features of support for families with children and women, both between and within the provinces.

Implementation of planned support measures represents only a part of family and birth rate support system. This system includes not only financial support but also ideological work with young people, organization of necessary social infrastructure aimed at pfoviding care and medical services for families with children, and changing the attitude toward women.

Taking into account the development of a single model for birth rate support as outlined in the Population and family planning law of the People's Republic of China, let us note that at the provincial level primary differences are observed in benefits and social security systems for the population. The Northeastern provinces of China have longer periods of maternity leave and additional payments for births in border regions.

Assessment of birth rate factors and implementation of family planning policy require a comprehensive approach that includes not only the current system of support measures, but also takes into account historical and socio-economic development features of territories, availability and level of childcare system that allows women and families with children not to experience any limiting circumstances.

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Received February 21, 2024.

DOI: 10.15838/esc.2024.2.92.14

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 VolRC RAS in the Vologda Region[1].

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 (April 2024) and for the period from April 2023 to April 2024 (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 2020–2023[2].

In February 2023 – April 2024, the President's approval rating increased slightly (by 3 percentage points, from 64 to 67%). The share of negative assessments remains stable (20–21%) and is significantly lower in comparison with positive ones[3].

Positive dynamics have been recorded over the past 12 months (from April 2023 to April 2024): the President's approval rating increased by 6 percentage points (from 61 to 67%)[4].

[1] The surveys are held six times a year in the cities of Vologda and Cherepovets, in Babayevsky, Velikoustyugsky, Vozhegodsky, Gryazovetsky, Tarnogsky Kirillovsky, Nikolsky municipal okrugs, and in Sheksninsky Municipal District. The method of the survey is a questionnaire poll by place of residence of respondents. The volume of a sample population is 1,500 people 18 years of age and older. The sample is purposeful and quoted. The representativeness of the sample is ensured by the observance of the proportions between the urban and rural population, the proportions between the inhabitants of settlements of various types (rural communities, small and medium-sized cities), age and sex structure of the Region's adult population. Sampling error does not exceed 3%.

More information on the results of VolRC RAS surveys is available at http://www.vscc.ac.ru/.

[2] In 2020, four rounds 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 +/- 3 p.p. fall within the limits of sampling error, they are considered insignificant and are marked in blue.

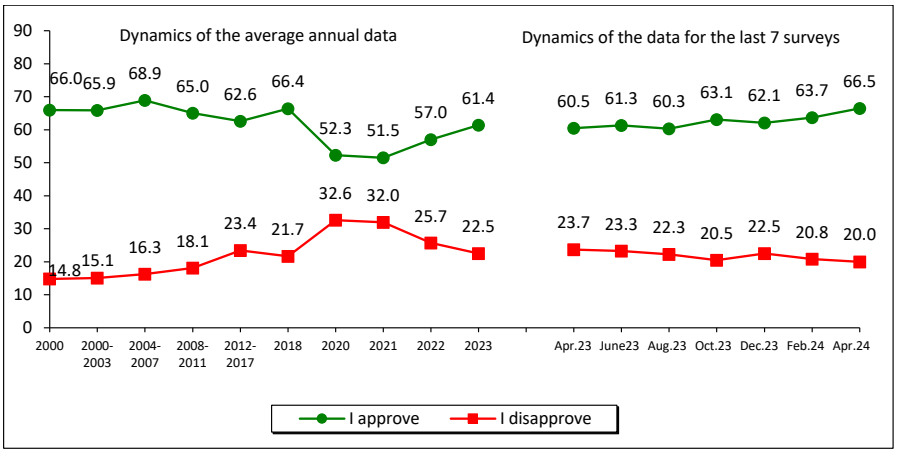
[4] Here and elsewhere in the text, the results of a comparative analysis of the data from the survey conducted in April 2024 and the results of the monitoring round conducted in April 2023 are given in the frame.

How would you assess the current work of…? (% of respondents)

Response	Dynamics of the average annual data									Dynamics of the data for the last 7 surveys							Dynamics (+/-), Apr. 2024 to	
	2000	2007	2011	2012	2018	2020	2021	2022	2023	Apr. 2023	June 2023	Aug. 2023	Oct. 2023	Dec. 2023	Feb. 2024	Apr. 2024	Apr. 2023	Feb. 2024
RF President																		
I approve	66.0	75.3	58.7	51.7	66.4	52.3	51.5	57.0	61.4	60.5	61.3	60.3	63.1	62.1	63.7	66.5	+6	+3
I disapprove	14.8	11.5	25.5	32.6	21.7	32.6	32.0	25.7	22.5	23.7	23.3	22.3	20.5	22.5	20.8	20.0	-4	-1
Chairman of the RF Government																		
I approve	-	-	59.3	49.6	48.0	38.7	39.9	45.4	50.1	48.3	49.2	50.8	51.3	51.9	52.7	53.7	+5	+1
I disapprove	-	-	24.7	33.3	31.6	40.4	37.6	32.0	27.6	28.1	27.1	26.1	28.6	27.9	26.2	24.3	-4	-2
Vologda Region Governor																		
I approve	56.1	55.8	45.7	41.9	38.4	35.0	36.7	40.9	48.1	48.3	48.7	48.1	47.5	49.1	50.8	51.7	+3	+1
I disapprove	19.3	22.2	30.5	33.3	37.6	42.5	40.5	35.8	30.9	32.3	30.7	29.7	29.7	29.9	27.5	30.1	-2	+3

Wording of the question: “How would you assess the current work of ...?”

How would you assess the way that the RF President is handling his job?
(% of respondents, VolRC RAS data)*



Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
I approve	+6	+3
I disapprove	-4	-1

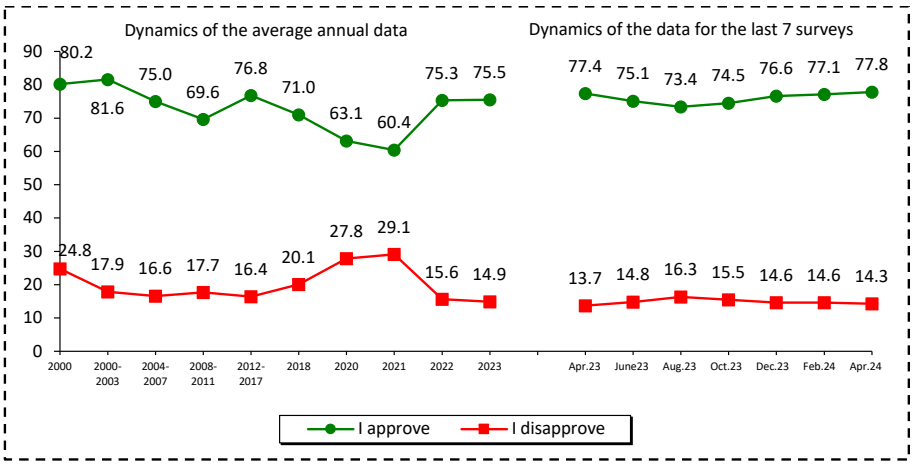
* Here and elsewhere, all graphs show the average annual data for 2000, 2018, 2020, 2021, 2022, 2023, as well as the average annual data for the periods 2000–2003, 2004–2007, 2008–2011, 2012–2017 that correspond to presidential terms.

For reference:

According to VCIOM, the President’s approval rating for the period from February 2024 to the beginning of April 2024 is 78%. The proportion of those who disapprove of the way the President is handling his job is 14%.

The President’s approval rating in 2024 remains at the level of 2023.

Do you approve or disapprove of the way that the RF President is handling his job?
(% of respondents; VCIOM data)



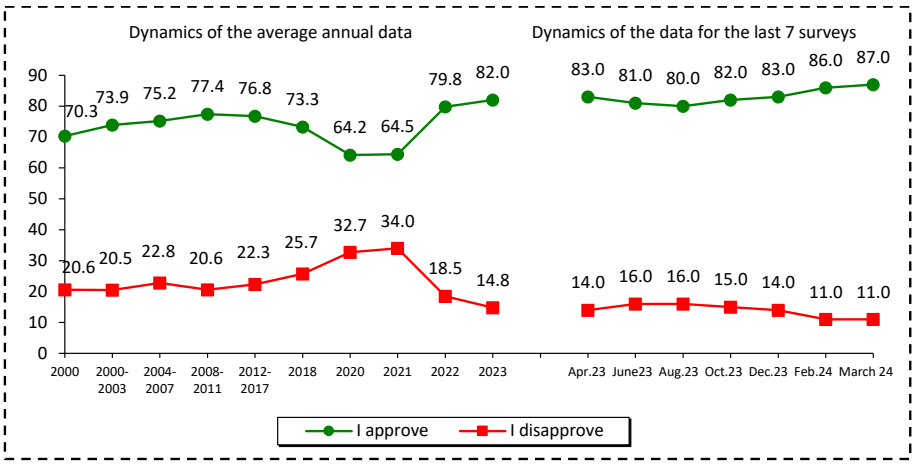
Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
I approve	0	+1
I disapprove	+1	0

Source: **VCIOM**. Available at: https://wciom.ru/
Wording of the question: "In general, do you approve or disapprove of the way that the Russian President is handling his job?"
Data as of April 2024 – for one survey of April 7, 2024.

According to Levada-Center, the President's approval rating has been increasing since August 2023. In February 2023 – March 2024, the share of those who approve of the way that the head of state is handling his job did not change (86–87%).*

Compared with April 2024, the President's approval rating in March 2024 increased by 4 percentage points, from 83 to 87%.

In general, do you approve or disapprove of the way that Vladimir Putin is handling his job as President of Russia?
(% of respondents; Levada-Center* data)



Dynamics (+/-), March 2024 to		
Response	Apr. 2023	Feb. 2024
I approve	+4	+1
I disapprove	-3	0

Source: **Levada-Center***. Available at: https://www.levada.ru/

Wording of the question: In general, do you approve or disapprove of the way that Vladimir Putin is handling his job as President of Russia?

* Included in the register of foreign agents.

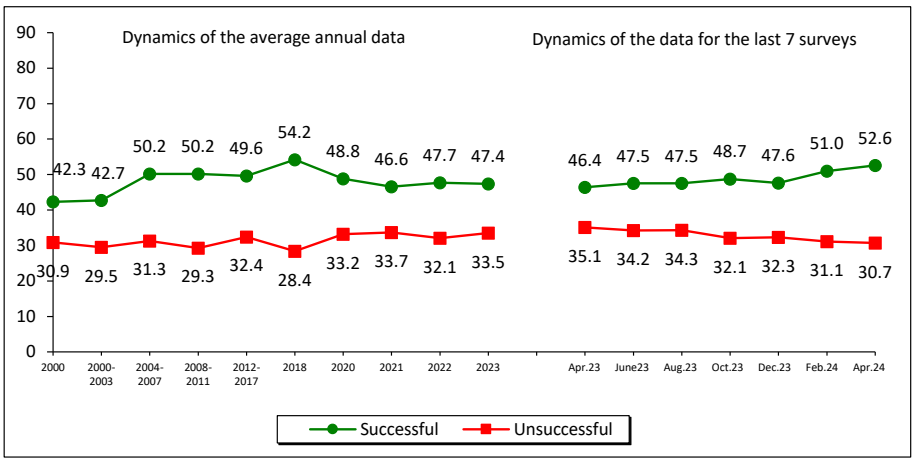
* Included in the register of foreign agents.

In your opinion, how successful is the RF President in handling challenging issues?
(% of respondents; VolRC RAS data)

From February to April 2024, we observe a slight increase in the share of the region's residents who consider the President's actions to strengthen Russia's international positions successful (by 2 percentage points, from 51 to 53%). The share of those who hold the opposite point of view has not changed and amounts to 31%.

Compared to April 2023, in April 2024, the share of positive assessments concerning the RF President's work aimed at strengthening Russia's position in the international arena increased by 6 percentage points (from 46 to 52%).

Strengthening Russia's international position

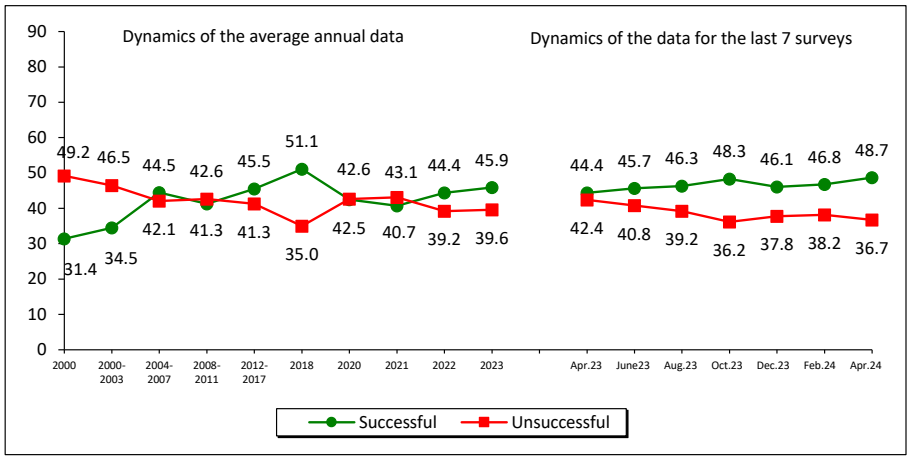


Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
Successful	+7	+2
Unsuccessful	-4	0

Over the past two months, the share of positive judgments about the RF President's work to restore order in the country has not changed significantly and amounted to 49%. The share of negative judgments is lower and there are small changes toward their reduction.

Positive dynamics are observed during the year of measurements (April 2023 – April 2024): the proportion of positive characteristics increased from 44 to 49%, the share of negative characteristics decreased from 42 to 37%.

Imposing order in the country

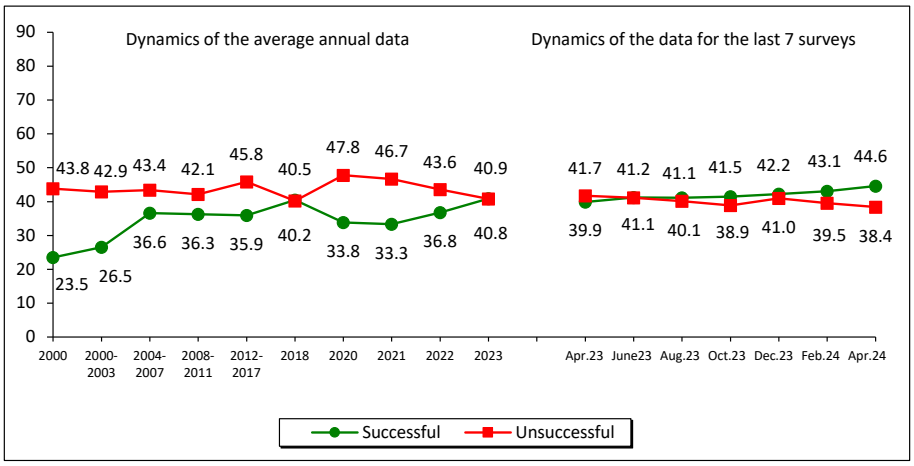


Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
Successful	+5	+2
Unsuccessful	-5	-2

The share of Vologda Region residents who consider the President's work to protect democracy and strengthen citizens' freedoms successful in February – April 2024 amounted to 43–45%. The proportion of those who adhere to the opposite point of view remains stable and amounts to 38–40%.

Compared to April 2023, the share of positive assessments of the President's work to protect democracy and strengthen citizens' freedoms increased from 40 to 45%, and the proportion of negative judgments decreased from 42 to 38%.

Protecting democracy and strengthening citizens' freedoms

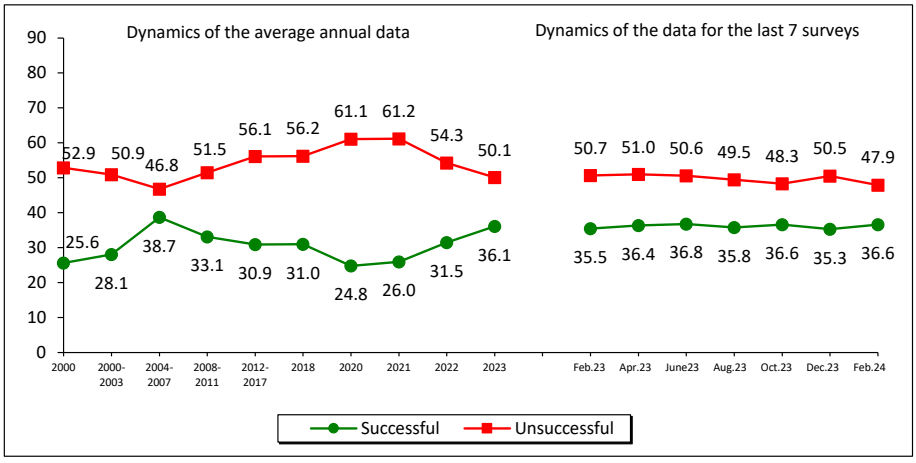


Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
Successful	+5	+2
Unsuccessful	-4	-1

In February – April 2024, assessments of the way the Russian President handles the problem of economic recovery and growth of citizens' welfare improved slightly: the share of positive opinions increased by 2 percentage points (from 37 to 39%), while the proportion of negative judgments remained at the same level.

Compared to April last year, there were no significant changes in public opinion. The share of positive judgments increased by 3 percentage points (from 36 to 39%), the proportion of negative judgments decreased by 3 percentage points (from 51 to 48%).

Economic recovery, increase in citizens' welfare



Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
Successful	+3	+2
Unsuccessful	-3	0

The political preferences of Vologda Region inhabitants have remained stable over the past two months. A large proportion still notes that their interests are expressed by the United Russia party (43–45%); the share of supporters of the United Russia party increased insignificantly, by 2 percentage points. The support of the population for the rest of the parties remains unchanged: Communist Party – 9%, LDPR – 6%, Just Russia – 4–3%, New People – 1–2%.

Over the past 12 months, the share of those whose interests are expressed by the United Russia Party has increased by 7 percentage points (from 38 to 45%). The proportion of those who do not support any of the parties decreased by 4 percentage points (from 28 to 24%).

Which party expresses your interests? (% of respondents; VolRC RAS data)

Party	Dynamics of the average annual data													Dynamics of the data for the last 7 surveys							Dynamics (+/-), Apr. 2024 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	2023	Apr. 2023	June 2023	Aug. 2023	Oct. 2023	Dec. 2023	Feb. 2024	Anp.2024	Apr. 2024	Feb. 2024
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	39.5	37.6	39.3	39.0	40.3	41.7	42.7	44.5	+7	+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	9.6	9.3	9.5	9.8	9.8	9.8	9.0	8.5	-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	7.0	6.9	6.7	7.8	7.9	6.5	6.6	6.5	0	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	4.4	4.7	4.7	4.5	4.5	3.5	3.6	2.8	-2	-1
New People*	–	–	–	–	–	–	–	–	–	5.3	2.3	1.5	1.9	2.1	2.1	2.3	1.5	1.9	1.4	1.9	0	1
Other	0.9	1.8	1.9	–	2.1	0.3	–	0.7	0.5	–	0.2	0.3	0.1	0.1	0.0	0.2	0.0	0.3	0.1	0.1	0	0
None	29.6	17.8	29.4	–	31.3	29.4	–	28.5	34.2	–	33.9	30.6	26.5	28.0	26.5	25.2	24.6	26.6	25.2	24.2	-4	-1
Unsure	20.3	21.2	13.2	–	11.7	12.0	–	11.2	11.1	–	10.0	10.1	11.1	11.4	11.4	11.2	11.4	9.9	11.4	11.4	0	0

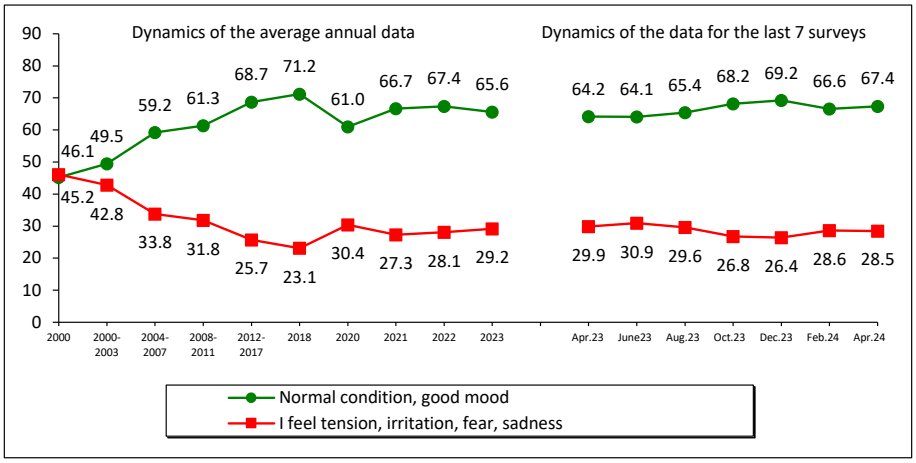
* The New People party was elected to the State Duma of the Russian Federation for the first time following the results of the election held on September 17–19, 2021.

Estimation of social condition (% of respondents; VolRC RAS data)

In April 2024, social sentiment estimates did not change significantly, compared to February. The largest proportion of people say that their daily emotional state is positive (67%).

The dynamics of the social well-being of the population over the year of observations remain stable. The proportion of positive ratings exceeds negative ones.

Social mood

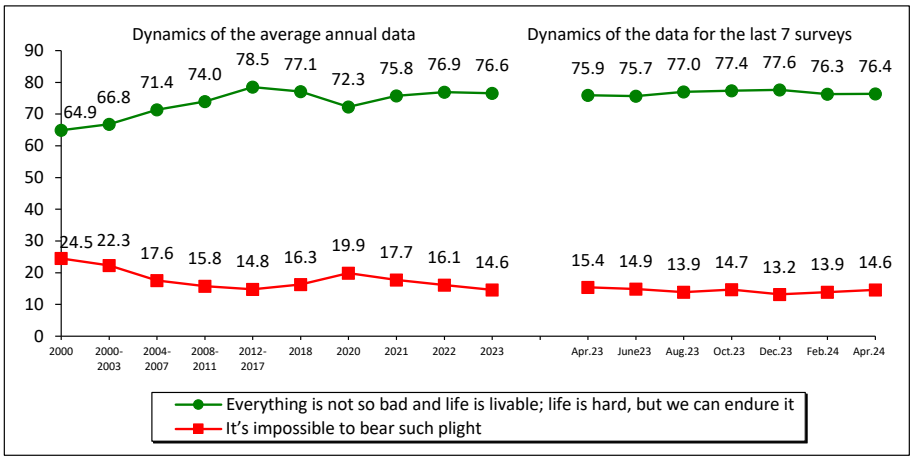


Response	Dynamics (+/-), April 2024 to Apr. 2023	Feb. 2024
Usual condition good mood	+3	+1
I feel tension, irritation, fear, sadness	-1	0

Over the past two months, the indicators of stock patience have remained consistently high: the proportion of those who believe that "everything is not so bad and life is livable; life is hard, but we can endure it" has remained at the level of 76%. The proportion of negative responses is 13–14%.

During the period from April 2023 to April 2024, there was no deterioration or improvement in the indicators of social patience.

Stock of patience

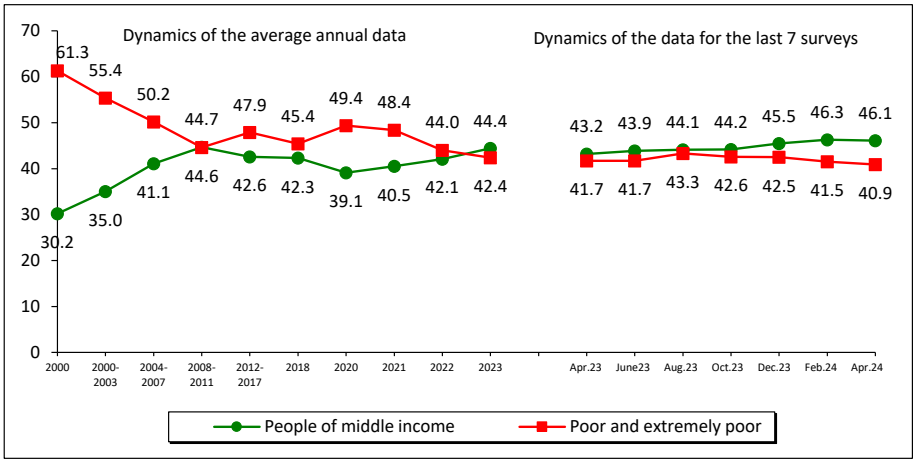


Response	Dynamics (+/-), April 2024 to Apr. 2023	Feb. 2024
Everything is not so bad and life is livable; life is hard, but we can endure it	+1	0
It's impossible to bear such plight	-1	+1

In April 2024, as in February, the share of Vologda Region residents who consider themselves people of "middle income" was 46%. According to self-assessments, the proportion of the "poor and extremely poor" remained at the level of 40–42%.

There have also been no significant changes in population estimates over the past year. However, the share of Vologda Region residents who consider themselves people of middle income increased by 3 percentage points (from 43 to 46%).

Social self-identification*



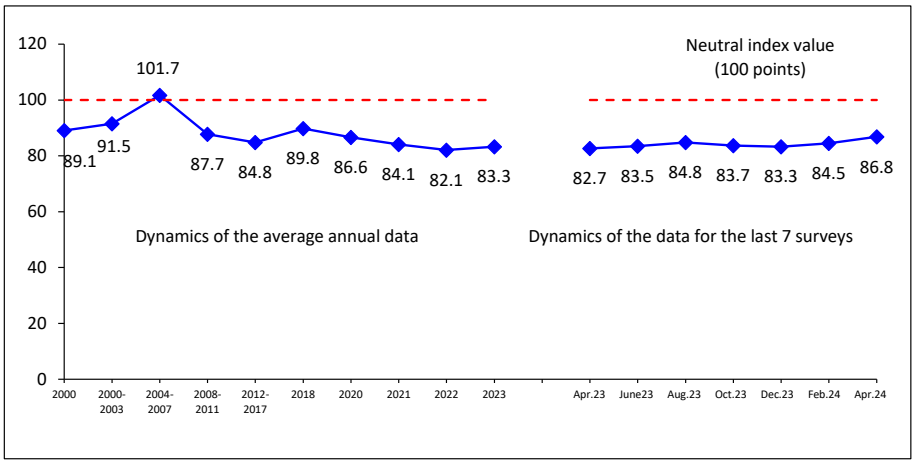
Dynamics (+/-), April 2024 to		
Response	Apr. 2023	Feb. 2024
People of middle income	+3	0
Poor and extremely poor	-1	-1

Wording of the question: "What category do you belong to, in your opinion?"

The Consumer Sentiment Index (CSI) increased slightly in February – April 2024: from 85 to 87 points, by 2 points.

Over the past year, there have been positive changes in the values of the CSI: an increase of 4 percentage points from 83 points in April 2023 to 87 points in April 2024.

Consumer Sentiment Index (CSI, points; VolRC RAS data for the Vologda Region)



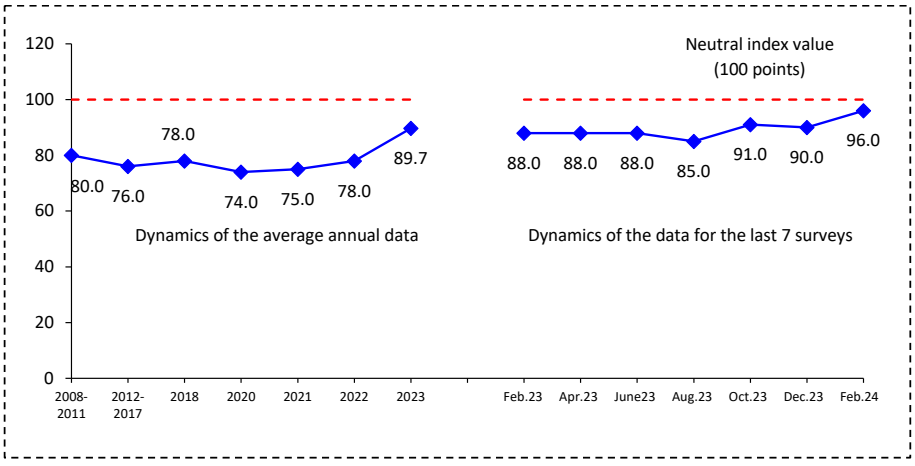
Dynamics (+/-), April 2024 to		
CSI	Apr. 2023	Feb. 2024
Index value, points	+4	+2

For reference:

According to the latest data from the all-Russian surveys conducted by ***Levada-Center****, for the period from December 2023 to February 2024, the Consumer Sentiment Index increased significantly (by 6 points) and amounted to 96 points.*

More positive changes are recorded in the annual dynamics. The CSI increased by 8 points, from 88 to 96 points.

Consumer Sentiment Index (CSI, points; Levada-Center* data for Russia)



Dynamics (+/-), February 2024 to		
CSI	Feb. 2023	Dec. 2023
Index value, points	+8	+6

The latest data are as of February 2024.

The index is calculated since 2008.

Source: Levada-Center*. Available at: https://www.levada.ru/indikatory/sotsialno-ekonomicheskie-indikatory/

* Included in the register of foreign agents

In February – April 2024, there were no significant changes in estimates of social mood in all major socio-demographic groups. An insignificant (by 3 percentage points) decrease in the proportion of people experiencing predominantly positive emotions in their daily lives is noted among the top 20%.

In the annual dynamics, 7 out of 14 groups show positive trends, while the estimates remain stable in the rest of the groups. At the same time, the most pronounced positive changes are recorded in women, young people under 30 years of age, and people over 55 years of age, people with a low level of education, as well as among the least affluent and middle-income residents of Vologda.

Social mood in different social groups (response: "Wonderful mood, normal, stable condition", % of respondents; VolRC RAS data)

Population group	Dynamics of the average annual data									Dynamics of the data for the last 7 surveys							Dynamics (+/-), Apr. 2024 to	
	2000	2007	2011	2012	2018	2020	2021	2022	2023	Апр. 2023	Июнь 2023	Авг. 2023	Окт. 2023	Дек. 2023	Фев. 2024	Апр. 2024	Apr. 2023	Feb. 2024
Sex																		
Men	50.1	65.9	64.5	69.1	72.8	60.8	65.7	66.8	65.5	65.4	63.4	65.4	66.9	69.6	66.5	67.7	+2	+1
Women	43.3	61.7	62.0	65.8	69.8	61.2	67.4	67.9	65.7	63.4	64.7	65.3	69.4	68.9	66.5	67.1	+4	+1
Age																		
Under 30	59.1	71.3	70.0	72.3	80.0	67.6	73.5	77.6	75.0	72.9	72.9	76.2	79.4	78.0	75.1	77.5	+5	+2
30–55	44.2	64.8	62.5	67.9	72.6	61.8	69.5	69.4	68.8	67.7	68.6	69.2	71.1	72.3	69.9	70.0	+2	0
Over 55	37.4	54.8	58.3	62.1	65.2	57.4	60.5	61.1	58.2	56.9	55.4	56.3	60.5	62.0	59.2	60.7	+4	+2
Education																		
Secondary and incomplete secondary	41.7	58.4	57.4	57.2	64.8	56.1	62.1	64.6	62.0	60.2	61.6	63.2	64.4	65.5	63.9	64.7	+5	+1
Secondary vocational	46.4	64.6	63.6	66.7	72.2	63.5	66.7	68.3	66.1	65.1	63.7	65.1	70.1	69.1	66.0	67.9	+3	+2
Higher and incomplete higher	53.3	68.6	68.3	77.0	76.8	63.3	71.5	69.5	68.8	67.3	68.2	67.4	70.0	72.8	69.4	69.8	2	0
Income group																		
Bottom 20%	28.4	51.6	45.3	51.5	57.3	43.4	54.6	57.0	50.1	47.8	50.4	49.6	52.5	54.2	52.2	53.0	+5	+1
Middle 60%	45.5	62.9	65.3	68.7	71.9	62.6	67.3	68.1	67.4	64.4	65.7	67.9	71.0	73.1	66.9	68.5	+4	+2
Top 20%	64.6	74.9	75.3	81.1	82.9	75.6	79.9	78.3	73.9	78.2	72.1	70.3	73.2	75.9	74.4	77.5	-1	+3
Territory																		
Vologda	49.2	63.1	67.1	73.6	71.0	60.9	60.3	59.8	59.6	56.0	57.8	60.8	63.8	64.8	62.5	64.2	+8	+2
Cherepovets	50.8	68.1	71.2	76.2	75.8	60.4	71.0	71.2	68.1	68.4	67.9	66.4	69.4	70.6	67.2	68.2	0	+1
Districts	42.2	61.6	57.1	59.8	68.7	61.4	67.8	69.5	67.7	66.6	65.6	67.3	70.2	70.9	68.5	68.8	+2	0
Region	46.2	63.6	63.1	67.3	71.2	61.0	66.6	67.4	65.6	64.3	64.1	65.3	68.3	69.2	66.5	67.4	+3	+1

RESUME

The results of the latest round of the public opinion monitoring demonstrate the stability of society and the high adaptive abilities of the population to challenges within the country and in the international arena, as evidenced by the predominance of mostly stable and positive assessments of the main indicators over the last two months (February – April 2024), and the year of observations (April 2023 – April 2024):

– the President's approval rating remains high (67%); compared with last year there is an increase in support for the head of state from 61 to 67%;

– since April 2023, there has been a steady positive trend in approval of the President's work aimed at strengthening international positions (46 to 53%), protecting democracy and citizens' freedoms (from 40 to 45%), as well as restoring order in the country (from 44 to 49%), while no significant changes have been recorded in two months;

– a certain increase in support is also noted in the field of political preferences, in which the United Russia party is consistently on top. While there were no significant changes in the level of support for this party from February to April 2024, in a year there has been an increase in the number of its supporters – those people whose interests it expresses – from 38 to 45%;

– estimates of social mood remained almost unchanged over the two months of observation and over the year: most people continue to assess their emotional state in everyday life as positive (64–67%). At the same time, positive trends are observed in the annual dynamics in seven of the 14 socio-demographic groups, the estimates remain stable in the rest of the groups.

– there were no noticeable changes in the dynamics of self-assessments of the financial situation on average in the region in April 2024, the majority of the population considers themselves "middle-income people" – 46%, but there remains a significant proportion of those who consider themselves "poor and extremely poor" – 41%.

– the values of the Consumer Sentiment Index remained almost at the level of two months ago, the growth was insignificant – by 2 p. (from 85 to 87 p.). In addition, in the long-term measurement (April 2023 – April 2024), the values of the CSI increased by 4 points (from 83 to 87 points), which may indicate some improvement in the financial situation and the forecast for the future.

Thus, there is an implicit, but mostly positive trend in the dynamics of public opinion. In this regard, the results of the surveys conducted at the regional level correlate with the estimates of the population as a whole in the country.

At the same time, we should note that the international situation around Russia continues to be alarming: the goals of the SMO have not yet been achieved, new economic sanctions are being imposed, and NATO is expanding (Sweden officially joined NATO on March 7, 2024, becoming the 32nd ally[5]), The norms of international law are being violated in relation to our country[6].

In addition, we cannot but recall the tragic event that occurred in Russia on March 22, 2024 – the terrorist attack at Crocus City Hall. Experts note that "the purpose of any terrorist action is the moral

[5] Sweden will officially join NATO on March 7. Available at: https://www.vedomosti.ru/politics/news/2024/03/07/1024261-shvetsiya-nato-marta

[6] Confiscation of assets of the Russian Federation will be a violation of the UN Charter and international law – expert. Available at: https://rapsinews.ru/international_news/20240422/309831684.html; Russian Mission to the UN: Russia condemns Israel's violations of international law in Gaza. Available at: https://tass.ru/politika/20205191

decay of society, devastation and fear"[7]. However, according to the survey data, the political situation in the country and the region has not worsened, and public sentiment is stable.

Perhaps these two factors (support for the course of national development implemented by Vladimir Putin, and the unrelenting nature of threats to national security from the Collective West) had a decisive influence on the main political event in the life of the country: on March 15–17, 2024, the presidential election was held in Russia, in which the current head of state, Vladimir Putin, quite predictably won a landslide victory. "The result obtained by the current President is more than 87% with a turnout of 77.44%, this is the most important confirmation of popular support for his course… This is a historical maximum. There has never been such a result in the modern political history of the country"[8].

We should also note that compared with Vladimir Putin's first presidential election (March 26, 2000), the number of people who voted for him almost doubled – from 39.7 to 76.3 million.

"The current high score of Vladimir Putin is not a political success, it is not some kind of accident, it is the result of many years of work in the interests of the people"[9].

Opinion of A. Mukhin, director general of the Center for Political Information. April 4, 2024

"There is an effect of "consolidating around the flag" in the RF presidential election… Russians have given a mandate to support the head of state against the background of the SMO"[10].

Opinion of M. Muzaev, election expert

"In the atmosphere of wartime, the election was held in the mode of military mobilization... The logic "for power – or we perish" for many voters turned out to be the main dominant behavior on voting days"[11].

Opinion of V. Egorov, RF State Duma deputy

This election result reflects people's trust in the national leader, and the demand for continuity in government is becoming more and more significant for society. Nevertheless, it is necessary to remember the importance of a comprehensive analysis and interpretation of public opinion assessments. The majority support of the head of state should not serve as a reason to ignore the opinions of "other groups" of the population and their needs. It is important to take into account the diversity of points of view and strive to unite them.

Prepared by K.E. Kosygina, I.M. Bakhvalova

[7] The tragedy at Crocus City Hall and the attacks on Belgorod united the whole of Russia from citizens to corporations. Available at: https://eisr.ru/news-and-announcements/eisi-tragediya-v-krokuse-i-ataki-na-belgorod-splotili-vsyu-rossiyu-ot-grazhdan-do-korporatsiy/

[8] Experts assessed the past presidential election: There was a supermajority. Available at: https://rg.ru/2024/03/18/eksperty-ocenili-proshedshie-vybory-prezidenta-slozhilos-superbolshinstvo.html

[9] The Expert Institute for Social Research noted an unprecedented level of concolidation around the president. Available at: https://lenta.ru/news/2024/04/04/edineniya/

[10] Political scientists discussed the results of the presidential election. Available at: https://rg.ru/2024/03/19/lider-i-brendy-ocenki.html?ysclid=lugn7jyv3x476786397

[11] Ibidem.

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Make up T.V. Popova
Translators and Proof-readers A.A. Popova
A.D. Kirillova
A.K. Volkova

Passed for printing May 30, 2024.
Date of publication May 31, 2024.
Format 60×84 1/8. Digital printing.
Conventional printed sheets: 31.03. Copies: 500. Order # 18.
Price is open.

The journal is registered with the Federal Service
for Supervision of Telecom and Mass Communications (Roskomnadzor).
Certificate of registration PI FS77-71361 dated October 26, 2017.

Founder: Federal State Budgetary Institution of Science
"Vologda Research Center of the Russian Academy of Sciences" (VolRC RAS)

Address of the Publisher and Editorial Office:
56A, Gorky St., Vologda, 160014, Russia
phone (8172) 59-78-03, fax (8172) 59-78-02, e-mail: common@volnc.ru