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THE ECONOMY OF THE RUSSIAN BALTIC SEA REGIONS: ADAPTATION AND MODERNISATION

RUSSIAN EXCLAVE ON THE BALTIC SEA

MUNICIPALITIES OF THE RUSSIAN BALTIC SEA REGION

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RUSSIAN BALTIC REGION IN A CHANGING WORLD:
FACTORS AND TRENDS IN SPATIAL DEVELOPMENT

Special issue

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From the editor

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Russia's Baltic regions have received considerable scholarly attention throughout the country's contemporary history, with recent years being no exception. Yet, the year 2022 — probably for the first time since the demise of the USSR — saw dramatic changes in the geopolitical standing of Russian regions, particularly the northwestern ones lying on the shores of the Baltic Sea.

Despite the many years of cooling in relations between Russia and the West, Russian Baltic regions continued to function as the proverbial window to Europe until the beginning of the special military operation and the sanctions against Russia, which surpassed the earlier imposed ones in scale. Most joint ventures benefiting from the advantageous coastal position and the well-known neighbourhood effect carried on their operations; the construction of new facilities fostered growth in the cargo handled by Baltic seaports. The severance of traditional international trade ties, which occurred in 2022, created a situation where Russia's Northwest, for the first time, was a laggard rather than a front-runner in terms of economic performance. To a significant extent, this resulted from logistics restructuring and international companies exiting Russia.

This state of affairs inevitably brings the prospects of the Russian Baltic regions to the forefront of scholarly attention and calls for a close analysis of the territory's features and factors in its socio-economic development. This scope of interdisciplinary problems is the focus of this themed issue of the journal, which showcases articles by experts in geography, economics and political science.

The contributors to the issue concentrate intently on the state of affairs observed in 2022 and 2023 in Russia's Baltic regions. At the same time, many elements of the situation seen in the macro-region are determined by long-term development factors and global trends, which are discussed in some of the articles. This also holds for the opening article by A. G. Druzhinin. He examines the impact of the sea factor on Russia's spatial development under the influence of geopolitical circumstances. His article delves into the conditions and trends in the socio-economic performance of Russia's distinct macro-region — the Baltic area.

The section investigating the development of the country's Baltic regions in the new geopolitical landscape continues with the article by Y. M. Zverev. His work examines the economic and military security of the area and the restructuring of economic ties, including the curtailment of cross-border cooperation.

Further on, P. Ye. Smirnov examines the geopolitical consequences of Finland's and Sweden's accession to NATO for Russia's standing in the Baltic region. The second section of the issue looks at the economy of Russia's Baltic regions, concentrating on two urgent problems: the adaptation of Russian territories to the severance of international economic ties and the territories' capacity for science and innovations.

The contribution by D. B. Kuvalin and Yu. A. Shcherbanin shows how and why Baltic seaports have adapted to the new environment, managing to carry on successful operations. The article co-authored by A. S. Mikhaylov, D. D. Maksimenko, M. R. Maksimenko and M. M. Filatov stresses the need for restructuring cooperation ties in research and academia, namely those that previously involved 'unfriendly' countries. The concluding

article is noteworthy as it offers a comparative assessment of innovation development in Northwest Russia: despite a certain commonality of trends and factors of socio-economic development observed across Russia's Baltic territories, each has specific features.

Owing to its exclave status, Kaliningrad occupies a distinctive position among Russia's Baltic regions. The challenges in economic development faced in 2022 were not the first instances of difficulties arising from strained relations with neighbouring EU countries. Well before the special military operation, Russian authorities grappled with issues related to Russian cargo transit through Lithuania. Notably, the Ust-Luga — Baltiysk train ferry service, which has seen substantial demand since 2022, was inaugurated as early as 2006.

Another section of the issue is devoted exclusively to the Kaliningrad region. The article by V. A. Kolosov and A. B. Sebentsov looks at how the functions of borders affect the restructuring of the region's economy, emphasising the role of the border as either a barrier or a stimulus for transformation. In her contribution, L.G. Gumenyuk focuses on the prospects of Kaliningrad's manufacturing industry.

The issue concludes with an article highlighting the significance of investigating Russian territories at a level of not only regions but also municipalities, with the latter revealing the contrasts between urban and rural areas. Moreover, this approach makes it possible to describe the formation of urban agglomerations and accurately assess the impact of a territory's geographical position and economic specialisation on its socio-economic development.

When analysing the geopolitical and geo-economic situation of Russia's Baltic regions, contributors to the issue emphasise the considerable degree of uncertainty regarding any future scenario and the obvious need to diversify national and regional economic ties irrespective of future developments. They also see it as crucial to foster interregional ties and cooperation whilst facilitating economic restructuring in pursuit of technological excellence.

The twenty months that have passed since February 2022 have demonstrated that the economy of Russia's Baltic regions and the nation as a whole can adapt to the new external environment. It seems that the studied regions will be able to continue to benefit from their traditional competitive advantages, including being home to the country's second most important urban agglomeration with its standing as a centre for science and technology and welcoming seaside location. Enjoying proximity to Central Russia and Greater Moscow — the economic nucleus of the nation, the St. Petersburg agglomeration still has the potential to emerge as a maritime hub. Pressing home these competitive advantages would be impossible without involvement from Russian businesses and public authorities, not to mention their effective cooperation. Although economic policy was not among the themes of the issue, all the articles presented in this instalment formulate recommendations on appropriate economic measures and describe further steps to adapt Russia's Baltic regions to the new geopolitical and geo-economic conditions whilst ensuring their socio-economic development.

Guest editor of the issue

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RUSSIAN BALTIC SEA REGIONS IN THE NEW GEOPOLITICAL REALITY

THE GEOPOLITICAL EFFECT OF THE MARITIME FACTOR ON THE SPATIAL DEVELOPMENT OF POST-SOVIET RUSSIA: THE BALTIC CASE

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The article explores the impact of geopolitical processes on the spatial organisation of society, a matter that has gained increasing importance in Russia. It focuses on the utilization of the World Ocean and its coastlines for resource extraction, logistics, military-strategic purposes, and settlement. Methodologically, this study combines modern socio-geographical approaches emphasising the role of the maritime factor in spatial development with classical geopolitical ideologemes drawing a line between the land and the sea. It stresses the fundamental possibility for territories, including states, not only to acquire synthetic continental-maritime attributes but also to transform the balance of these attributes under the influence of geopolitical determinants. The article analyses geopolitically induced changes in the maritime activities pursued by Russia in the post-Soviet period. The primary focus is on the situational territorial and economic shifts of 2014 and 2022, and their implications for Russian territories in the Baltic region. Pronounced inter-basin differences are described with respect to the coastalisation of the population. The study also evaluates the economic condition of key Russian maritime centres and their resilience to external influences, especially geopolitical challenges. The article offers a geopolitical justification for Russia's ongoing maritime endeavours, emphasizing the need for inter-basin, intermunicipal, and interregional integration. This integration should be accompanied by the establishment of coastal-intracontinental facilities, such as hubs, across Russia. It is imperative for the nation and its prominent corporations to actively engage in shaping the framework of emerging expansive international maritime socio-geographical structures, facilitating the shift toward global maritime polycentrism. The solution to these problems is closely linked to the priority goal of strengthening Russia's geostrategic standing in the Baltic region, particularly with a focus on its maritime components. These developments are

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anticipated within the context of the Russian Baltic Area, envisioned as a borderland with trans-basin geopolitical, economic-geographical, and geocultural bi-structural asymmetry.

Keywords:
spatial development, coastal areas, marine regionalisation, maritime activity, geopolitics, Russia, Russian Baltic Area

Introduction and problem setting

The manifestations and consequences of today's massive geopolitical and geopolitical shifts are all-encompassing and multifaceted. These shifts include the drift of economic activity and power from the Euro-Atlantic to the Indo-Pacific region [1], the nationalisation and regionalisation of politics and the economy [2] and, accordingly, the rise of 'new globalisation' and the formation of a multipolar world [3]. The change is also felt in such a seminal area of human endeavour as maritime activity, which seeks to harness the potential of sea basins for raw materials extraction, logistics, and strategic military and other uses whilst doing so with regard to settlement patterns and the spatial structure of the economy, as well as to the processes determined by the maritime factor [4].

The metamorphoses of the global world order give rise to violent conflicts, a vivid example of which is the special military operation in Ukraine. The struggle between incommensurable centres of political power is transforming maritime spaces into not only potential and actual theatres of war, but also a major arena, resource for, and object of, geopolitical rivalry.

All things maritime and their human geography aspect, which has been extensively investigated in Russia [5—7 and other works] and abroad, are becoming increasingly relevant whilst inevitably assuming a geopolitical dimension. The efforts of the academic community to conceptualise maritime geopolitics [8—14] are gaining substance and recognition despite remaining few. This equally applies to the infrequent attempts to provide an informed rationale for geopolitical factors in the development of coastal regions [15; 16]. At the same time, classical geopolitical approaches are coming to the fore in research. Characterised by a focus on the dualism and even contrariety between land and sea [17], close attention to the maritime strength of the state [18] and the recognition of the geostrategic significance of sea coasts [19; 20]. Geopolitics is an interdisciplinary research area that, despite being fuzzy in terms of scope, is directed clearly at spatial analysis. A solid definition of geopolitics interprets it as a science of rivalry of powers over territories [21]. When applied to Russia, geopolitics increasingly focuses on the background circumstances of national development, situations in selected regions and major aspects of spatial evolution.

This article seeks to examine the maritime features of post-Soviet Russia's spatial development by placing it in the context of current and persistent geopolitical circumstances. These maritime features are understood as the continuous coastalisation of population and the economy in response to maritime structures outpacing in their development their inland counterparts, as well as to the growing dependence on the resources and geostrategic function of the World Ocean.

I pay particular attention to the changes to the localisation of Russia's maritime economy efforts, brought about by the events of 2014 and 2022. Another focus is the effects of the coastalisation of population and the economic stability of the country's coastal cities, particularly those situated in the Baltic region — the epicentre of today's geopolitical tensions.

The maritime features of post-Soviet Russia's maritime development and its major geopolitics-induced metamorphoses. Since the 16th century, Russia has strived as an independent geopolitical entity towards incorporation into maritime geopolitical structures. This involved, for example, forging ties with leading European sea powers, and borrowing and cultivating marine navigation technology. Yet, the country remains an antipode and opponent of the sea, increasingly recognised as such since the beginning of the 20th century, when Halford Mackinder published his seminal works. The seven decades of Soviet rule were marked both by pronounced continental tendencies (see, for instance, [22]) and extensive (and mostly successful) efforts to launch a *quasiglobalist maritime project*. The ideological framework for this project was provided in the 1976 publication of Admiral Sergey Gorshkov titled *The Marine Power of the State* [23], which postulated the marine-continental status of eh USSR. Many of these successes, however, were nullified by the national geopolitical catastrophe of 1991. Examples thereof include the seaport system in the southwest of the country and the Baltic republics, Black Sea Shipping, which was the largest navigation organisation in the USSR, fishing zones in the World Ocean, etc. [24].

The growing coastalisation tendency characteristic of post-Soviet Russia[1] occurred against the background of the conflicting combination of economically motivated *geopolitical conformism* at the global level, the attempts to strengthen the national maritime jurisdiction specified in the World Ocean federal target programme of 1998,[2] and the retention and restoration of the sphere

[1] For a detailed analysis from the human geography perspective, see [25; 26].

[2] On the World Ocean federal target programme: A resolution of the Government of the Rusg sian Federation of 10.08.1998 № 919, 2002, *Portal pravovoy informatsii [Legal Information Daabase],* URL: http://pravo.gov.ru/proxy/ips/?docbody=&nd=102054870&rdk=3 (accessed 11.07.2023).

of Eurasian influence. Geopolitical conformism manifested itself in recognising the leadership of an exogenous dominating centre of power and the aspiration to integrate into the geoeconomic structures built by this centre. The most considerable success in maritime jurisdiction expansion was the recognition of a 52,000 sq. m enclave as Russia's continental shelf in March 2014.[1] A principal Eurasian initiative is the Caspian Pipeline Consortium project aimed at facilitating hydrocarbon transit from Kazakhstan. Maritime infrastructure has been developing along with related industries: since 1994, the cargo turnover of Russian seaports has increased eightfold; from 1997 to 2021, an export-oriented underwater gas transportation system was established; the creation of industrial port complexes has intensified [26]. Russia's maritime activity, however, was becoming more internationalised, with a visible westernisation tendency. Particularly, it depended on third states for market outlets, logistics, services and technology, which contributed to the Western tilt characteristic of the country's spatial development.

At the subnational level, coastalisation or the shift towards an oceanic economy, as Pyotr Savitsky termed the process a century ago, is evident in the active engagement of coastal territories in the formation of transboundary maritime regionalisation structures. This trend, accurately described in [28], has been most pronounced in the Baltic region, with a substantial geopolitical element [27]. All these trends affected the architecture of the Russian space, producing *a change in its economic and settlement proportion towards coastal territories*, which was evident at the level of trends and average figures. The Eurocentric and north-western dimension had the upper hand in this process.

Remarkably, as early as the second half of the 1990s, the principal coastal territories of Russia's western borderlands — St. Petersburg, the Leningrad region, Krasnodar Krai and the Kaliningrad region [29] — became consistent contributors to the federal budget. As the maritime activity, particularly in the hydrocarbon industry, gained momentum the list grew to include the Sakhalin and Astrakhan regions [30]. GRP was increasing across the country, with Russia's coastal regions[2] remaining in the lead. Leaving aside Crimea, which became part of the country in 2014, the GRP of Russia's coastal regions, according to Rosstat, was 13.8 % in 2000, 14.9 % in 2008, 16.7 % in 2014 and 18.1 % in 2020. Notably, this shift induced by the stable growth of sea ports'

[1] The UN Commission recognized the enclave of the Sea of Okhotsk as part of the Russian continental shelf, 15.03.2014, *TASS,* URL: https://tass.ru/ekonomika/1047596 (accessed 11.07.2023).

[2] These include St. Petersburg, the Leningrad Region, the Kaliningrad Region, Krasnodar Krai, Rostov Region, Astrakhan Region, the Republic of Dagestan, Arkhangelsk Region, the Nenets Autonomous Okrug, Murmansk Region, the Primorsky Krai, the Sakhalin Region, Kamchatka Krai, Magadan Region, and Chukotka Autonomous Okrug [31].

turnover, which reached 10.5 %[1] in the first six months of 2023, followed the crisis of 2008 — the starting point of a radical change in global economic and geopolitical trends [32; 33]. The increase continued in the post-Crimean period, which witnessed the dismantling of the Russia — the West system that emerged over the previous quarter century.

Provoked by the growing activity of the EU and NATO, Russia's aspiration to maintain and extend the security perimeter in the Baltic Sea area led at first to the virtual geoeconomic blockade of the Crimean peninsula by the Western countries in 2014. The interdiction affected Crimea's marine economy by limiting the volume of cargo that could be handled at the local ports [34]. In 2021, a series of steps followed that were taken by the globalist forces to undermine Russia's marine economic capacity, their culmination being the Nord Stream pipeline sabotage of 26 September 2022). This profound transformation in the geopolitical landscape of the country's maritime, mainly economic, activities is a significant external challenge. Although this change seems to have prompted a substantial update to the Maritime Doctrine of the Russian Federation,[2] carried out in the summer of 2022, we firmly believe that it *does not imply the necessity, let alone the inevitability, of any substantial continentalisation*.

Naturally, problematic situations of varying scope are emerging, encompassing a decline in import- and sea transport-dependent motor vehicle assembly in the country's Northwest. A notable symptom is the output of the processing industries of the Kaliningrad region plummeting to 80.5 % in 2022 year-on-year. Additionally, there's a short-term decrease in the turnover of the Great Port of St. Petersburg, down by 37.5 % in 2022.[3] Finally, the increasingly strained Russian—Turkish relations are likely to complicate Russia's subsea pipeline exe ports of natural gas through and through.

The total number of Russia's coastal regions faced with socio-economic, transport-logistic and military-political complications has increased due to the military escalation in Ukraine. Now, these are not only the Republic of Crimea and the city of Sevastopol, but also the Baltic exclave and the territories of Novorossiya. There is inevitably a shift in economic activity favouring Russia's inland territories [35]. However, the current situation, where *the sea itself as a*

[1] The cargo turnover of Russian seaports in the first half of 2023 increased by 10.5 %, 10.07.2023, *TASS*, URL: https://tass.ru/ekonomika/18238249 (accessed 12.07.2023).

[2] On the approval of the Maritime Doctrine of the Russian Federation: Decree of the President of the Russian Federation of 31.07.2022, № 512, 2022, *Official Internet portal of legal information,* URL: http://publication.pravo.gov.ru/Document/View/0001202207310001 (accessed 17.07.2023).

[3] Cargo turnover of Russian seaports for 12 months of 2022, 2023, *Russian Seaports Association*, URL: https://www.morport.com/rus/news/gruzooborot-morskih-portov-rossii-za-12-mesyacev-2022-g (accessed 12.07.2023).

geo-economic phenomenon begins to exhibit non-Western multipolar features, stimulates Russian maritime activity. Taking place within Russia's jurisdiction, this process affects a vast area comprising the waters of the country's economic zone and its continental shelf. This expanse can be conceptualised as the land-sea structure of Maritime Russia, which relies on coastal settlement and particularly coastal cities with their capacity for an increase in the population replacement rate.

Population coastalisation: geopolitical factors

The coastalisation of the population and settlements is a fundamental characteristic of the land-sea organisation of society, which applies to post-Soviet Russia as well (see [7; 16; 36; 37]). Notably, as census data suggest, the population of 74 Russian towns (including those in Crimea) situated in coastal areas or the mouths of major navigable rivers has increased by 10.5 % since 1989. In contrast, the overall urban population in the country has remained nearly constant, at 99.9 % of the 1989 census figure. The coastal urban population of Russia has seen a significant increase over the three inter-census periods, even without factoring in Crimea (Table 1).

Table 1

Population change in Russian coastal cities, 1989—2021

Years	1989—2002	2002—2010	2010—2021	1989—2021
1,000 people				
Total	–233	348	1234	1349
Crimea excluded	–173	354	1140	1321
%				
Total	98.0	102.7	109.5	110.5
Crimea excluded	98.5	103.0	109.4	111.0

* Prepared by the author based on the All-Union and Russian censuses of 1989, 2002, 2010 and 2021.[1]

A reflection of the growing role of the maritime factor in Russian society and the economy, post-Soviet coastalisation proved to have distinctive spatial, i.e. basin-specific, features. In geopolitical terms, these characteristics primarily manifested in the chronologically asynchronous dominance of the Baltic region as regards population growth. Although St. Petersburg accounted for 90 % of the

[1] Results of the All-Russian Population Census 2020. Vol. 1: Population Size and Distribution, 2022, *Rosstat,* https://rosstat.gov.ru/vpn/2020/Tom1_Chislennost_i_razmeshchenie_naseleniya (accessed 15.07.2023).

increase, the population of the Kaliningrad region went up by 20 % from 1989 to 2021. Similar trends were observed in the Black Sea-Azov region and the Caspian region, with the latter driven exclusively by Dagestan. In the Russian Far East, the population of coastal cities stabilised after a 17 % reduction of the 1990s. The only coastal area where depopulation became a steady trend was the Arctic basin (Table 2).

Table 2

Population of Russian coastal cities in Russia (by maritime basins) and their proportion in the national coastal population in 1989—2021, 1,000 people / %

Region	1989	2002	2010	2021
Baltic Sea	5306/41.2	5336/41.1	5524/42.5	6333/44.4
Black Sea-Azov*	3227/25.0	3337/26.4	3361/25.9	3829/26.8
Arctic	1510/11.7	1218/9.6	1162/8.9	1003/7.0
Caspian	993/7.7	1185/9.4	1379/10.6	1501/10.5
Russian Pacific	1854/14.4	1583/13.5	1567/12.1	1575/11.3
Total	12 890/100.0	12 659/100.0	12 993/100.0	14 261/100.0

* Prepared by the author based on the All-Union and Russian censuses of 1989, 2002, 2010 and 2021.[1]

Comment: * the all-year total for the basin includes Crimea.

Initially, geopolitics had a role in shaping the demographic landscape, particularly in the Baltic region. It supplemented and tuned up the prevailing centripetal, i.e. capital-oriented, migration trend. Particularly, in 2010—2021, St. Petersburg comprised 70 % of the total population growth in Russian coastal areas. This increase was due to inertia: it continued regardless of the emerging tension between Russia and the largest EU states. At the same time, it was a product of the Eurocentric mindset of a part of Russian society, which added to the effect of the already existing core-periphery gradient. Subsequent geopolitical events, coupled with economic and natural factors, prompted the population of Russia's Far East to concentrate in the Vladivostok agglomeration, this process becoming evident as early as the 2010s. A notable example is the population growth by 11 % in the town of Bolshoy Kamen, home to a major shipbuilding company, Zvezda, which was observed between 2010 and 2021.

[1] Results of the All-Russian Population Census 2020. Vol. 1: Population Size and Distribution, 2022, *Rosstat,* https://rosstat.gov.ru/vpn/2020/Tom1_Chislennost_i_razmeshchenie_naseleniya (accessed 15.07.2023).

The rivalry between the centres of power created a *geopolitics-induced increment* characteristic of the population growth in Russian coastal cities. The 'Crimean stage' of this process added 910 thousand people to the coastal network structure of Russian urban centres. Moreover, migration led to a 12 % increase in the population since 2014. The current stage, linked to the special military operation in Ukraine, involves the inclusion of another nine coastal urban settlements in the Russian political-geographic space. The country's maritime frontier becomes more substantial in demographics, with geopolitical risks rising accordingly. This reinforces the significance of nodes and drivers of maritime activity in withstanding external influences, primarily in the economic sphere.

Russia's principal maritime hubs amid geopolitical turbulence: the potential for economic stability within the Russian space

The economic exploration of the World Ocean always begins, as Yulian Saushkin wrote, 'from its coasts' [38, p. 214], and the most intensive and diversified maritime activities concentrate in relatively compact areas. A century ago, when contemplating 'powerful territorial possession' (or, put in modern terms, the geopolitical determinants of national development) in the context of Russia, Veniamin Semyonov-Tyan-Shansky [19] described pivotal structures in the country's space, which he termed 'colonisation strongholds'. When applied to the issues of the World Ocean and the specifics of today's maritime-oriented Russia, this approach makes it possible to identify the country's principal maritime hubs [39]. The growing confrontation between the 'centres of power', including in water areas, considerably enhances their territorial-economic and geostrategic standing. This brings to the forefront the question of to what degree maritime hubs are capable of withstanding external (sometimes overwhelming and disruptive) influences, which have been extensively discussed within regional studies [40; 41].

Conducted following the logic of the key plot methods, my analysis demonstrates that the economies of coastal municipalities comprising disparate maritime hubs responded differently to the turbulent events of 2014 and 2015 (Table 3). The same diversity in reaction was observed during the COVID-19 restriction and the situational degradation of global markets crucial for Russian exports.

Table 3

Dynamics of taxable income of individuals and individual entrepreneurs in selected key municipalities of Russia's maritime hubs, million roubles

Municipality	2013	2014	2015	2015/2013	2019	2020	2021	2021/2019	2021/2013	In per mille of the natioal total		
										2013	2021	2021/2013
Russian Baltic region												
Kaliningrad	131,191	152,807	161,189	1.23	154,368	185,931	228,537	1.48	1.74	6.73	5.92	0.88
Baltiysk	5,060	5,593	5,875	1.11	4,611	5,097	6,600	1.43	1.30	0.26	0.17	0.65
Pacific Russia												
Vladivostok	152,347	153,878	160,853	1.06	232,875	276,539	291,431	1.25	1.91	7.82	7.56	0.97
Bolshoy Kamen	8,424	6,381	7,302	0.87	12 579	18 171	19 634	1.56	2.33	0.43	0.51	1.19
Russian North (Arctic)												
Arkhangelsk	77,709	90,338	98,705	1.27	112,077	109,882	142,131	1.27	1.82	3.99	3.68	0.92
Severodvinsk	44,791	51,157	55,767	1.25	74,823	76,710	91,570	1.22	2.04	2.30	2.37	1.03
Russian Caspian region												
Makhachkala	116,336	69,687	70,448	0.61	153,336	146,150	124,168	0.81	1.06	5.97	3.22	0.54
Kaspiysk	8,117	5,558	8,509	1.05	15,342	15,788	13,340	0.87	1.64	0.42	0.35	0.83
Russian Black Sea region												
Novorossiysk	62,280	61,832	69,913	1.12	83,030	101,078	106,914	1.29	1.72	3.20	2.77	0.87
Anapa	18,851	21,849	25,896	1.37	38,516	49,230	55,179	1.43	2.93	0.96	1.43	1.49

* Prepared by the author using Rosstat data.[1]

[1] Volume of social payments to the population and taxable cash incomes of the population broken down by municipal entities. Statistical series, 2023, *Rosstat,* URL: https://rosstat.gov.ru/storage/mediabank/urov_munst.htm (accessed 04.08.2023).

A sensitive reaction to the deteriorating global situation was characteristic of the Caspian towns of Dagestan, which depend heavily on inter-regional financial transfers. Vladivostok and Novorossiysk experienced a downturn during the periods of decline; Kaliningrad, however, proved to be more resilient. As anticipated, the overall economic balance, evaluated based on the taxable income of individuals and business entities, has shifted since 2013 towards Vladivostok and Bolshoy Kamen (the eastern track, shipbuilding), Severodvinsk and Arkhangelsk (the northern track), and particularly Anapa (the Black Sea track, recreation). Although the year 2022 brought about a more dramatic change in the geopolitical conditions of Russia's spatial-economic dynamics, relevant statistics are not yet available. Against this background, the contribution of certain regions to the overall national statistics decreased throughout the study period. This illustrates the broader trend of the modern economy shifting towards inland centres, a process accelerated by the special military operation. The future coastalisation of the economy is contingent on substantial maritime projects — industrial, recreational, and settlement-focused, including those in shipbuilding. Current geopolitical challenges, risks and limitations add urgency to the search for approaches and measures aimed at raising the profile of the sea factor and ensuring its more efficient utilisation. When doing so, the following spatial structures and processes cannot be taken out of the equation.

1. It is essential to build new effectively functioning Russian maritime hubs and decentralise the existing ones. This must be done at both federal and regional levels. In the former case, this concerns the Bukhta Sever port on the Taymyr peninsula, whose prospects are linked to oil extraction and transport within the flagship project of Rosneft—Vostok Oil;[1] in the latter, the restoration of the port infrastructure of Mariupol and Berdyansk.

2. There is a need for consistent diversification in the structure of maritime hubs' economies, such as reinforcing their principal function of a logistics facility with industrial and service specialisations, including those linked to import substitution. This will expedite the establishment of industrial port complexes, a concept initially envisioned as early as the 1960s—1980s [42]. It is likely to transform them into multifunctional port facilities with industrial, educational, and research capabilities. The most likely candidate for the latter is St. Petersburg, albeit such projects can be implemented in Kaliningrad, Sevastopol, Vladivostok and, with reservations, Arkhangelsk.

3. Coordinated development of maritime hubs within selected sea basins, for which there are ample geopolitical reasons in the Russian Black Sea and Baltic areas, will benefit from a network of maritime centres with elements of speciali-

[1] About the enterprise, 2023, *Rosneft,* URL: https://vostokoil.rosneft.ru/about/Glance/OperationalStructure/Dobicha_i_razrabotka/Vostochnaja_Sibir/vostokoil/ (accessed 16.07.2023).

sation and hierarchy throughout Russia's marine border areas. This network may enjoy considerable autonomy, which will contribute to its resilience to exogenous geostrategic risk, including the still hypothetical possibility of a blockade imposed by external forces on water areas neighbouring Russia and having a transport significance for the country.

4. It is advisable to increase the economic potential of Russian maritime hubs in terms of workforce, market share and production facilities by extending their influence to adjacent territories as part of agglomeration and inter-municipal and interregional integration. For example, the modernisation of federal motorways adjacent to Rostov-on-Don caused the demographic capacity of the expanded agglomeration to increase by one-third, reaching 2.5 million people. Linking the agglomeration to Donetsk and Mariupol will form a space unified in economic and settlement terms with at least 4.5 million residents.

5. Closer attention should be paid to building integrated coastal structures encompassing vast areas in Russia: in the southern and northwestern 'intermaria', in the Western and Eastern Siberia and, in a broader context, along the White Sea—Black Sea, Baltic Sea—Black Sea and the Baltic Sea—Sea of Japan routes. This process should involve the massive heartlands of the country's major sea ports [31].

The logic of creating *large Russian continental maritime spaces* in the new geopolitical landscape necessitates the conceptual reconstruction of transboundary basin structures of Russia's marine border areas, particularly in the west, including the Baltic area. Russia should seek transboundary and trans-basin interaction predominantly with the friendly Eurasian states.

Maritime regionalisation in the space of geoeconomic interaction and geopolitical confrontation: the phenomenon of the Russian Baltic area

Closely linked to Eurointegration, the formation of the Baltic region as a transboundary maritime entity spanned almost the whole post-Soviet period [43—45]. In the military-political sphere, it was accompanied by the enlargement of NATO. Russian coastal territories participated in the so-called Baltic integration in the capacity of a 'friendly alien', a periphery, a space of globalist expansion and the principal transport corridor within the Russia—West system.

The current geopolitical reformatting of the Baltic region commenced not on 24 February 2002 but five or six years earlier, as evidenced by contributions from Russian [46; 47] and international [48] researchers. In these conditions, the Russian—European barrier is becoming increasingly tangible both on land and at

sea. The macro-region is adopting a bi-structural design that both offers coastal areas new opportunities, such as saturating the local food market with Russian goods [49], and presents them with risks [50].

As rightly noted in [51], the proclaimed *Zeitenwende* in the Baltic region has become a thing of the past, a completely unrealised ideologeme, whilst the 'space of cooperation' has rapidly militarised. The new geopolitical landscape calls for revising the status of Russian Baltic territories as autonomous and geopolitically distinctive entities — a view prevalent throughout the past thirty years. The corresponding reconceptualisation of all Russian marine border areas with a focus on affiliation with Russia and its jurisdiction rather than on transboundary opportunities may manifest itself in the *Russian Baltic* geo-concept, a term that has been recently gaining currency [54—56]. To compare, the ideas of Pacific Russia [52] and the Russian Black Sea area [53] have already been described in the literature.

I regard as more adequate the narrow definition of this taxon, which encompasses St. Petersburg and two Baltic regions of Russia or, at a lower administrative level, their fifteen municipalities bordering the sea. These territories are home to 6.8 million people, or 4.6 % of the national population, most of whom reside on the northern coast of the Gulf of Finland. There is a dramatic difference in the economic performance, i.e. the taxable income of individuals and individual entrepreneurs, of the Kaliningrad exclave, accounting for a mere 8 %, and the other Russian Baltic territories. Therefore, the Russian Baltic area is bi-centric and asymmetric in demographic and economic terms. Moreover, which is particularly important as far as the sea factor is considered, it is a trans-basin area boasting its own *maritime infrastructure*. The sea ports comprising the latter have been increasing their throughput in the post-Soviet period; furthermore, they have been linked by transport services, including aviation since February 2022, and benefit from the high sea status, according to the UN Convention.[1] Partly excluded from the former space of Baltic integration but still open to the idea of pursuing it in a mid- and long-term perspective, the Russian Baltic region and particularly its Kaliningrad exclave must rely even more strongly on *coastalisation* in its socio-economic development.

This inevitable change, determined by path dependence, the available infrastructure and human capital, is complicated by both the current geopolitical landscape and the overall long-term geoeconomic trend towards redistributing Russia's maritime activity in favour of non-Western coasts. The geopolitical

[1] United Nations Convention on the Law of the Sea, 1994, *UN,* URL: https://www.un.org/ru/documents/decl_conv/conventions/pdf/lawsea.pdf (accessed 18.07.2023).

situation hinders the execution of flagship coastal projects, such as the facility for ethane-containing gas processing and LNG production under construction in Ust-Luga by Gazprom[1] or the cruise terminal in Pionersky.[2]

Since the mid-2000s, the significance of the Baltic ports for the country in terms of logistics has been declining: the port turnover increased by a factor of 2.06 nationwide, but only by 1.37 in the Russian Baltic area between 2005 and 2022; it grew by a factor of 1.42 and 1.14 from 2013 to 2022, respectively. A similar, albeit less prominent, situation has been observed in fish processing. The migration support for the economy is likely to decline, with the trend being already discernible. This reduction will affect the construction industry of coastal urban agglomerations in the Russian Baltic area, which can counter the trend by taking the following measures to support and enhance its maritime functionality: 1) conversion to the transport systems and markets of friendly nations; 2) increasing internal inter-basin connectivity, including along the Baltiysk—Ust Luga route; 3) promoting the territories as destination for recreation and tourism; 4) emerging as centres for research, technology, culture and education at the core of Maritime Russia. Kaliningrad has the greatest potential for tourism development: the number of people staying at the region's hotels and other types of accommodation increased 4.7 times between 2014 and 2022, compared to 2.7 times across the country.[3]

Conclusion

The universal and diverse impact of the sea factor on the economy, human settlement and the military-strategic sphere has been increasingly shaped by the geopolitical landscape. The key factor here is the growing confrontation between Russia and the West, taking place against the radical reformatting of the world order. The geopolitical determinant of the conditions, manifestations and effects of coastalisation, which has been crucial for Russia's spatial development, is most pronounced in the borderlands of transboundary marine regions, similar to those found in the Baltic area.

The geopolitical and correspondent geoeconomic change has led to the reformatting of Russia's maritime activities and the transformation of the overall land-

[1] Linde's withdrawal from the Baltic LNG project in Ust-Luga and the problems of RusKhimAlliance, 07.07.2023, *TEK-ALL*, URL: https://www.tek-all.ru/news/id10005-vihod-linde-iz-proekta-baltiyskiy-spg-v-ust-luge-i-problemi-ooo-rushimalyans/ (accessed 19.07.2023).

[2] Never-ending port construction. Why the terminal in Pionerskoye cannot be completed for two years, 05.11.2013, *RBC*, URL: https://kaliningrad.rbc.ru/kaliningrad/05/11/2021/617fcf9d9a7947682664af34 (accessed 19.07.2023).

[3] Hotels and other accommodation, 2023, *Rosstat,* URL: https://rosstat.gov.ru/statistics/turizm (accessed 18.07.2023).

sea organisation of the country. Russian maritime economy is becoming more autonomous, diversified (including in spatial terms), efficient and complex. The coastalisation and continentalisation trends are merging to create vast integrated spaces in the format of Russian intermaria of varying scales. These processes are stimulating the identification and conceptualisation of the resource-driven, economic and geopolitical megastructure of Maritime Russia, which includes the Russian Baltic area, the Russian Black Sea area, Caspian Russia, the Russian Arctic and Pacific Russia.

Today, international processes are adopting an increasingly visible basin-specific dimension, and the socio-economic situation of coastal territories is becoming an element of geopolitical security. The major coastalisation trend, which has been crucial for post-Soviet Russia, should continue. It should be supported by scientific analysis, particularly in human geography.

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THREE RUSSIAN BALTIC REGIONS IN THE CONTEXT OF CONFRONTATION BETWEEN RUSSIA AND THE WEST

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This study examines the features, limitations and development prospects of three Russian territories bordering the Baltic Sea — St. Petersburg, and the Leningrad, and Kaliningrad region — amid the sharply heightened confrontation between Russia and the West, which has affected the Baltic region. The time frame spanning from 2014 to 2023 was chosen for the study. This period encompasses the sanctions imposed by Western countries and their associations, primarily the EU, in response to the return of Crimea and Sevastopol to Russia, and extends up to the present day, when the relations between Russia and the West, as many experts and politicians have emphasised, have reached a critical point and may require substantial changes in the global order, including at macro-regional levels, for a return to what was once considered 'bbusiness as usual'. The study examines the development level and dynamics in the three regions, alongside their economic security. Another focus is on foreign policy and a geopolitical typology of the Baltic region states. The article investigates the impact of a changed geopolitical landscape on cross-border cooperation, the restructuring of foreign trade relations in Russia's three Baltic regions, and the geopolitical and military factors influencing the development and security of these territories. Based on the findings, several suggestions are provided to promote the ongoing growth of Russia's Baltic regions and enhance their economic and military security.

Keywords:
Baltic region, Russian Federation, EU, NATO, St Petersburg, Leningrad region, Kaliningrad region, confrontation between Russia and the West

Introduction

In our earlier publications, my colleagues and I, in assessing interstate interactions in the Baltic region, analysed existing risks and potential conflicts between Western countries in the Baltic Sea region and Russia. Despite these considerations, we hoped that common sense and the economic advantages of cooperation would foster the creation of a cohesive Baltic macro-region [1—3 et al.]. This optimism was underpinned by initiatives such as the establishment of the Council of the Baltic Sea States, collaborative research on the Baltic macro-region within

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the Interreg programme, the execution of cross-border cooperation programmes, and joint ventures in scientific and educational projects. Notably, some foreign experts also proposed the development of cross-border connections, advocating for the formation of a bipolar Three-City system (Gdansk — Gdynia — Sopot) — Kaliningrad [4].

The Immanuel Kant Baltic Federal University has been instrumental in facilitating an international platform for discussing cross-border cooperation through its annual conference "The Baltic Region — a Region of Cooperation". This conference, supported by numerous partners from Poland, Lithuania, Germany, and other Baltic region countries, has served as a forum for participants to engage in collaborative discussions, publish articles, and collaborate on cross-border cooperation projects with Russian counterparts. The shared goal has been to expand and deepen mutually beneficial interactions in the realms of economy, ecology, and the social sphere [5—8]. However, during the sixth conference held in October 2022, the title "Region of Cooperation" was no longer fitting, given the annulment of all forms of cooperation between Russia and the Baltic region countries by the Western side. Consequently, the conference was renamed "New Trajectories of International Cooperation". This shift was accompanied by a change in the composition of foreign participants, with representatives from Belarus, the Republic of Srpska (Bosnia and Herzegovina), China, and India taking part.

Presently, there are growing geopolitical risks impacting economic development, particularly for the exclave Kaliningrad region. Researchers from the Immanuel Kant Baltic Federal University, in collaboration with experts from other scientific centres in the country, conducted studies addressing the challenges of economic security in the regions along Russia's western borderlands. [9; 10]. Special attention is given to the problems of the Baltic region, the relations of Russian subjects located on the Baltic Sea, and, in particular, the Kaliningrad region [11; 12].

In this study, I have assessed the perspectives of Western authors examining Russia's interactions with Western countries and the Baltic region. It became apparent that Russia confronted the challenge of articulating its position in the evolving international landscape. Faced with political and economic vulnerabilities, Russia found itself obliged to strengthen its cooperation with the West between 1991 and 2014. The dynamics of relations between Russia and Western countries during this period revealed a blend of successes and failures, persisting over an extended period [13].

As early as 2021, certain authors [14] observed both elements of restraint and communication in the interactions between the West and Russia. Despite the deterioration of Russia-West relations, this initially fostered cautious optimism, hinting at the potential for maintaining enduring peace in Europe. However, since then, some restraining factors highlighted by the author of the article — especially the energy interdependence between Russia and Europe — have lost much of their significance. Some researchers contend that "European energy security will

remain problematic in the absence of a more comprehensive political settlement between Russia and the West" [15, p. 875], although this perspective is not unanimous.

The previously noted 'pacifying' effect of nuclear weapons, as emphasized in [14], has also begun to wane. This development forces researchers to revisit ostensibly obsolete issues related to preventing the escalation of conflicts to the 'nuclear threshold', a concern that has regained prominence in the context of the ongoing special military operation [16].

Geopolitical changes have affected not only Russia but also its neighbours in the Baltic region. In particular, Poland has turned to the idea of uniting Central and Eastern Europe (CEE) based on the geopolitical concept of the Three Seas, which, besides serving as a defensive measure against the excessive influence of Russia and Germany, is intended to address important economic challenges [17].

Many researchers acknowledge that the roots of the conflict in the CEE region lie in the American policy of exporting democracy and the 'open door' policy of NATO, combined with the strengthening of its eastern flank in military terms. Russia perceived this policy of the West as a manifestation of the U.S. and Western expansion at the expense of its legitimate security interests. Russia was particularly opposed to Ukraine's attempts to join NATO [18].

Following the commencement of the special military operation (SMO), by November 2022, the West viewed the "victory of Ukraine... as quite possible, provided that the West promptly supplies an adequate amount of military equipment and training" [19, p. 91]. It is precisely in this direction that the strategy was adopted.

As the special military operation prolonged, the recognition surfaced that the enduring confrontation between Russia and the West would exert a lasting and widespread negative impact on the majority of European companies and economies. In this context, the significance for business and the economy lies not only in the eventual conclusion of the special military operation in Ukraine but also in determining which trade and financial restrictions on Russia can be lifted and when [20].

There is a viewpoint that in the global context, the current conflict between Russia and the West is driven by the rise of radical left-liberal elites in the West, while Russia, in this situation, seeks to reclaim its traditional position as a liberal-conservative centre in the international relations system [21]. According to some authors, Russia's value agenda aligns closely with the values embraced by representatives of European right-wing movements. This presents an opportunity to leverage conservative values as a bridge between Russia and the West, showcasing the potential for establishing multifaceted strategic cooperation [22].

An alternative perspective posits that while the permanent isolation of Russia may not be a sustainable endgame for Europe or the United States, its isolation could be inevitable for a generation or more [23].

As Bordachev notes, "for Russia, none of the geographical directions of its external relations is a question of survival, a necessity, but always remains a choice." He believes, and one might concur, that Russia evaluates any foreign policy partnership based on the benefits of this choice, not as a matter of vital necessity for developing relations with a specific partner [24]. This approach opens up opportunities for pragmatic foreign and economic policies without becoming 'too focused' on specific countries or their groups. As Lukyanov points out, "for the first time, we find ourselves in a situation where the most dynamic and assertively developing part of the world in the coming years and decades will be not what is to the west of us but what is to the east and south" [25]. It is in these directions that the foreign policy and economic ties of the Russian Federation should and have already begun to diversify [26]. The Eurasian ideas of Gumilyov are of great importance for shaping the Eurasian vector of modern economic (and not only) activities of Russia [27]. As Druzhinin points out, "an important aspect of Gumilev's 'Eurasian' ideas is seen in the simultaneous purposeful building of interactions of the Russian ethnos, Russia with other systemically significant states and ethnicities of Eurasia, constructing a kind of multi-vector 'Eurasian complementarity'. Considering the intricacies of historical events, Gumilyov persistently and very correctly suggested "seeking friends, not enemies" [28, p. 45].

For the establishment of new vectors of Russia's geopolitical and geo-economic development, the tracking of the dynamics of geopolitical threats and the creation of a system for monitoring the geopolitical (regional) security of Russia are of paramount importance [29].

Within this geopolitical context, I look into the development of three Baltic (Baltic Sea-facing) regions of Russia — St. Petersburg, the Leningrad, and the Kaliningrad regions — from 2014 to 2023. Over this period, the ongoing reduction in cooperation with Western neighbours in the Baltic region has gradually evolved into an almost complete cessation, with trade ties diminishing and continuing to do so.

The level, development dynamics, and economic security of the three regions

The Baltic region, once regarded as a macro-region fostering active international cooperation between Russia and Western countries, upholding the notion of "The Baltic Sea — a Sea of Peace," has now evolved into one of the most conflict-prone areas along Russia's borders. The intensification of the confrontation between Russia and the West heightens the relevance of economic security issues for the Russian regions located along the Baltic Sea coast.

Russia's Baltic regions play a crucial role in the country's economy [30]. St. Petersburg, in particular, holds significant importance, ranking 4th among the Russian Federation's subjects in terms of population, 3rd in GDP volume, and 2nd in

foreign trade turnover (Table 1). Across all three regions, their positions in GDP production, and especially in foreign trade turnover, surpass their positions in terms of population.

Table 1

The ranking of the Baltic regions among the other regions of the Russian Federation (2021—2022)

Region	Population, 2021	GRP, 2020	GRP per capita, 2020	Foreign trade turnover, 2021
Kaliningrad region	50	47	29	12
Leningrad region	24	19	17	10
St. Petersburg	4	3	10	2

Source: compiled by the author based on data from EMISS and Rosstat.[1]

These three regions account for a considerable share of the population, GDP, and foreign trade turnover in these indicators of the Russian Federation. Moreover, during the period of anti-Russian sanctions (2014-2021), these indicators experienced substantial growth. The combined share of the three regions in GDP production increased from 6.1 % in 2014 to 7.4 % in 2020. Per capita GDP grew even faster. In St. Petersburg, it rose from 128 to 152 % relative to the national average from 2014 to 2021, in the Leningrad region, from 100 to 103 %, and in the Kaliningrad region, from 79 to 83 %. The per capita foreign trade turnover significantly exceeds the average Russian level, especially in St. Petersburg and the Kaliningrad region (Table 2).

Table 2

The share of the Baltic regions in key indicators of the Russian Federation

Russian Federation, regions of Russia	Share in RF						GRP per capita, % to RF		Foreign trade turnover per capita, % to RF, 2011
	Population		GRP		Foreign trade turnover				
	2014	2021	2014	2020	2014	2021	2014	2020	2020
RF	100	100	100	100	100	100	100	100	100
Kaliningrad region	0.66	0.7	0.52	0.58	2.5	1.4	79	83	200
Leningrad region	1.21	1.3	1.21	1.33	2.6	1.6	100	103	123
St. Petersburg	3.53	3.69	4.50	5.45	6.8	7.2	128	152	192
Three regions	5.40	5.69	6.23	7.36	11.8	10.2	115	132	177

Source: compiled by the author based on data from EMISS and Rosstat.[2]

[1] Gross Regional Product at basic prices (GCEAT 2), *EMISS*, URL: https://fedstat.ru/indicator/59448 (accessed 06.08.2023) ; Regions of Russia. Socio-economic Indicators, *Rosstat*, URL: https://rosstat.gov.ru/folder/210/document/13204 (accessed 06.08.2023).

[2] Gross Regional Product at basic prices (GCEAT 2), *EMISS*, URL: https://fedstat.ru/indicator/59448 (accessed 06.08.2023) ; Regions of Russia. Socio-economic Indicators, *Rosstat*, URL: https://rosstat.gov.ru/folder/210/document/13204 (accessed 06.08.2023).

According to the well-known classification by Friedman, St. Petersburg can be classified as a core region, while the Leningrad and Kaliningrad regions can be considered "ascending" (dynamically developing) regions. All three regions exhibit characteristics of regions often referred to as "international development corridors" (a type identified by Gennady Fedorov). These features are more pronounced in St. Petersburg and the Leningrad region, and less so in the Kaliningrad region. The first two regions form a unified territorial socio-economic system with well-developed internal connections. Due to its exclave status, the Kaliningrad region has a more 'fragile' economy, highly dependent on external influences, with a low level of economic security.

During the tumultuous economic crises of the 1990s, St. Petersburg witnessed a staggering fourfold reduction in industrial production (1992—1999), while the Kaliningrad region experienced an even more substantial sixfold decline. The situation in the Leningrad region was relatively better, largely due to the operation of the Leningrad Nuclear Power Plant. In 1998, the minimum production level recorded was 56 % of that in 1991, surpassing the national average (48 %) for Russia. Although St. Petersburg had not fully regained its pre-crisis industrial output by 2021, it strategically diversified its economic functions, particularly through the burgeoning service sector. In 1997, St. Petersburg contributed 3.3 % to the total GDP of Russian regions, accounting for 2.3 % of shipped goods in its own industrial sector. By 2020, this share had increased to 5.6 % (with 4.1 % in the industrial sector), positioning St. Petersburg as the second-largest contributor to GDP, ranking only behind Moscow and the Moscow region.

In the Leningrad and Kaliningrad regions, the industrial sector, particularly manufacturing, exhibited a growth rate surpassing the national average and outpacing other economic activities. In 2020, the share of industry in the Leningrad region's GDP was 1.9 %, accounting for 1.3 % of industrial goods in Russia. Meanwhile, in the Kaliningrad region, these figures were 0.6 %.[1]

In 2022, the extensive anti-Russia sanctions (more accurately termed as restrictions) had a more pronounced impact on the production decline of two out of three regions compared to the national average in Russia due to the dependence of many processing industries on imported supplies. While the overall manufacturing output in the country decreased by 1.3 % in 2022, the Leningrad region experienced a decline of 2.7 %, and the Kaliningrad region saw a significant decrease of 19.5 %. Enterprises heavily reliant on imported components suffered the most. In the automotive assembly sector, production levels dropped by 31.6 % and 36.5 %,[2] respectively, compared to 2021. Wood processing, furniture manu-

[1] Calculated using the following data: Industrial production index (indicator value for the year), *EMISS*, URL: https://fedstat.ru/indicator/43045 (accessed 06.08.2023) ; Regions of Russia: Statistical Compilation, 2 vols. M. : Russian Federal State Statistics Service (Rosstat), 1999. Vol. 2. 861 p. ; Regions of Russia. Socio-economic indicators. 2022. M. : *Rosstat*, 2022. 1122 p.

[2] Production index (operational data) (GCEAT 2) (percentage, Large, medium and small enterprises), *EMISS*, URL: https://fedstat.ru/indicator/57806 (accessed 06.08.2023).

facturing, and machinery and equipment repair also saw a substantial decline. In the Kaliningrad region, computer production, railway carriage manufacturing, and metallurgy were also affected.

However, the food industry, unaffected by raw material imports from EU countries due to retaliatory measures against imposed restrictions, experienced only a minor decline in production, with some sectors even witnessing an increase in their production output. St. Petersburg's manufacturing sector showcased resilience to external influences, registering a 5.1 % growth. While specific areas like automotive assembly or machinery and equipment repair encountered reductions, the majority of production sectors demonstrated growth, notably in the food industry, textile production, and clothing and footwear manufacturing.[1]

Foreign policy relations and geopolitical typology of the Baltic region countries

Foreign policy relations, after a period of uncertainty in the 1990s and the early 2000s, gradually began to deteriorate due to the West's disregard for Russian interests. The situation significantly worsened in 2014 and became problematic after February 24, 2022. In 2014, the European Union imposed illegal economic sanctions against Russia, and all EU member countries in the Baltic region joined them.

The geopolitical dynamics in the Baltic region from 2014 to 2021 revealed distinct stances among different countries in relation to Russia, despite their overall anti-Russian orientation in foreign, military, and economic policies:

1. Germany: Initially seeking to maintain special relations with Russia developed during the USSR in the 1980s, Germany shifted its stance in September 2020. Taking the advantage of the case of Alexei Navalny's 'poisoning', fabricated in the West, Berlin decided to abandon its special policy toward Russia. Special relations between the two countries completely dissipated after the start of the special military operation in Ukraine.

2. Countries not supporting additional sanctions: Finland, and to a lesser extent Denmark, fall into this category. Although Denmark obstructed the construction of the "Nord Stream-2" gas pipeline, these countries did not advocate for additional sanctions against Russia beyond those imposed by the EU.

3. Most anti-Russian countries: Poland, the Baltic States (including Lithuania and Latvia), and Sweden emerged as the most anti-Russian nations in the Baltic region. Not only did they endorse common sanctions, but they also independently imposed additional measures against Russia.

From February 23, 2022, to June 23, 2023, the EU imposed 11 packages of sanctions against Russia. The main negative impact on the economies of the Baltic region countries comes from restrictions on the export of 20 % of goods from Russia and a 60 % import restriction. Additionally, from February 26—27 (de-

[1] Production index (operational data) (GCEAT 2) (percentage, Large, medium and small enterprises), *EMISS*, URL: https://fedstat.ru/indicator/57806 (accessed 06.08.2023).

pending on the country), bans on flights of Russian aircraft over the EU territory were introduced. For the Kaliningrad region, difficulties are also associated with the restriction, starting from June 18, 2022, on the transit through Lithuania of a large list of imported and exported goods.

According to the Decree of the Government of the Russian Federation dated March 5, 2022, № 430-r (with amendments), all foreign countries in the Baltic region were included in the list of foreign states committing unfriendly actions against the Russian Federation. This inclusion has led to the implementation of various retaliatory measures affecting Russian legal entities and individuals, resulting in the reduction of relations and hindering the development of their economies. Consequently, the slight differentiation among the Baltic region countries noted in 2014—2021 has practically disappeared, and there is now an apparent 'anti-Russian front' led by the United States, NATO, and the EU.

According to a survey conducted online in 53 countries worldwide in the spring of 2023 by the Alliance of Democracies Foundation (a non-profit organization founded in 2017 by the former NATO Secretary-General Anders Fogh Rasmussen), the ratio of positive and negative assessments of Russia is as follows: in Poland (–68 %),[1] in Denmark (–57 %), in Sweden (–55 %), in Germany (–51 %), and in Norway (–43 %). The Baltic States were not surveyed, but it can be assumed that their indicators would be close to those of Poland. Finland was also not included in the study. As a result, the Baltic region emerges as a concentration point for European countries with arguably significantly negative inclinations toward Russia. It is noteworthy that, outside the surveyed Baltic states, similar indicators show variations for other European nations, with differing degrees of negative sentiment. For instance, Portugal (–69 %), Spain (–66 %), the UK (–57 %), Ireland (–55 %), Austria (–47 %), and France (–42 %) exhibit varying levels of negativity toward Russia.[2]

Nevertheless, it is essential to highlight that, in comparison to the 2022 survey, there has been a noticeable shift in attitudes toward Russia across all Baltic region countries. This shift appears to be correlated with a growing sense of fatigue among citizens, who may be experiencing increased internal economic and political challenges, leading to a reevaluation of their support for Ukraine by their respective countries.

In terms of military aid to Ukraine from January 24, 2022, to May 31, 2023, Germany ranked 2nd in the world (after the USA), Poland — 4th, Denmark — 6th, Sweden — 8th, Finland — 9th, and Norway — 10th. Thus, six countries from the extended Baltic region (including Norway) are in the top ten countries providing military aid to Ukraine. Lithuania (14th place), Estonia (16th), and Latvia (18th) are in the second ten, leading the world in terms of total state aid to

[1] In Europe, only Ukraine (–79 %) and Portugal (–69 %) have more.

[2] Democracy Perception Index — Online Results 2023, *Alliance of Democracies,* URL: https://www.allianceofdemocracies.org/initiatives/the-copenhagen-democracy-summit/dpi-2023/ (accessed 06.08.2023).

Ukraine as a percentage of GDP.[1] This serves as additional evidence of the foreign policy alignment of the Baltic region countries against Russia, as all foreign countries in the region actively participate in the sanctions imposed against Russia.

Lithuania and Latvia have significantly downgraded diplomatic relations with Russia, recalling envoys from Moscow and instructing Russian diplomats to leave Vilnius and Riga. Lithuania went further by closing the Russian consulate in Klaipeda and its own consulate in St. Petersburg. Latvia took similar steps, closing Russian consulates in Daugavpils and Liepaja, while Estonia closed the Russian consulate in Narva and the consular department in Tartu.

In March 2022, Lithuania expelled four Russian diplomats, and Latvia and Estonia expelled three each as well. Poland took a more drastic measure, expelling 45 staff members from the Russian embassy and trade representation. In April, Germany followed suit by expelling 40 Russian diplomats, Denmark expelled 15, Sweden expelled three, and Finland expelled two. Additionally, in April 2022, Latvia expelled another 13 Russian diplomats, and Estonia expelled 14 more staff members from the Russian embassy, 7 of whom had diplomatic status.

On May 10, 2022, the Lithuanian Seimas unanimously declared Russia a "state supporting and engaging in terrorism". Subsequently, on August 11, 2022, the Latvian Seimas also formally acknowledged Russia as a "state supporting terrorism". The escalation continued on October 3, 2022, when Lithuania declared a Russian envoy persona non grata, leading to their expulsion from the country.

Finland, Estonia, Latvia, Lithuania, and Poland closed their borders to Russian tourists. On September 20, 2022, Finland submitted a letter to the European Commission requesting common recommendations for all Schengen Agreement countries regarding the invalidation or annulment of visas issued to Russian citizens and the imposition of entry bans.

Special relations between Russia and Germany have also come to an end. In his address to the Bundestag on February 27, 2022, German Chancellor Olaf Scholz declared a turning point (*Zeitenwende*) in Germany's foreign policy. The new doctrine represents a departure from traditional German *Ostpolitik* [31; 32]. In Germany's first-ever National Security Strategy adopted in the spring of 2023, Russia is viewed as an inevitable threat [33]. Connections across almost all fronts have experienced a rupture, although it is noteworthy that German businesses maintain a substantial presence in Russia.

Finland has also expressed the impossibility of continuing relations with Russia in the same way. Finnish companies, including those from St. Petersburg and the Leningrad region, are withdrawing from the Russian market, with the process starting as early as 2014. Russia withdrew its consent for the operation of the Finnish Consulate General in St. Petersburg on October 1, 2023.

[1] Ukraine Support Tracker. A Database of Military, Financial and Humanitarian Aid to Ukraine, *Kiel Institute for World Economy,* URL: https://www.ifw-kiel.de/topics/war-against-ukraine/ukraine-support-tracker/ (accessed 06.08.2023).

Finland and Sweden applied to join NATO on May 18, 2022. The foreign ministers of Finland and Sweden, along with ambassadors from 30 NATO countries, signed protocols on the accession of the two Nordic countries to the North Atlantic Treaty Organisation on July 5, 2022. On April 4, 2023, Finland became the 31st member of NATO. As of the time of writing this article, only Turkey and Hungary had not yet ratified the agreement on Sweden's accession to NATO. However, on July 10, 2023, after a closed meeting between Turkish President Recep Tayyip Erdogan and Swedish Prime Minister Ulf Kristersson in Vilnius, it was announced that Turkey had agreed to ratify the protocol admitting Sweden to NATO.

Cross-border cooperation

In the altered conditions, not only political but all other international ties of Russian regions in the Baltic with the Baltic countries, including cross-border cooperation, are objectively limited, compared to the well-developed relationships in the past. The population and authorities of the neighbouring regions of the countries actively supported it. For example, residents and leadership of the Polish border areas opposed the cessation of local cross-border movement initiated by Poland (in effect on the Polish — Russian border in 2012—2016).

In March 2022, the European Commission suspended all programmes of cross-border cooperation of the European Neighborhood Instrument, including "Russia — Southeast Finland", "Russia — Estonia", "Russia — Latvia", "Russia — Lithuania", and "Russia — Poland"," in which the studied Russian regions in the Baltic actively participated. Russia's participation in the transnational cooperation programme "Baltic Sea Region" has been terminated. Joint projects with the Northern Dimension Partnership have been halted. In response to hostile actions, Russia withdrew from the Barents Euro-Arctic Council in May. In July, Russia declared its decision to discontinue cooperation with the Nordic Council of Ministers. The operations of Euroregions, in which the Kaliningrad region formally participated (though, by 2022, only two, namely "Baltica" and "Neman," remained active), have come to a complete halt.

While there is no official confirmation regarding the termination of the "German — Russian Roadmap for Cooperation in Education, Science, Research and Innovation" (signed on December 10, 2018), which actively involved educational and research institutions in St. Petersburg, among others, its implementation seems unlikely under current conditions. This sentiment extends to other programmes and projects involving international scientific and technical cooperation and educational initiatives with St. Petersburg, Leningrad, and Kaliningrad regions and the Baltic countries. Based on my own and my colleagues' experiences, scientific journals in Poland have ceased accepting articles from Russian scientists.

Foreign trade relations

All three regions play a significant role in Russia's foreign trade due to the presence of seaports. Apart from handling transit shipments, crucial for the export of hydrocarbons and timber (ports of the Leningrad region and St. Petersburg),

maritime transport ensures the delivery of substantial quantities of raw materials and semi-finished products for import-substituting and partially export-oriented productions within the regions. Additionally, it facilitates the transportation of consumer goods to meet the population's needs and supports the export of manufactured products. The Baltic Sea basin, the second-largest in terms of cargo turnover (245.6 million tons in 2022, accounting for 29.2 % of the total cargo turnover of all ports in Russia), only slightly lags behind the Azov-Black Sea basin (263.6 million tons).[1] In April 2023, the share of the Baltic basin in the total cargo turnover of all seaports in Russia corresponded to 30.4 %.[2]

Despite the possibilities of active maritime communication, until recently, transport connections between Kaliningrad and two other regions were insignificant. Out of a total volume of 3 million tons of cargo transportation between Kaliningrad and St. Petersburg with the Leningrad region, the ferry line Ust-Luga — Baltiysk, launched in 2006, had a capacity of only 700,000 tons of cargo per year. In 2015, it was complemented by a second vessel. In 2022, unprecedented sanctions were imposed, not only affecting Russia's imported goods but also transit through the territory of Lithuania. Restrictions, initially constituting a ban, were applied to over a thousand types of goods, representing 60 % of the cargo volume in 2021, thereby limiting transit to average volumes over a three-year period. To transport additional cargo, the number of vessels on the line between the Kaliningrad region and the other two regions in the Baltic increased to 18[3] by March 2023.

The exclave region faces a critical challenge in restructuring its trade and geographical relations, where export-import flows surpass transportation with other parts of Russia. In this context, the Kaliningrad region demonstrates a substantial surplus in exports to other regions of Russia compared to imports. This external relations structure mirrors the specificity of the Special Economic Zone, with varying regimes in effect since 1996. Import-substituting and export-oriented production directions depend on imported raw materials and semi-finished products. Notably, a significant portion of imports, including components for car assembly, parts for television and computer production, and various equipment, originated from "unfriendly" countries.

In 2022, the cargo turnover of Russian ports in the Baltic, primarily oriented towards "unfriendly" states that significantly increased illegal trade restrictions with Russia on numerous goods, experienced a decrease, contrasting with growth

[1] Cargo turnover of Russian seaports in 2022 increased by 0.7 % — to 841.5 million tons, 12.01.2023, *PortNews*, URL: https://portnews.ru/news/341316/ (accessed 06.08.2023)

[2] Cargo turnover of the Baltic basin in April 2023: transshipment of food bulk has increased, 19.05.2023, *Sea News*, URL: https://seanews.ru/2023/05/19/ru-gruzoob-orot-baltijskogo-bassejna-v-aprele-2023-vyrosla-perevalka-pishhevogo-naliva/ (accessed 06.08.2023).

[3] The number of ships on the St. Petersburg-Kaliningrad line increased to 18, 07.03.2023, *Marine News of Russia*, URL: https://morvesti.ru/news/1679/101369/ (accessed 06.08.2023).

in all other basins (except the Caspian). For 2022 compared to 2021, the reduction was 2.9 %, while overall growth in Russia was 0.7 %.[1] This is because the export of the three Baltic entities of Russia is dominated by oil and oil products, natural gas, and timber, while the import includes equipment and other goods restricted by EU countries. The ongoing reorientation of freight traffic to countries in Asia, Latin America, and Africa is leading to an increase in cargo turnover in the ports of the Arctic, Azov-Black Sea, and Far Eastern basins.

Until recently, the Baltic region countries were significant foreign trade partners for the three regions. In 2014, trade with these countries accounted for 29 % of the external trade turnover of the three regions, with 10.2 % attributed to trade with Germany, 6.2 % with Finland, bordering Leningrad region, 5.4 % with Estonia, 2 % with Latvia, 1.8 % each with Sweden and Denmark. Trade with neighbouring countries of the Kaliningrad region, namely Poland (1.2 %) and Lithuania (0.3 %), was the least active, which is not surprising given the less satisfactory relations[2] between Russia and these countries in recent years.

In 2021, the contribution of Baltic region countries to the foreign trade turnover of the three regions decreased to approximately 16 %. Germany accounted for 6.4 %, Finland for 2.8 %, and Estonia, ranking 4th, for over 1.9 %. Poland, ranking 3rd (2.0 %), and Lithuania (1.4 %) increased their share compared to 2014, although it remained extremely low. Denmark represented about 1.2 %, Latvia about 0.8 %, and Sweden about 0.6 %. Notably, China emerged as the leader in the foreign trade turnover of all three regions, displacing the Netherlands in the first two regions and Germany in the Kaliningrad region. While the Netherlands moved to the second position in the commodity turnover of St. Petersburg, in 2022, it ranked only 6th in the commodity turnover of Leningrad Oblast, and Germany was 7th[3] in the commodity turnover of the Kaliningrad region.

The geopolitical and military-political situation in the Baltic Sea region

The geopolitical and military-political situation in the Baltic Sea region has sharply deteriorated compared to the period when this study was originally planned and initiated. The configuration ‘all against Russia’ has solidified. Western states, members of the Council of the Baltic Sea States (CBSS) established in 1992, have rejected equal dialogue with Russia, transforming the Council into an instrument of anti-Russian policy. In connection with this, on May 17, 2022, Russia announced its withdrawal from this organisation (Russia’s membership in the CBSS was suspended on March 4, 2022).

[1] Cargo turnover of Russian seaports in 2022 increased by 0.7 % — to 841.5 million tons, 12.01.2023, *PortNews*, URL: https://portnews.ru/news/341316/ (accessed 06.08.2023).

[2] Calculated on: Russian Export and Import Database (VED). Data from January 2013 to January 2022, *Ru-Stat Information System*, URL: https://ru-stat.com/database/ (accessed 06.08.2023).

[3] Ibid.

Finland's entry into NATO and the likelihood of Sweden following suit in the near future signify a transformation of the Baltic Sea into an 'internal sea of NATO', considering Russia's control over only 7 % of its coastline. This development grants the North Atlantic Alliance the capability to regulate access to the Gulf of Finland, subsequently controlling routes to the military naval base in Kronstadt and Russian ports in the region. Furthermore, NATO exercises control over air and sea routes connecting the Kaliningrad exclave with the main part of Russia. It is worth noting the potential deployment of the American High Mobility Artillery Rocket System (HIMARS) on the Swedish island of Gotland. With the introduction of the new Precision Strike Missile (PrSM) systems boasting a firing range of 650 km, the entirety of the Kaliningrad region falls within striking distance from this location.

An additional factor contributing to the heightened military-political tension in the Baltic region is the doubling in size of the Polish armed forces, aiming to become the most powerful army in Europe. This expansion involves substantial acquisitions of modern weaponry and military equipment.

The escalation of the geopolitical and military-political situation in the Baltic region was vividly illustrated by the explosions resulting from terrorist attacks on the Nord Stream and Nord Stream 2 gas pipelines on September 26, 2022. Such events had not occurred even during the worst periods of the Cold War.

Naturally, Russia will not remain indifferent to the negative changes in the military-political situation in the Baltic region and will be compelled to take retaliatory military measures. According to Russian experts, additional units of ground forces, air and missile defense, missile weaponry, and the Baltic Fleet will be deployed in the Northwest of Russia. After Sweden and Finland join NATO, as stated by the Deputy Chairman of the Security Council of the Russian Federation Dmitry Medvedev, "there will be no talk of any non-nuclear status in the Baltic".[1] This implies the deployment of Russian nuclear weapons in the region.

Considering the worsening military-political situation in the Baltic, we propose to continue strengthening the "anti-access and area denial" (A2/AD) zones in the Kaliningrad region and around St. Petersburg. In these regions, among others, new S-500 Prometheus air defense systems and possibly mobile anti-aircraft/anti-missile systems, such as the Nudol, should be deployed. Given the ongoing deployment of low-observable fifth-generation F-35 fighter-bombers by the U.S. Air Force in Europe and the air forces of several NATO European countries, it seems reasonable to include Russian fifth-generation Su-57 fighters and the accompanying heavy strike UAV S-70 Okhotnik in the Western Military District in the Baltic region (possibly in the Kaliningrad region). In response to Poland's increasing procurement of HIMARS and K239 Chunmoo MLRS, as well as 155 mm self-propelled howitzers K9A Thunder, it is necessary to reinforce the artillery of the Russian military group in the Kaliningrad region with

[1] The Baltic may lose its non-nuclear status, Medvedev said, 14.04.2022, *RIA Novosti*, URL: https://ria.ru/20220414/baltika-1783465933.html (accessed 06.08.2023).

modern weaponry. To counter the United States and NATO, as a reciprocal measure, the deployment of ground-based INF (including hypersonic) missiles, as well as sea-launched high-precision cruise missiles Kalibr-M, should be explored in the Western strategic direction (including the Kaliningrad region) (see [34, p. 66—68]).

The formation of the sub-regional security complex (SRSC) between the Republic of Belarus and the Kaliningrad region of the Russian Federation plays a significant role in ensuring military security as NATO increases its forces and resources along its borders (see more: [35]).

The current and projected political landscape in foreign countries in the Baltic region, as well as the sentiments of the majority of the population, seemingly rule out any prospect of a friendly and cooperative government coming to power in the foreseeable future. According to the experience of the Cold War, this standoff could persist for decades. However, under the influence of the economic crisis, primarily caused by anti-Russian sanctions, a return to some forms of pragmatic cooperation, especially with Germany and Finland, becomes possible. Nevertheless, it appears that the United States, as well as the European Union and NATO, will actively hinder such efforts.

Conclusion. Ensuring the dynamic development of the Baltic regions of Russia and enhancing their economic security

The new strategies for the socio-economic development of the Baltic regions of the Russian Federation must anticipate a significant restructuring of their foreign trade and overall international relations. This involves reducing the reliance on the Baltic region countries in the external trade of the Russian Baltic subjects, along with all unfriendly nations, in favour of states that continue to cooperate. The objective is to strengthen the resilience and dynamism of foreign trade connections and economic development in Russia and its constituent entities.

The maritime location of the Baltic regions of Russia, increasingly leveraging maritime transport for the development of international economic ties, facilitates this restructuring. Reorienting a portion of international trade towards interregional cooperation represents a promising prospect, with the three regions closely cooperating in various forms of economic activity.

Given the cessation of cooperation by the Western side, lost opportunities must be compensated for (and are already being compensated for) through the development of scientific and technical collaboration with the Eurasian Economic Union (EAEU), BRICS, Shanghai Cooperation Organization (SCO), and other countries in Asia, Latin America, and Africa. The experience gained from discontinued cross-border cooperation, taking accumulated knowledge into account, is proposed to be utilized in shaping programs for interregional cooperation within the Union State.

To ensure the sustainable development of the three Baltic regions of Russia, with particular emphasis on the enclave of the Kaliningrad region, reinforcing

mutual connections and cooperation is of paramount importance. A prospective approach involves a more active development of interregional ties, redirecting a portion of international trade towards interregional cooperation, and fostering close mutual cooperation among the three regions in various economic activities.

The Kaliningrad region's imperative lies in developing robust maritime and air transportation links with the other two regions, contributing to the establishment of territorially distributed sectoral and cross-sectoral clusters. There are promising opportunities for creating clusters in shipbuilding, automotive manufacturing, the jewellery industry (particularly, amber), as well as in fishing, agro-industry, tourism, health, and scientific-educational complexes. The ultimate goal is to seamlessly integrate the region into a unified territorial socio-economic system with the other two Baltic regions of Russia. Proposed measures for this integration should be incorporated into the Development Strategy of the Northwestern Federal District, the Spatial Development Strategy of Russia, and the socio-economic development strategies of St. Petersburg, Leningrad, and Kaliningrad regions. In order to enhance the economic security of the regions, especially the enclave of the Kaliningrad region, the new strategies for the socio-economic development of the regions are recommended to fully utilize internal natural, labor, and innovative resources. Concurrently with the advancement of maritime and air transportation, leveraging the prospects of international waters in the Baltic Sea, it is imperative to pursue, in accordance with international law, the creation of more robust agreements for overland transit of goods and passengers between the Kaliningrad region and other regions of Russia via the territories of the Baltic States.

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THE ACCESSION OF FINLAND AND SWEDEN TO NATO: GEOPOLITICAL IMPLICATIONS FOR RUSSIA'S POSITION IN THE BALTIC SEA REGION

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The article examines Sweden's and Finland's motives for ending their long-time non-aligned policies and joining NATO after Russia had launched a special military operation in Ukraine in February 2022. The two countries' decision is shown to be in the interest of the United States, which has always sought to fill the geopolitical vacuum reigning after the collapse of the opposing Soviet bloc and the Soviet Union itself. Finland and Sweden were the missing links for Washington and NATO in the Baltic region and Northern Europe as a whole. The study analyses the major consequences of these geopolitical changes for Russia in the Baltic region. These include the increasing disparity in armed forces with NATO, the substantial expansion of the border with the Alliance, the acquisition of new territorial and infrastructural capabilities by NATO to deploy reinforcements and military equipment from member countries to the region, the potential stationing of nuclear weapons on the territories of new member countries, the risk of blockading the Kaliningrad region, as well as the Gulf of Finland, and the Danish straits for Russian vessels. It is stressed that in the current circumstances, Russia needs to consider multiple scenarios in the Baltic region. On the one hand, it must safeguard its interests with minimal damage. On the other hand, it is crucial to steer clear of uncontrolled escalation of tensions with NATO, as it entails the risk of a military clash.

Keywords:
Baltic region, Russia, Kaliningrad region, NATO, armed forces, naval activity, nuclear weapons, infrastructure, blockade

Introduction

The decisions of Sweden and Finland to join NATO were an eloquent manifestation of increased tensions between Russia and the West. The two Nordic countries for a long time (the former for more than two centuries, the latter for the entire period after World War II) adhered to the policy of military non-align-

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ment. In May 2022, they submitted applications for accession to NATO, and the Alliance summit in Madrid in June 2002 sent them official invitations to join NATO.

The situation emerging as a result of this development inevitably affects Russia's position both in the Baltic region and in Europe as a whole. The geopolitical and military imbalance between the Russian Federation and the collective West is becoming even more obvious. NATO's eastern flank is acquiring a logically complete shaping, which, in the context of a sharp aggravation of the Russian-Western confrontation, seriously disadvantages Russia.

Yet, the consequences of such an expansion of the North Atlantic Alliance, which, in the opinion (albeit not indisputable) of many observers, primarily in the West, means the transformation of the Baltic into a 'NATO lake', are not unambiguous. Russia still has many opportunities both to protect its own interests and avoid complete isolation in the region and to prevent a dangerous escalation of tensions, fraught with a direct military clash with NATO. The aim of this study is to analyze the immediate and potential challenges that Russia faces in the Baltic region, to forecast possible scenarios for the development of the situation, and to formulate some recommendations in terms of how Russia should act to minimize the damage, and in the long term, to find ways out.

To achieve this aim, elements of the retrospective method are used, necessary to understand the motives for the decisions taken by Finland and Sweden, as well as studying the role of the main external players (primarily the United States). Likewise, the key factors shaping the challenges and threats that Russia faces in light of these events are analyzed. Finally, possible scenarios for the development of the situation and Russia's reaction are built.

The study draws on a wide range of Russian and foreign authors who trace the evolution of military-political trends in the Baltic Sea region (including the question of how Helsinki and Stockholm decided to break with non-aligned politics), the ability of these two Nordic countries to contribute to the cumulative power of NATO, and the current confrontation between the West and Russia, and who try to forecast the ways Moscow may act in these circumstances.

How Helsinki and Stockholm came to NATO membership. Discussions in the political community of both Nordic countries regarding joining NATO, took place long before Russia began the special military operation in Ukraine on February 24, 2022, at least after the political and military crisis in that country started in 2014. Even in the earlier period, various formats of defence and security cooperation between the Nordic countries, regardless of their affiliation with military-political alliances (primarily the Northern Defence Cooperation Forum (NORDEFCO) established in 2009 comprising Denmark, Finland, Iceland, Norway, and Sweden), had been objectively aimed at bringing these states closer to NATO and building a security system in the region focused on the Atlantic vector [1]. The Russia — West confrontation, which escalated after the start of the Ukraine crisis, further accelerated the erosion of the non-aligned status of

Finland and Sweden. They were increasingly involved in joint military activities with NATO, including Aurora, BALTOPS, and Cold Response military exercises, although officially they did not set the goal of joining NATO. At the 2014 NATO Summit in Wales, the two countries signed memoranda with the Alliance to join its Host Nation Support program, which opened the way to inviting NATO forces in crisis situations and for exercises [2, p. 16]. In May 2018, in Washington, the defence ministers of the United States, Finland and Sweden signed a trilateral declaration for expanding security cooperation. As a major field of such cooperation, it was planned to increase joint military exercises and develop interoperability.[1]

In Finland, back in 2016, a report by the Ministry of Foreign Affairs was released assessing the country's possible accession to NATO, which examined all the pros and cons of such accession, and prospective options for different scenarios (including either simultaneous or separate accession to the Alliance with Sweden). The authors of the report, including prominent experts and diplomats from Finland and other European countries such as Mats Bergqvist, René Nyberg, and François Heisbourg, expressed their concern about a serious crisis in relations with Russia in the event of such a break with the post-war the tenets of Helsinki's security policy and urged not to take such important decisions in a hurry. However, the strategic course towards joining NATO was already outlined in that report [3].

Some Russian experts already recognized at that time that the likelihood of Sweden and Finland joining the North Atlantic Alliance had increased in recent years [4, p. 16], especially given the growing 'threat' emanating from Russia in the 'post-Crimean' period [5, p. 88]. Anyway, it was stated that their rapprochement with NATO was an irreversible process, the only question being how far it would go and how it would be taken in Moscow [6].

In principle, the departure of Helsinki and Stockholm from neutrality had been heralded by their accession to the European Union in 1995, since the EU's capability to build its own defence and security identity, despite the ambitions of some of its leaders, is severely limited, and this task is unattainable in isolation from NATO.

Nevertheless, the decision by the governments of these two Nordic countries (with nearly unanimous support from their political elites) to part with the non-aligned policy was determined by the start of the Russian military operation in Ukraine, which became inevitable for the Russian leadership after the United States and NATO had rejected the draft agreements on mutual security treaties handed over to them in late 2021. If the Russian campaign in Ukraine had not begun, domestic discussions in Stockholm and Helsinki regarding the necessity to join NATO would probably have continued indefinitely, and these countries

[1] Finland, Sweden and US sign trilateral agreement, with eye on increased exercises, *Defence News*, 09.05.2018, URL: htpps://www.defencenews.com/training-sim/2018/05/09/finland-sweden-and-us-sign-trilateral-agreement-with-eye-on-increased-exercises/ (accessed 29.07.2023).

themselves would have continued to be drawn into joint military activity with the Alliance, especially by intensifying joint military exercises with it. Now that Russia has crossed a critical line in Ukraine, these reflections, as the larger part of these countries' elites see it, have become inappropriate [7, p. 11]. This radical break of the two states with their long-term geopolitical stance is supported by public opinion polls. In Finland, the survey conducted by the YLE media company almost immediately after Russia began its special operation in Ukraine, showed that the share of citizens in favour of joining NATO exceeded 50 per cent for the first time in that country's history.[1] In Sweden during the same period, the proportion of NATO supporters was slightly lower, with 41 per cent expressing support and 35 per cent opposing, indicating an increase in the share of supporters by approximately 4 per cent compared to the survey conducted in January of the same year.[2]

The events that began on February 24, 2022, became a triumph for that group of politicians in both Nordic countries who had always focused on maximum rapprochement with NATO. Among them, in particular, is the former Prime Minister of Sweden Carl Bildt, one of the principal architects of the EU Eastern Partnership program, aimed at dragging the European countries of the former USSR into the Western orbit. After the start of the Russian military operation in Ukraine, Bildt became a vociferous supporter of Sweden's and Finland's accession to NATO, arguing that in their new status, they could significantly change the European security architecture and strengthen NATO's European pillar [8—10]. In Finland, among the most prominent proponents of joining the North Atlantic Alliance from the very beginning of the Ukraine crisis in 2014, were ex-president Martti Ahtisaari and former foreign minister Alexander Stubb.[3]

For the first time since the end of the Cold War, NATO enlargement is not taking place by adding former socialist countries constituting the Warsaw Pact, or some former Soviet republics, but by accepting states that were part of the world capitalist system but maintained a non-aligned status. It is noteworthy that in terms of compliance of their armed forces with NATO requirements, as well as in terms of political criteria (belonging to "established democracies"), Helsinki and Stockholm could be admitted to the Alliance without the intermediate and preparatory stages that former members of the Warsaw Pact and the Baltics had gone through.

[1] Neutral Finns and Swedes reconsider idea of NATO membership, *NPR,* 03.03.2022, URL: https://www.npr.org/2022/03/03/1084112625/neutral-finland-sweden-warm-to-idea-of-nato-membership (accessed 22.07.2023).

[2] Possible NATO membership campaign gathers momentum, *Euractiv,* 28.02.2022, URL: https://www.euractiv.com/section/politics/short_news/possible-nato-membership-campaign-gathers-momentum/ (accessed 22.07.2023).

[3] Hakala, H.J. Finland Turned to NATO Membership with Lightning Speed, *International Centre for Defence and Security, Estonia*, 26.09.2022, URL: https://icds.ee/en/finland-turned-to-nato-membership-with-lightning-speed/ (accessed 28.07.2023).

Helsinki and Stockholm are actively involved in providing military assistance to Kyiv through the supply of weapons (in particular, air defence systems), and training Ukrainian military personnel to master various types of Western military equipment. The 'Russian threat' after the start of Moscow's military operation in Ukraine outweighed the argument of that part of the expert community, the political and business elite of Finland and Sweden, who had feared that their joining NATO and corresponding war obligations was fraught with the risk of uncontrollable tension with Russia or involvement in hostilities in the interests of those members of the Alliance who are geographically remote from the Baltic region (in particular, Turkey).

Until the Nordic countries broke with their non-aligned stance in 2022, this argument provided some Russian experts and observers with reasons to believe that their departure from neutrality and joining NATO was unlikely in the foreseeable future. As a result, these analysts suggested that Russia should not view the Nordic region as an inevitable candidate drifting towards NATO [11; 12].

Justifying its intention to radically rethink its national and regional security strategy, the Finnish government, in its report issued in April 2022 placed full responsibility for the new situation on "Russia's aggressive and revanchist policy". According to the report, "Finland's foreign and security policy and active and proactive diplomacy strengthen security in Finland and our neighbouring areas both through national measures and international cooperation. As the war is ongoing in Ukraine, it is difficult to assess all its effects. In response to the changed security situation, Finland will in any case have to strengthen its security and defence capability and intensify long-term cooperation with key partners". The report asserts that Finland keeps its "sovereign decision-making" and "makes its foreign and security policy decisions independently" [13, p. 14].

In Sweden, submitting the application to join NATO was somewhat more controversial than in Finland (especially because possible NATO accession was traditionally an ideological issue and reflected the contradictions between, mainly, Social Democratic 'NATO skeptics' and right-wing supporters of rapprochement with the Alliance) [14, p. 27—28]. This is evidenced by discussions in the working group set up in March 2022 by the government including representatives of various political parties in the Swedish Riksdag. The final report of this group, as well as in the case of Finland described above, claims that the security environment for Sweden has deteriorated as a result of the "Russian aggression," and that the danger of Russian "aggressive actions" against Sweden has grown. Yet the Swedish report pays more attention to the costs the country would bear due to potential NATO membership, including those related to the possible involvement of Stockholm in international conflicts in remote regions. The document calls for the maximum preservation of those mechanisms of cooperation in the field of security and international influence of Sweden, which it managed to develop during the period of its non-aligned status [15].

It is not a mere coincidence that Sweden's and Finland's announcement of their joining NATO made shortly after Russia's launch of the military campaign in Ukraine, happened almost simultaneously with the referendum in Denmark on June 1, 2022 (not formally related to NATO) on abolishing the opt-out from the European Union concerning Common Foreign and Security Policy (CFSP). More than two-thirds of those participating in the referendum voted for the abolition of that provision, which until that moment had been one of the foundations of Copenhagen's limited status in the European integration project. Actually, given the sharp aggravation of the security situation in Europe and the confrontation between Russia and the West, any attempts by the European Union to build its military and political identity, autonomous from NATO and the United States, become irrelevant. Therefore, any projects within the framework of CFSP strengthen the Atlantic rather than the Europe-oriented principle in the strategy for a united Europe. As one Russian scholar notes, the supporters of the abolition of the Danish CFSP opt-out who won that voting, "managed to make that referendum not merely a vote 'for' or 'against' the European Union, but a question of protecting the European values, solidarity with Ukraine and European partners who are taking unprecedented steps in the new environment" [16].

Yet, ratification of the protocols on the accession of the two states (especially Sweden) to the alliance met with certain obstacles, primarily given the conditions put forward by the Turkish government due to Stockholm's alleged reluctance to counter Kurdish groups (primarily the Kurdistan Workers' Party — PKK) which Ankara considers terrorist. As for Finland, Turkish ratification of the protocol on its accession to NATO was also delayed but was still carried out in March 2023. Hungary took a similar position on this issue. It was dissatisfied with the interference of Helsinki and Stockholm in the country's internal affairs under the pretext of 'anti-democratic' trends in the policies of the Viktor Orban government. With their opposition, Ankara and Budapest disrupted the original plan of Helsinki and Stockholm to join NATO simultaneously.

In this regard, some experts in Sweden express concern that this time gap between Finland and Sweden in joining the Alliance and probable new delays in Stockholm's accession will give Russia a chance to exploit the emerging effect of the 'grey zone' in the region and consider Sweden as a weak link in the Western bonds. According to Marco Nilsson from the University of Jönköping, in this situation, Moscow will intensify operations to influence public opinion in the countries of the region and even try to stimulate internal instability there [17].

However, judging by Turkish President Recep Tayyip Erdogan's step-by-step abandoning his 'principled' position in 2022—2023, and concessions he made to the majority in NATO (and primarily to Washington) on the issue of Stockholm's membership in the Alliance, this issue is practically resolved. The incompleteness of Sweden's accession to NATO was yet reflected in the final communiqué of the

Vilnius summit in July 2023, which only says that NATO welcomes "Finland as the newest member of [the] Alliance" and that "NATO membership makes Finland safer, and NATO stronger".[1]

In late October 2023, Erdogan signed the protocol on Sweden's accession to NATO and sent it to the Turkish parliament for ratification. Since Budapest's position remains an obstacle in resolving the "Swedish issue," it cannot be ruled out that the completion of Stockholm's admission to NATO will take some time, but it is obvious that both Finland and Sweden will be integrated into the Alliance altogether. Accordingly, Russia's geopolitics in the Baltic region, as well as its political, economic and military positions there, are undergoing negative change.

The importance of Sweden's and Finland's joining NATO for the collective West is evidenced by the fact, albeit symbolic, that the Ewald von Kleist Award was presented to these two Nordic countries for their "historic step in response to Russia's war of aggression". This event occurred during the Munich Security Conference in February 2023. This award, named after the founder of that international forum, was accepted by the former and the current Prime Ministers of Sweden Magdalena Andersson and Ulf Kristersson, the President of Finland Sauli Niinistö and the then Finnish Prime Minister Sanna Marin.[2]

U.S. interest in the Baltic region in a proxy war against Russia. After the end of the Cold War, when the United States and its allies in security alliances (primarily NATO) made the most of the emerging "unipolar moment," the enlargement of the North Atlantic Alliance and its expansion beyond the sphere of responsibility limited by the Washington Treaty, became one of the foundations of American geo-strategy. This applied, among others, to the Baltic region, where Washington needed, despite inevitable negative reactions from Russia, to promote the entry of Estonia, Latvia and Lithuania into NATO and the maximum involvement of the then non-aligned Finland and Sweden in NATO activity. The latter included participation in possible efforts to defend the Baltic countries given their semi-isolation from the mainland of the Alliance [18, p. 61].

However, the evolution of Washington's priorities in the Baltic region and the entire eastern half of Europe was largely reactive and depended on many factors — both domestic and external. Among them is Russia with its readiness and capability to challenge the unipolar world order in its immediate environment. No less important is the increasing need (especially since the presidency of Donald Trump) to counter the growing influence of China and the Chinese expansion. In any case, when such a challenge from Moscow was barely noticeable, Washington (during the presidencies of Bill Clinton, George W. Bush, and in

[1] Vilnius Summit Communiqué. Issued by NATO Heads of State and Government participating in the meeting of the North Atlantic Council in Vilnius 11 July 2023, *NATO,* 11.07.2023, URL: htpps://www.nato.int/cps/en/natohq/official_texts_217320.htm (accessed 26.07.2023).

[2] Kleist Award 2023 to be presented to Sweden and Finland, *Munich Security Conference,* 13.02.2023. URL: htpps://securityconference.org/en/news/full/kleist-award-2023/ (accessed 15.07.2023).

the early period of Barack Obama's office) focused not so much on the use of the Baltic region in its military and political strategy, but more on demonstrating the triumph of 'democratic values' in this region and the orientation of its post-communist countries to the West [19].

The situation began to change after the outbreak of the Ukraine crisis and Russia's actions in response to the coup in Kyiv in 2014, when 'deterring' Moscow — the Baltic region being a major arena — started to return to the agenda of the United States and NATO. But even then, until February 2022, the emphasis was placed mainly on the military "mastering" of those countries (Poland and the Baltic trio) that had joined NATO after the end of the Cold War and always tried to be in the vanguard of the anti-Russian efforts of the West. As for Finland and Sweden, the task of their involvement in NATO and using their capabilities for military confrontation with Russia was rather theoretical and prognostic.

Washington, driven by its need to mobilize as many countries as possible to counter Russia in the wake of hostilities in Ukraine, sought to leverage their military, industrial, and intelligence potential. This involved creating challenges in regions most sensitive for Moscow unleashing a proxy war against Russia. From the beginning, the United States was among the most enthusiastic supporters of Sweden's and Finland's applications to join NATO. In early June 2022, then-Chairman of the US Joint Chiefs of Staff, General Mark Milley, visited Helsinki and Stockholm. While meeting with senior officials of these countries, he noted their capability to make significant contributions to the war potential of the North Atlantic Alliance and assured them of Washington's intention to participate more actively in joint military exercises with these countries.[1]

On August 3, 2022, the US Senate ratified the protocols on the accession of Finland and Sweden to NATO. On August 9 of the same year, President Joseph Biden signed these protocols. Commenting on this event, Secretary of State Antony Blinken said that "in the United States there is "strong… bipartisan support for the membership applications of Finland and Sweden", and that in Washington, they "look forward to quickly bringing them into the strongest defensive Alliance in history". Blinken emphasized that "allies are united in their shared mission to defend the Euro-Atlantic community, deter aggression, project stability, and uphold NATO's values of democracy, individual liberty, and the rule of law". "We also remain firmly committed to NATO's Open Door policy".[2]

American experts studying the changes in the security environment which accompany the recent wave of NATO expansion, focus on several aspects. Firstly,

[1] Pentagon weighs plans to expand exercises with Finland, Sweden amid NATO bid, *Defence News,* 03.06.2022, URL: htpps://www.defencenews.com/pentagon/2022/06/03/pentagon-weighs-plans-to-expand-exercises-with-finland-sweden-amid-nato-bid/ (accessed 20.07.2023).

[2] Signing of U.S. Instruments of Ratification of Finland and Sweden's NATO Accession Protocols, U.S. *Department of State*, 09.08. 2022, URL: htpps://www.state.gov/signing-of-u-s-instruments-of-ratification-of-finland-and-swedens-nato-accession-protocols/ (accessed 20.07.2023).

the contribution of Helsinki and Stockholm to the collective military potential of NATO; secondly, their ability alongside other countries in the region to destroy Moscow's strategic plans for the further use of the Baltic in its interests as a 'grey zone'; thirdly, the necessity to coordinate the strategies of all Western states in the region within the framework of NATO, the European Union, and other forums, to overcome certain gaps between different groups of states in the region (Baltic Trio, Scandinavian peninsula, South Baltic countries) in their military and political priorities [20].

Among the types of military equipment Sweden and Finland have to contribute to the total NATO war potential, experts close to the Pentagon mentioned (as of mid-2022) about 150 fighters, including 96 JAS-39 Gripen multirole fighters used by Sweden, and 62 F/ A-18 Hornet multirole combat aircraft in Finland (the latter are planned to be decommissioned by 2025). By the end of this decade, Finland intends to purchase 64 F-35 fifth-generation fighters. The Swedish Air Force will acquire two GlobalEye airborne early warning and control (AEW&C) aircraft. A significant contribution by Sweden to NATO will be Stealth Visby corvettes and Gotland-class submarines. For its part, Finland, which is often called an 'artillery superpower', has a powerful (larger than France, Germany or the UK) resource of these types of weapons, primarily the M-270 Multiple Launch Rocket System (MLRS). As for tanks, Finland and Sweden have 220 Leopard main battle tanks, which is comparable to Germany's 245 similar vehicles. Both Nordic countries have developed air defence systems. Sweden has been operating the Patriot air defence systems since 2021; Finland uses NASAMS systems [21]. It is noteworthy that Finland has AGM-158 JASSM low-detection standoff air-launched cruise missiles developed by Lockheed Martin. Moreover, Helsinki plans to purchase an extended range version of this missile, the AGM-158B JASSM-ER for F-35 fighters with a range of up to 980 km, which is a matter of greater concern for Russia.

At the same time, certain American expert centres are warning that Russia will not put up with the deterioration of its geopolitical position (even despite the mixed effectiveness of the campaign in Ukraine), and increase its reliance on nuclear deterrence and other military instruments in the region, as well as on hybrid methods of influencing a potential enemy [22].

The value of the two Nordic countries for the United States and NATO in their addressing 'hybrid' threats — the main source of which being Russia, as the West alleges in recent years — is confirmed by the fact that the European Centre of Excellence for Countering Hybrid Threats (Hybrid CoE) has been operating in Helsinki since 2017. The right to participate in it is granted to member countries of the European Union and NATO. After Finland and Sweden become NATO members, the role of the North Atlantic Alliance in the functioning of this formally European organization will increase. The competence of this centre includes countering threats that are non-military in nature but directly affecting the security of various countries. They include activities

in the information and psychological sphere, active use of cyber technologies, and supporting various opposition and extra-systemic movements to undermine state power.

New enlargement of NATO in the Baltic region and Russia's position. After Finland and Sweden sent official applications to join NATO, the positive response to which was obvious, the thesis about turning the Baltic Sea into a 'NATO lake' became unanimous in the Western media, as well as among scholars studying security issues. Some observers in the Alliance member countries, however, warn against euphoria and unrealistic calculations about this geographical factor. They recall that Russia still has many opportunities to counter NATO in the Baltic region, that its armed forces are stationed in the Kaliningrad region, in the western part of the mainland of the Russian Federation and in Belarus, and that Russia retains the potential to limit NATO's freedom of manoeuver in the Baltic, albeit not in its entire water area and only for a certain period [23].

Nevertheless, the fact that all the states in the Baltic Sea, except Russia, will be NATO members, cannot but affect this country's positions both in the Baltic region itself and its geopolitical and military-political interests in general. The principal challenges and threats — real and potential — boil down to the following groups:

— the complete disappearance of the geopolitical buffer between Russia and the Western side, which Finland used to be;

— an inevitable blow to Russia's foreign economic ties and supply chains of these ties in the region (primarily with Finland), which began after the EU countries joined anti-Russian sanctions in 2022 and cannot but worsen as a result of the new NATO expansion;

— the growth of NATO's overall power by adding new member countries, especially Sweden (primarily its submarine fleet);

— ever more unfavourable situation for Russia in the Baltic region, due to the fact, that the principal NATO and EU member countries, hostile to Russia (Poland and the Baltic states) are concentrated there, and due to potential joining of their efforts with new members of the Alliance for the sake of "containing" Moscow;

— the emergence of a springboard for the deployment of military contingents of NATO member countries to deter Russia;

— facilitating the delivery of NATO military reinforcements to the Baltic countries thanks to the geographical resources of the two Nordic countries and improving their infrastructure capabilities in this regard;

— the danger of deploying nuclear weapons on the territories of new member countries;

— the threat of a blockade of the Gulf of Finland and Kaliningrad, as well as blocking Russia's exit from the Baltic Sea to the Atlantic Ocean.

If we group these challenges and threats by their relevance, it is evident that at the top of them are those pertaining to the changes in the military balance with

NATO, unfavourable for Russia. This is especially noticeable due to the interference of the United States and its allies in the Ukrainian conflict which is fraught with a risk of a 'hot' war. This is aggravated by a significant extension — over 1,300 km — of the land border between Russia and NATO in Finland, and an even greater increase in the line of contact with the Alliance in the Baltic Sea from north to south. Moreover, there is a desire among Western military-political experts and in the media, with a direct interest in justifying the swift integration of the armed forces of new NATO members into the Alliance's total military power for the sake of countering the 'Russian aggression', to intimidate Moscow and present the emerging situation in the Baltic Sea region as nearly disastrous for Russia. This information bravado is exemplified by the claims of certain experts interviewed by *Newsweek* magazine on the eve of the Vilnius NATO summit in July 2023. In particular, Frederik Mertens, an analyst at the Hague Centre for Strategic Studies, argues that NATO in the Baltic already has an overwhelming advantage over Russia not only in the sea but also in air potential, and with Sweden joining NATO, Russian surface ships can only rely on ground-based air defence. There hardly is a spot of the Baltic left, Mertens argues, where a Russian surface ship cannot expect the imminent attack of an advanced sea-skimming missile. Besides, Sweden will be much more integrated into NATO in terms of information and intelligence sharing.[1]

The second group of challenges and uncertainties facing Russia in the Baltic arises from its most vulnerable territories and maritime spaces. This is primarily the Kaliningrad region, due to its exclave and isolated position from the 'mainland'. The most alarmist-minded observers in Russia (in particular, Alexander Nosovich, editor-in-chief of the Kaliningrad analytical portal *RuBaltic*) even argue that Finland's and Sweden's joining NATO creates a threat of Russia losing this region [24]; the more so that a step towards this has already been taken by Lithuania's blocking in June 2022 of transit of goods subject to EU sanctions. This was an attempt to provoke a military-political crisis requiring NATO intervention, in which the new members, especially Sweden with its appreciable naval capabilities, having the island of Gotland as an 'unsinkable aircraft carrier', would play an important role.

Although the threat of 'losing Kaliningrad' is still highly exaggerated, it is clear that those in the West who are calling for a tougher line against Moscow to force it to capitulate in Ukraine, openly view pressurizing Kaliningrad and creating as many difficulties for Russia as possible in the region as a major tool against it. First of all, because Kaliningrad is an ice-free port, the home base of the Baltic Fleet, and Iskander-M missiles are deployed in the region. In any case,

[1] Sweden Joining NATO Is a Nightmare for Russia's Baltic Sea Fleet, *Newsweek,* 12.07.2023, URL: htpps://www.newsweek.com/russia-nato-sweden-baltic-sea-finland-1812526 (accessed 30.07.2023).

some Western experts, although they do not speak out loud about the blockade of the Russian exclave, openly argue that Kaliningrad will be at the centre of a new Russian-NATO confrontation [25].

Sweden's entry into NATO (albeit still incomplete) opens the way for the Alliance to actively use the strategically significant island of Gotland in the Baltic Sea, not least for keeping the Kaliningrad region under pressure. In late 2021 and early 2022 (when military tension around Ukraine began to grow), the transfer of American HIMARS missile systems to this island began — their range covering Kaliningrad. The Swedish government also started the deployment of armoured combat vehicles and military personnel there for patrolling. At the end of April 2022, the Swedish government announced the allocation of 1.6 billion Swedish crowns ($163 million) to strengthen military infrastructure on this island (primarily for the construction of barracks), justifying this step by growing tensions with Russia. According to the country's Deputy Minister of Finance and Financial Markets Minister Max Elger, the aim of this measure "is to be able to house many more conscripts and to make operations more effective, and in that way contribute to greater capacity... on Gotland".[1]

Another, albeit less likely, hot spot that faces a hypothetical blockade by some NATO countries, is the Russian part of the Gulf of Finland. The Baltic countries, primarily Estonia, who are seriously considering the possible 'locking' of the Russian fleet in the Gulf of Finland, express particular satisfaction in this regard. They can try to do this jointly with Finland (in particular, using the RBS-15 anti-ship missile systems that are in operation in Finland, and the Blue Spear anti-ship missiles purchased by Tallinn from Israel), since now the exit from this narrow bay to the main waters of the Baltic Sea will be controlled by NATO countries from both shores. In particular, Enno Mõts Chief of Staff of the Headquarters of Estonian Defence Forces, openly said in May 2022 that the expansion of NATO presence in the Baltic Sea is a strategic move that could potentially disrupt Russia's plans to conduct military operations from the Gulf of Finland. This expansion, akin to surrounding Kaliningrad by NATO on all sides, is seen as a countermeasure to mitigate potential security concerns.[2]

With the accession of Finland and especially Sweden to NATO — due to the Alliance gaining the entire Scandinavian Peninsula as a bridgehead, and correspondingly strategic depth — the problem of the "indefensibility" of the Baltic states is solved for NATO. Now the remote member countries of the Alliance have practically unlimited opportunities to transfer reinforcements there, primarily using the Swedish air and sea space. Daniel S. Hamilton senior fellow at

[1] Sweden to boost military on Gotland amid Russia fears, *Reuters*, 29.04.2022, URL: htpps://www.reuters.com/world/europe/sweden-boost-military-gotland-amid-russia-fears-2022-04-29/ (accessed 25.07.2023).

[2] Finland Joining NATO Will Help Bloc Control Baltic Sea: Officials, *Newsweek*, 13.05.2022, URL: htpps://www.newsweek.com/finland-joining-nato-help-bloc-control-baltic-sea-officials-russia-estonia-1706293 (accessed 23.07.2023).

the Brookings Institution argues that with the transformation of the Baltic into a "NATO lake," there will be no need to rely on the Suwalki Gap between Poland and Lithuania to achieve the task of protecting the Baltic countries [25].

The accession of Finland and Sweden to NATO is a chance to activate some infrastructure facilities which can now be used to transfer troops and weapons to territories located close to the Russian borders and Russian military bases on the Kola Peninsula. This, in particular, is a project to electrify the long-frozen railway link (Tornio — Haparanda) between these two countries in the polar region.[1]

However, publications of a number of experts in the Nordic countries (in particular, from the Royal Swedish Academy of War Sciences) express concern that the entry of Finland, and in the future Sweden into NATO will highlight the problem of splitting the Northern European flank of the Alliance between different Joint Force Commands (JFC). Finland, after its accession to NATO, was designated to JFC Brunssum (Netherlands), responsible for Central Europe and the Baltic region, while Norway is under JFC Norfolk (USA), whose task is to protect the sea routes between Europe and North America via the Greenland — Iceland — United Kingdom (GIUK) gap, as well as in the Arctic. It is not yet known which JFC Sweden will be assigned to after joining NATO. The authors of these publications expect that further reforms of NATO's command structure will be guided by a strategic vision for the Nordic and Baltic regions as a joint operational area [26].

The 'nuclear factor' in the military-political equation that is emerging in the new conditions, will most likely have a delayed effect on Russia, although Finland and Sweden, including their heads of government, declared that they would not set preconditions for membership in the Alliance (i.e., they do not rule out deploying nuclear weapons on their territories in principle). However, nuclear planning issues, in terms of both the extension of guarantees to potential members and their participation in NATO's operational activities, still remain highly important, because as part of collective defence and NATO nuclear guarantees, they correspondingly will be addressed by Russia in its war planning. On the other hand, their armed forces can and will be considered by NATO in the context of nuclear planning even without nuclear weapons on their territories [27, p. 21—22].

In the Arctic region, no less than in the Baltic, the accession of Sweden and Finland to NATO affects the security of Russia. Given that after joining the Alliance they will significantly enhance their participation in various NATO-wide and regional military projects, the confrontation between Russia and the West in the Arctic, as Ilya Kramnik, research fellow at the Primakov National Research Institute of World Economy and International Relations of the Russian Acade-

[1] How Sweden and Finland could help NATO contain Russia, *Reuters*, 05.07.2023. URL: htpps://www.reuters.com/world/europe/natos-new-north-fresh-chances-contain-moscow-2023-07-03/ (accessed 17.07.2023).

my of Sciences (IMEMO) argues, "risks being larger than during the Cold War, especially considering that Sweden and Finland were neutral states at that time" [28]. A number of American experts reasonably forecast that the mere accession of these two countries to the North Atlantic Alliance will significantly increase the importance of the Arctic region in both NATO and Russian military priorities (the more so that over half of the coastline of the Arctic Ocean falls on Russia), Sweden and Finland making a significant contribution to monitoring Moscow's military activity on the Kola Peninsula and at the same time contributing to increasing the risk of NATO — Russia escalation [29].

In the context of growing NATO's total power in the Baltic region, Poland and the Baltic states — Estonia, Latvia and Lithuania — are designing new plans, not only military, but also geoeconomic, to deter Russia, and expect these designs to be included in the Alliance's agenda. The Baltic countries will gain important strategic and defensive space in the event of a possible military conflict with Russia, as well as an opportunity to participate in probable alternatives to Russian energy supplies. In particular, complementary protection by NATO may be provided for the Polish-Danish Baltic Pipe gas pipeline under construction with a connection to the Norwegian gas transportation network, as well as the Swinoujscie gas hub of American oil and gas companies for Eastern and Central Europe, and the floating LNG terminal near Gdansk [30].

A new dimension of NATO's activities, which has now almost the entire Baltic at its "disposal," arises at the intersection of the security sphere and geo-economics, which was facilitated by the Nord Stream and Nord Stream 2 pipeline blasts in September 2022. They disabled these gas pipelines for an indefinite period, and a number of leading EU member countries (primarily Germany) were directly interested in their functioning. This attack itself, the likely NATO entry of Sweden — it is conducting its own investigation here as the explosion happened in its special economic zone — is a new pretext for NATO to take care of the security of infrastructure facilities in the Alliance's area of operation, including in the Baltic Sea. In February 2023, NATO Secretary General Jens Stoltenberg announced the creation of a Critical Undersea Infrastructure Coordination Cell at NATO Headquarters.[1]

New uncertainties and alternatives for Russia. The less favourable the international position of Russia becomes due to the Ukraine conflict, the more urgent it seems to search for variants of reducing mutual tension, — at least in certain areas or regions — even if the conflict in Ukraine itself cannot be resolved or frozen in the near future. The Baltic region, paradoxically, can provide such opportunities, even though it is here that the states most unfriendly towards Russia are located, and it is now becoming an almost monopoly sphere of influence for NATO.

[1] NATO stands up undersea infrastructure coordination cell, *North Atlantic Treaty Organization,* 15.02.2023, URL: htpps://www.nato.int/cps/en/natohq/news_211919.htm?selectedLocale=en (accessed 24.07.2023).

The unfavourable scenario for the development of the situation in the region for the foreseeable period seems the most realistic, given the level of mutual tension. This is evidenced by the significant decline in relations with Finland (both economic and political), the severance of many humanitarian ties with that country. As a result, Russia loses one of the few 'buffers' in relations with the collective West. Monopolization of the security sphere in the Baltic by the North Atlantic Alliance goes hand in hand with other events testifying to the West's desire to isolate Russia in the region both politically and economically. In March 2022, almost immediately after the start of the special military operation in Ukraine, the Russian Federation was suspended from the Council of the Baltic Sea States (CBSS). Thereupon, Moscow announced in May of the same year that it was withdrawing from it. The seriousness of Moscow's perception of challenges posed by the further expansion of NATO and its infrastructure — by adding the states whose non-aligned status has long been one of the foundations of the European balance of power — is evidenced by the complete withdrawal of the Russian Federation from the Treaty on Conventional Armed Forces in Europe (CFE). The Russian Foreign Ministry announced the denunciation of this treaty at the beginning of June 2023. Its statement in particular notes that "a safe and stable balance of conventional arms in the north of Europe has been seriously undermined by the recent accession to NATO of Finland, a non-CFE country that borders Russian territory which is regulated by the CFE, and the prospects of deploying conventional arms of third countries in Finland, along with the ongoing accession of Sweden, also not a CFE member. These steps were the last straw that prompted the Russian Federation to finally exit the treaty".[1]

In the first months after Helsinki's and Stockholm's decisions to join NATO, a prevailing opinion in the Russian political and expert community was that such a turn in their policies, despite emerging problems for Russia, would not be fatal. For instance, professor of St. Petersburg State University Konstantin Khudoley expressed an opinion that the accession of these countries to the Alliance "does not create any existential threat for Russia," and "when criticizing the decision of Sweden and Finland, it is advisable to refrain from threats, or sharp and rude attacks; they will not frighten the Finns and Swedes, but only increase their negative attitude towards Russia. If NATO military infrastructure appears on the territory of Sweden and Finland, Russia, of course, must take measures, but they must be strictly verified and be a response only to those threats that will specifically arise no less, but in no case more" [31].

However, the subsequent development of events, the protraction of hostilities in Ukraine, and the escalation of Western intervention in the Ukrainian conflict leave, at least for the foreseeable future, little chance for supporters of Russia's restrained behaviour, including in the Baltic region. After Sweden and Finland

[1] Foreign Ministry statement on Russia sending notifications to states-parties to the Treaty on Conventional Armed Forces in Europe (CFE). *The Ministry of Foreign Affairs of the Russian Federation,* 09.06.2023. URL: htpps://www.mid.ru/en/foreign_policy/news/1886348/?ysclid=lp703pgtk7952680477 (accessed 26.07.2023).

abandoned their long-standing tradition of non-aligned politics and got actively involved in political and war confrontation with Russia, unconditionally joining the general line of the West to deter the 'Russian aggression', the idea that maintaining some kind of cooperation between Russia and NATO states in the military and military-technical field in the Baltic region (in particular, the idea of Russia's return to participation in the BALTOPS exercises, as it did until 2014) will help curb the rise in tensions, is not relevant any more [32, p. 73].

The scenario of 'reducing the damage' caused by the transformation of the Baltic into "the NATO lake," although it seems unrealistic due to non-decreasing tensions between Russia and NATO, should not be completely ruled out, because neither Moscow nor the West have an interest in uncontrollable confrontation. Despite the obvious security challenge that the actual NATO monopoly in the Baltic poses for Russia, in the initial period after Stockholm and Helsinki announced their intention to join the Alliance, there was no desire within the top leadership of the Russian Federation and the expert community, to put this problem among the key threats for the security of Russia. President Vladimir Putin, during the Collective Security Treaty Organization (CSTO) summit on May 16, 2022, speaking about the enlargement of NATO, including Finland and Sweden, said that "Russia has no problems with these states … In this sense, therefore, there is no direct threat to Russia in connection with NATO's expansion to these countries. But the expansion of its military infrastructure to these territories will certainly evoke a response on our part. We will see what it will be like based on the threats that are created for us … So, we will respond to it in a fitting manner".[1] Thus, there was a clear desire of Moscow to somewhat push aside the challenges and threats emerging from NATO expansion, which at the moment are less than the threats that stem from the events around Ukraine and the danger of a clash with NATO on the Ukrainian front.

Some diplomats and political experts in the new NATO member countries, who oppose burning all bridges with Russia, were quick to respond to such somewhat conciliatory signals from Moscow. Among them, there exist different opinions regarding the extent to which this expansion of the North Atlantic Alliance really threatens Russia's military security, whether it is an immediate war threat or rather a political and psychological factor. In the political communities in Finland and Sweden, a prevailing desire is to downplay the danger that their accession to NATO poses for Russia, and to place all the blame for the respective geopolitical choices of Helsinki and Stockholm on Moscow itself. For instance, the well-known Finnish diplomat, former ambassador of Finland to the Russian Federation and Germany René Nyberg believes that in the context of miscalculations made by Moscow during its military campaign in Ukraine, "Finnish and Swedish NATO membership looks from a Russian perspective more like collateral damage… Sweden has enjoyed unofficial American guarantees since the 1950s

[1] CSTO summit, 16.05.2022. *President of Russia,* URL: en.kremlin.ru/events/president/news/68418 (accessed 27.07.2022).

and Finland is an enhanced partner of NATO. Both defence forces are NATO compatible… From a purely Russian military view, Finnish and Swedish NATO membership does not change much. Except that it provides additional depth for Norway's defence of Finnmark" [33].

Despite such attempts to downplay the negative consequences of the two Nordic countries joining NATO that Russia faces, the view expressed by the Finnish diplomat leaves hope that in Helsinki and Stockholm a desire to blindly follow the path of other post-communist Baltic states trying to be Washington's proxies, will not prevail. However, it is only after the root causes of the current acute confrontation between Russia and the West are addressed adequately, that one can expect avoiding unfavourable development in the Baltic region.

The need for Russia to take countermeasures to reduce the negative impact of the transformation of the Baltic Sea into the 'NATO lake', leaves enough room for flexibility and involves, on the one hand, purely military response, on the other hand, necessary adjustments of our country's political priorities in the region. First, reinforcing both the land and sea groups of the Russian Armed Forces on the north-western border becomes inevitable, corresponding to the dimension of threat emerging for our country. This will entail the deployment of ballistic missile systems, and air defence forces, as well as creating opportunities for launching strikes with high-precision weapons on the territories of new NATO members. Second, it is necessary, as long as the Russia — West tension continues on the current level, to rethink more thoroughly the political and economic priorities of the Russian Federation in relations with those states of this region that adhere to Russia-hostile attitudes (including a revision of established logistics schemes), linking these relations with a 'contribution' they make to the build-up of mutual tension. Actually, this process was started by the EU and the US by escalating sanctions pressure on Russia. Third, even with the current Russian-Western deadlock and brinksmanship, it is necessary to explore options for resuming cooperation and defending Russian interests in the region for the future, as sooner or later, the confronting parties come to awareness that new institutional mechanisms are required to replace the discredited post-bipolar Western-centric system of the European security architecture.

The actual consequences of the latest geopolitical changes in the Baltic region will largely depend on the outcome of the military operation in Ukraine, and at least a partial easing of the overall political and war tensions between Russia and the West.

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THE ECONOMY OF THE RUSSIAN BALTIC SEA REGIONS: ADAPTATION AND MODERNISATION

THE ADAPTATION OF RUSSIAN REGIONS' ECONOMIES TO THE RUPTURE OF RELATIONS WITH EUROPE: THE CASE OF BALTIC SEA PORTS

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Despite the sweeping economic sanctions imposed by Western countries, Russia has managed to avoid a significant recession, experiencing recovery growth. The situation in the regions earlier involved in cooperation with Europe was more complicated. Yet, these territories have also succeeded in reviving their economies and returning to growth. A number of growth areas have emerged in the Russian regions, which continue to develop under sanctions. A prime example of this is Russian seaports. This article examines the factors that enabled Russian businesses, including those operating in Baltic Sea ports, to adapt to the sanctions and continue operations. To do so, a comprehensive analysis was conducted, with a focus on macroeconomic, sectoral, regional, and corporate statistics. In addition, scholarly articles and information from business media were examined, and a survey was conducted among Russian enterprises operating across various industries and regions of the country. This study traces the history of economic relations between Russia and Europe over the past twenty-five years, examining the impact of Western sanctions on Russia's spatial development, the response of Russian maritime transport to these sanctions, and the adaptation measures taken. It also evaluates the performance of Russian Baltic ports between 2022 and 2023, assessing the long-term risks and threats to their development and exploring the potential for maritime transport growth in the Baltic region under the current circumstances.

Keywords:
spatial development of Russia, the Baltic Sea, seaports, adaptation to sanctions

Cooperation with Europe as the main priority of Russia's post-Soviet foreign economic policy. During the 25—30 years preceding the current geopolitical crisis, the European direction was the main priority of Russian foreign economic and foreign trade policy [1; 2].

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The majority of Russian exports went to European countries. In the period from 2011 to 2014, the share of 37 European countries in the total Russian commodity exports was 53—55 %. After the launch of the first wave of anti-Russian sanctions, this share decreased, but not very much — from 2015 to 2021 it ranged from 42 to 49 %. For certain types of goods, it was even higher. For example, in 2021, Europe's share in Russian gas exports was 79 %, petroleum products exports — 56 %, and oil exports — 48 %.

The situation was similar to the import of goods: from 2011 to 2014, 37 European countries supplied 43—44 % of Russia's merchandise imports, and in the period from 2015 to 2021 their share was 35—40 % [3].

In addition, in these years, Russia placed its bets on the large-scale attraction of direct and portfolio investments, as well as high technologies from European countries, hoping to modernize its national economy with their help. Foreign investors, mainly European, received significant preferences and benefits that helped them to take good positions in Russian markets. As a result, companies from European countries have opened a large number of their own and joint ventures in Russia to produce various goods and services [4]. For example, in 2014, over 6 thousand German companies operated in Russia with an accumulated investment volume of 22.3 billion euros.[1]

During these years, Russian companies often opened their subsidiaries in European countries, trying to integrate into international value chains. For instance, the NLMK Group still owns three metallurgical enterprises in France and one in Denmark, supplying its products produced in Russia for further processing.[2]

Problem points of Russian-European economic cooperation. It should be noted that Russia has been striving for open and equal economic cooperation with Europe for many years. The European vector of the development of Russia's foreign economic relations was justified by the confidence of many domestic politicians that cooperation with partners from the EU and other countries, in general, would be long-term, stable and mutually beneficial. This policy remained consistent, despite the fact that many European partners, long before the aggravation of the geopolitical situation in 2014, refused to take into account Russia's economic interests and applied discriminatory measures towards our country [5—8].

In particular, in 2006, the Russian Severstal Group received a refusal to purchase the Luxembourg metallurgical company Arcelor. According to many observers, one of the reasons for the refusal was the reluctance of European governments to sell one of the largest producers of ferrous metals in the world to a Russian buyer.[3] A similar story occurred in 2009, when a deal to acquire the

[1] Almost 630 German enterprises are registered in Russia, *Rossiyskaya Gazeta*, 08.10.2014, URL: https://rg.ru/2014/10/07/inostranny-business.html (accessed 16.10.2023).

[2] Geography of NLMK Group assets, *NLMK*, URL: https://nlmk.com/ru/about/map-of-assets/ (accessed 16.06.2023).

[3] Russian politicians consider Arcelor's decision a manifestation of Russophobia, *Inopress*, 27.06.2006, URL: https://www.inopressa.ru/article/27Jun2006/nytimes/arcelor.html (accessed 16.06.2023) ; Experts: the deal with Arcelor-Mittal is a political decision, *Rosbusinessconsulting*, 27.06.2006, URL: https://www.rbc.ru/economics/27/06/2006/5703c3139a7947dde8e0aab3 (accessed 16.06.2023).

German automobile company Opel by Russian buyers fell through. After the deal failed, there were many media reports saying that the reasons for the refusal were politically motivated.[1] General Motors, which controlled Opel at that time, under pressure from the American authorities, did not want to provide Russia with access to Opel technologies and patents, even though these technologies were mass-produced and could hardly be considered the most advanced and sensitive from the point of view of military rivalry.[2]

It is also necessary to recall that Estonia, Latvia, Lithuania, and Poland, which border Russia, have for many years shown themselves to be disloyal and unreliable transit countries for freight flows from and to Russia. These countries often introduced restrictions for Russian exporters and importers, inflated prices for the transportation of goods across their territory, created obstacles to the construction of transit transport infrastructure, and put forward various political demands. In particular, in 2013, Poland refused to approve the project for the construction of the Yamal — Western Europe-2 gas pipeline, demanding as an ultimatum that in the section leading to the Polish border, the pipe should not pass through the shorter and more reliable route through Belarus, but through Ukraine.[3] This story became one of the main reasons that forced the Russian company Gazprom to switch to the implementation of the Nord Stream project, within the framework of which gas went directly to Germany, bypassing the unfriendly countries of Eastern Europe.

Development of Russian ports in the Baltic. Until very recently, Russia continuously advanced its infrastructure to bolster and facilitate economic and trade ties with Europe across various domains. This policy was accompanied by the construction of new ports, berths, terminals, railway approaches, and specialized warehouse areas on the western borders of Russia. At the same time, housing for workers and other infrastructure for port, customs, phytosanitary and other services were built in the port areas. Particular emphasis was placed on the augmentation of cargo traffic through the Baltic Sea, given that this route served as the shortest and most convenient pathway to Russia's primary trading partners in Europe, including Germany, France, the Netherlands, and others [9—11]. As a result, transport operations in the Baltic, both freight and passenger, developed very quickly. In the mid-1990s, transport departments and businesses managed

[1] The failure of the deal to sell Opel could have occurred for political reasons, *Forbes*, November 12, 2009, URL: https://www.forbes.ru/news/27466-sryv-sdelki-po-prodazhe-opel-mog-proizoiti-po-politicheskim-prichinam-pervyi-zampred-sove (accessed 16.06.2023).

[2] Journalists found out new details about the failed sale of Opel, *Autonews*, 25.07.2011, URL: https://www.autonews.ru/news/5825a8939a7947474312d984 (accessed 16.06.2023).

[3] The Polish opposition is dissatisfied with the project for the construction of the Yamal-Europe-2 gas pipeline, *Neftegaz*, 08.04.2013, URL: https://neftegaz.ru/news/politics/257954-polskaya-oppozitsiya-nedovolna-proektom-stroitelstva-gazoprovoda-yamal-evropa-2/ (accessed 03.06.2023).

to convince the then Russian president to sign decrees on the construction of three new ports in the Leningrad region — Ust-Luga, Primorsk and Batareynaya Bay. This decision fundamentally changed the situation with the Baltic transit in favour of Russia, although the leadership and business of Estonia, Latvia and Lithuania resisted this development in every possible way, trying to maintain their pricing and political influence on Russian-European trade relations. The construction of new large ports in the Gulf of Finland can be considered one of the main successes of Russian spatial policy in recent decades. This success made it possible to largely get rid of the dictates of the disloyal transit countries of Eastern Europe and gave a serious impetus to the economic development of almost all regions of North-West Russia.

The expansion of Russian port facilities in the Baltic Sea was executed with deliberate intent and systematic precision, ensuring a sustained and consistent growth in maritime cargo turnover (Fig.).

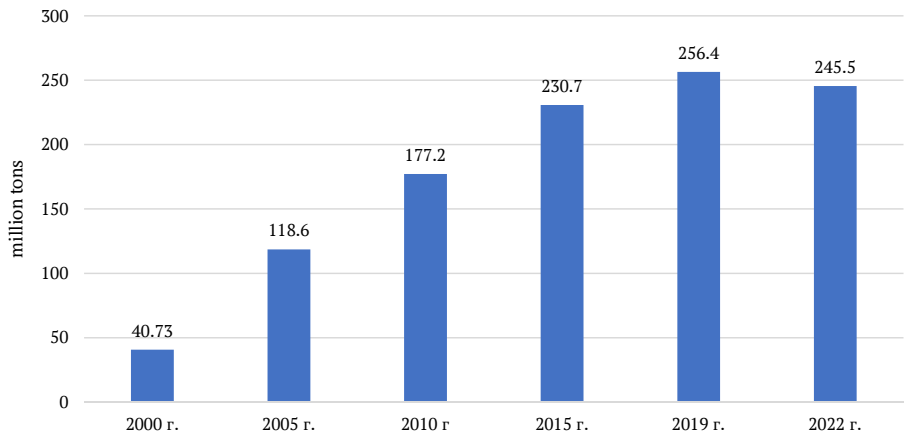

Fig. Dynamics of growth in cargo turnover
of Russian ports in the Baltic, million tons/year

Source: compiled by the authors based on data: Transport of Russia, Information and Statistical Bulletin 2022, 2023, *Ministry of Transport of the Russian Federation*, URL: https://mintrans.gov.ru/ministry/results/180/documents (accessed 08.08.2023) ; Russian Baltic ports. "Window to Europe at the beginning of the 21st century", *Morstroytekhnologiya*, URL: https://morproekt.ru/articles/science-artiles/obzornye-stati/1204-russian-baltic-ports (accessed 08.08.2023) ; All cargoes of Russia, *Seaports*, 2011, № 1, p. 79—86. All cargoes of Russia, Seaports, 2016, № 1, p. 71. All cargoes of Russia, *Seaports*, 2020, № 1, p. 65. All cargoes of Russia (in Russ.), Seaports, 2023, № 1, p. 57.

Thus, domestic ports in the Baltic Sea increased their cargo turnover by 6.3 times in the period from 2000 to 2019. This allowed Russian ports to take the first three places in the port hierarchy of the Baltic Sea in 2019—2020 (Table).

Cargo turnover of ten leading ports on the Baltic Sea in 2019–2021, million tons

Port	2019	2020	2021
Ust-Luga	103.852	102.602	109.377
Saint Petersburg	59.879	59.884	62.031
Primorsk	61.024	49.302	52.998
Gdańsk	52.154	49.038	53.213
Klaipeda	46.26	47.79	45.619
Gothenburg	38.9	37.9	36.9
Swinoujscie	32.175	31.178	36.9
Rostock	25.7	25.1	28.68
Gdynia	23.957	24.662	26.686
Tallinn	19.931	21.327	22.397
Total	463.832	447.782	471.121

Source: Report Cargo Throughput in Top 10 Baltic Ports In 2021 Rebound After Tough 2020. February 2022, *Port Monitor*, p. 3, URL: www.actiaforum.pl (accessed 08.08.2023).

As can be seen from the table, in 2021, the three leading Russian ports accounted for almost half of the cargo turnover of the Baltic top ten. Let us note another important result of the changes that took place during that period: now almost the entire market for the transportation of Russian oil and petroleum products in the Baltic is controlled by two domestic ports — Primorsky and Ust-Luga.

Adaptation of the Russian economy to Western sanctions. After the start of a special military operation in February 2022, Western countries, primarily European ones, introduced numerous anti-Russian bans. For example, leading foreign sea container carriers went out of business with Russia. European ports introduced a ban on the entry of ships carrying the Russian flag, as well as the loading of ships, regardless of their flag, destined for Russian ports. The restrictions extended to the transit of Russian cargo through European ports, bunkering services for all vessels owned by Russian shipowners, and the entry of automobile rolling stock (both freight and passenger cars) displaying Russian license plates. In addition, the transshipment of containers with Russian cargo by rail at border crossings was limited. Ships flying the flags of EU countries were prohibited from entering Russian ports, a closed skies regime was introduced for the Russian air fleet, etc. EU countries have essentially abandoned imports from the Baltic ports of both large cargo consignments (oil cargo, coal, fertilizers, timber, etc.) and goods exported in small consignments.

Many experts, both in the West and within Russia, anticipated that the implementation of extensive sanctions would deliver a significant blow to the Russian economy, potentially causing a substantial setback. As subsequent events showed, the blow was indeed strong [12; 13]. However, the speed of adaptation of the Russian economy to external pressure turned out to be very high, which made it possible to significantly mitigate the consequences of sanctions and to quickly commence economic restructuring.

For instance, as surveys conducted by the Institute of National Economic Forecasting of the Russian Academy of Sciences showed, in the spring of 2022, many Russian enterprises began searching for alternative suppliers of sanctioned products. 36 % of surveyed enterprises responded that they were looking for alternative suppliers of sanctioned products abroad, and 70 % of surveyed enterprises — within Russia. In addition, in the spring of 2022, 31 % of enterprises began searching for new markets; 21 % launched the production of new types of products, and 15 % began to rebuild production (through modernization, repairs, etc.).

In 2023, Russian enterprises not only sustained their commitment to adaptation but also heightened their efforts, with a discernible increase in the frequency of employing active adaptation methods. In particular, in the spring of 2023, the share of enterprises that began modernizing their manufacturing process increased to 33 %. As a result, in the spring of 2023, 32 % of Russian enterprises came to the conclusion that they were generally not affected by the sanctions (in the spring of 2022 there were only 19 % of such enterprises)[1] [14].

Intensive efforts to adapt to the sanctions were also undertaken at various levels, including Russian federal ministries and departments, regional administrations, and major state-owned companies. According to the Ministry of Economic Development (MED) of the Russian Federation, 309 measures were launched in Russia to provide anti-sanctions support to the national economy in 2022. In particular, the loan debt of large businesses was restructured in the amount of 5.9 trillion roubles, which allowed domestic companies to save 36.6 billion roubles on interest payments. The so-called parallel import of products (without the consent of copyright holders through informal channels), the suppliers of which officially refused to import them into Russia, was also legally permitted. At the same time, the Government of the Russian Federation introduced a moratorium on unscheduled business inspections for 100 types of federal, 33 types of regional and 7 types of municipal control procedures.

In addition, numerous measures have been taken to support certain sectors of the Russian economy.[2] For example:

— until July 30, 2027, the value added tax (VAT) on hotel accommodation services was zeroed out;

[1] From 132 to 189 enterprises participated in the surveys of the Institute of Economic Forecasting in 2022—2023. They were operating in 49 regions of Russia and representing such industries as electric power; ferrous and non-ferrous metallurgy; chemistry; mechanical engineering; construction materials industry; forestry, wood processing and pulp and paper industries; light, food and medical industries; Agriculture; construction; transport; communications, vehicle repair; healthcare; hotels, catering.

[2] On the progress of the Government's implementation of anti-crisis measures, *Ministry of Economic Development of the Russian Federation*, 27.09.2022, URL: https://www.economy.gov.ru/material/file/bf52beecf1a10a82b88953a79edc34e6/daydzhest_mery_podderzhki.pdf (accessed 22.05.2023).

— a zero profit tax was established for national IT enterprises for 2022—2024 (which, according to estimates by the Ministry of Economic Development of the Russian Federation, will provide the industry with annual cost savings of 3.7 billion roubles);

— in 2022 enterprises of the Russian agro-industrial complex received over 150 billion roubles in preferential loans at a rate not exceeding 5 % per annum;

— over 122 billion roubles were allocated to domestic air carriers in 2022; it was direct budget support to compensate for losses incurred due to the severance of transport links with Western countries;

— Russian Railways received 250 billion roubles from the National Welfare Fund for additional capitalization; the primary objective of the additional capitalization was to supplement budgetary funding, specifically earmarked for the modernization of railways in the Far East and the procurement of rolling stock from Russian suppliers.

— Numerous measures were implemented to extend anti-crisis support to households, encompassing additional payments to families with children, totalling approximately 440 billion roubles in 2022. The budget allocated funds for public works amounting to 25 billion roubles, engaging unemployed citizens in the process. Additionally, there was an increase in budgetary support for professional retraining initiatives. Remarkably, Russian citizens exhibited responsible behaviour, refraining from consumer panic, mass withdrawal of deposits from banks, or organizing strikes.

Due to the active adaptation activities of the state, businesses and households, the fall in Russia's GDP at the end of 2022 was not 8—12 %, as many leading foreign and domestic analytical organizations expected at the beginning of events, but only 2.1 %[1].

The impact of Western sanctions on the development of Russian regions. The restructuring of economic processes caused by geopolitical upheavals in 2022–2023 greatly influenced the spatial development of Russia [15—16]. The significant decrease in economic connections with Western countries, particularly those in Europe that imposed sanctions, prompted a discernible reorientation of Russian foreign trade and transport flows [17—19]. Under the new conditions, transport routes leading to the Far East, the Barents and Caspian Seas, as well as the countries of Central Asia have become of particular importance for Russia. Currently, these areas are experiencing rapid development, evident not only in the escalating trade turnover with nations supportive of Russia but also in the rising investments directed toward projects facilitating the enlargement of foreign trade relations in the southern and eastern regions of Russia. This includes the construction of new ports, the expansion of existing ones, the enhancement of border crossings, the augmentation of transport route capacities, and the relocation of certain types of production activities to the east, among other initiatives.

[1] On the production and use of gross domestic product (GDP) in 2022, *Rosstat*, 20.02.2023, URL: https://rosstat.gov.ru/storage/mediabank/22_20-02-2023.html (accessed 03.09.2023).

At the same time, the imposition of sanctions has led to a decline in transport flows directed towards European countries, particularly those traversing the sea and land borders in the western part of Russia. It is very likely that this state of affairs will continue in the medium term. A possible easing of geopolitical tensions in the more distant future will most likely lead to a gradual restoration of economic ties between Russia and Europe, but it is already clear that this restoration will not happen soon and will entail serious changes in the structure of cross-border exchanges [20].

This development of events quite seriously affected the state of affairs in the Russian regions adjacent to the Baltic — St. Petersburg, Leningrad, Kaliningrad, Pskov and Novgorod regions, and the Republic of Karelia. This was primarily expressed in a decrease in the workload of a large number of local enterprises in the transport complex and related industries serving it.

Furthermore, a decline in output occurred at Russian enterprises reliant on raw materials and components from unfriendly countries. This impact was notably felt in the Baltic regions of Russia, where a significant number of such enterprises were located. For instance, at the onset of 2023, in the automotive cluster of St. Petersburg, production at two plants — Nissan and General Motors — was nearly halted, while at the third plant, Hyundai-KIA, only the manufacturing of specific components for cars of these brands continued.[1] The Tikhvin Carriage Works in the Leningrad region was shut down for more than two months in 2022 due to a shortage of cassette bearings of Western origin.[2]

The complete or partial closure of a number of joint ventures due to the departure of some foreign investors also led to negative consequences. In particular, cassette bearings ceased to be produced at the Russian factories of the Swedish company SKF and the American company Timken, which supported the sanctions and left the Russian market.

Many Russian enterprises that previously exported their production to European countries also reduced their output. For example, exports of lumber from Russia at the end of 2022 fell by about 21—22 %, mainly due to the fact that their supplies to European countries were blocked as a result of sanctions.[3] The forest industry of North-West Russia, which was most dependent on the export to Europe, suffered the most.[4]

[1] Kobits, E. An unexpected contender has appeared at car factories in St. Petersburg, *Expert*, 03.03.2023, URL: https://expert.ru/2023/03/3/na-avtozavody-v-sankt-peterburge-poyavilsya-neozhidanniy-pretendent/ (accessed 16.10.2023).

[2] The carriage building plant returns to the rails, *Kommersant*, 02.08.2022, URL: https://www.kommersant.ru/doc/5491481 (accessed 16.10.2023).

[3] Exports of Russian lumber in 2022 decreased by 20.8 %, *Interfax*, 26.01.2023, URL: https://www.interfax.ru/business/883363 (accessed 16.10.2023) ; Timber export in 2023: from forecasts to reality, *Timber expert*, URL: https://timber-expert.ru/eksport-pilomaterialov-2023-prognozy-i-realnost (accessed 16.10.2023).

[4] Results of the work of the Russian timber industry complex in 2022, *What-Wood*, 15.02.2023, URL: https://whatwood.ru/whatwood-itogi-rabotyi-rossiyskogo-lpk-v-2022-g/ (accessed 05.09.2023).

The development of maritime transport is a success story in overcoming the consequences of anti-Russian sanctions. Contrary to widespread expectations, the Russian maritime transport sector, including companies catering to international transportation, managed to navigate through the challenges and generally avoided a crisis in the years 2022—2023.

Good results were shown both in Russia as a whole and in the Baltic. Despite the introduction of several packages of sanctions against Russian individuals and legal entities, in 2022, Russian ports managed not only to maintain the level of cargo work achieved in the pre-pandemic 2019, but also to exceed it. Domestic transport companies managed to turn the situation around in just three to four months: by July-August 2022, cargo transshipment volumes rebounded, and subsequently, cargo flows between Russia and other countries around the world continued to witness positive growth. At the end of 2022, the total cargo turnover of Russian sea ports increased by 0.7 % compared to 2021 and amounted to 841.5 million tons, including dry cargo — 404.7 million tons (– 2.0 %), for liquid cargo — 436.8 million tons (+ 3.4 %). 667.5 million tons (+ 1.0 %) were shipped for export; imported cargo amounted to 36.3 million tons (– 10.2 %); transit amounted to 60.7 million tons (– 5.9 %); cabotage — 77.0 million tons (+ 10.7 %).

As for the Baltic basin, which was most affected by sanctions, the results for 2022 were as follows: total cargo turnover — 245.5 million tons (– 2.9 %), including dry cargo — 96.9 million tons (– 18.1 %); liquid cargo — 148.6 million tons (+ 10.4 %). The cargo turnover of single ports was: Ust-Luga — 124.1 million tons (+ 13.5 %); Primorsk — 57.1 million tons (+ 7.8 %); Big Port of St. Petersburg — 38.8 million tons (– 37.5 %); Vysotsk — 16.0 million tons (– 5.2 %). It should be noted that the decline in cargo work in St. Petersburg is associated with a sharp decrease in the handling of container cargo, in which the city port has always specialized. In 2022, Russia was no longer served by the world's leading container companies, and restructuring this area using internal resources requires quite a lot of time.

The positive dynamics of the development of Russian maritime transport continued in 2023. In Russia as a whole, the growth of maritime transport accelerated compared to 2022, and in the Baltic the situation has changed from a decrease in the volume of transport work to recovery growth. In January-July 2023, cargo turnover at Russian seaports increased by 9.3 % compared to the corresponding period in 2022 and amounted to 526.8 million tons, including dry cargo — 263.9 million tons (+ 16.8 %); liquid — 262.9 million tons (+ 2.6 %), including oil — 161.5 million tons (+ 6.4 %); petroleum products — 75.5 million tons (– 5.7 %); liquefied gases — 20.2 million tons (– 4.4 %); food products — 3.4 million tons (+ 38.6 %). Export load amounted to 413.0 million tons (+ 7.8 %); 22.8 million tons (+ 11.1 %) were handled for import, 38.9 million tons (+ 7.1 %) — for transit, 52.1 million tons (+ 24.3 %) — for cabotage.

In the Baltic, the results of the first 7 months of 2023 were as follows: cargo turnover — 149.0 million tons (+3.8 %), of which dry cargo — 66.2 million tons (+17.5 %), liquid cargo — 82.8 million tons (–5.1 %). At the same, time the cargo turnover of single ports was as follows: Ust-Luga — 70.2 million tons (+1.6 %), Primorsk — 38.6 million tons (+9.5 %), Big Port of St. Petersburg — 26.4 million tons (+9.3 %), Vysotsk — 7.8 million tons (–16.3 %).

These indicators highlight the resilience of Russian marketers, logisticians, port workers, railway workers, shipowners, and other market participants utilizing maritime transport. They successfully implemented an effective asymmetric response to the sanctions, nearly fully compensating for the incurred losses. Various methods were employed to counter politically motivated sanctions restrictions, showcasing adaptability and strategic manoeuvring within the industry.

For example, according to Western business media reports, at the beginning of 2023, the shadow tanker fleet serving the Russian export of oil and petroleum products bypassing sanctions amounted to over 600 vessels.[1] Moreover, this fleet was formed in 2022. Simultaneously, shipbuilding, especially that of gas carriers, is gaining momentum within Russia. The surge in the number of such vessels will contribute to circumventing sanctions during the transportation of hydrocarbons.

Activities of Russian Baltic ports to overcome the consequences of sanctions crisis. The ports of the Russian Baltic, due to their orientation towards European countries, suffered from sanctions more than ports of other seas in 2022. However, both the ports themselves and the cargo carriers responded very quickly and flexibly to the situation.

Firstly, the Baltic transport industry made concerted efforts to swiftly redirect delivery routes for traditional cargo. The outcome was a swift reconfiguration of Russian transport capacities, initially centred on the Baltic direction. These capacities were promptly employed not only for connections with Europe but also for the vigorous transportation of goods to other countries. As a result, the Baltic ports began to handle much more cargo destined for Africa, Latin America and Asia.

In particular, the export of gasoil and diesel fuel from Russia to North Africa in the first quarter of 2023 (2.3 million tons) increased by 7.2 times compared to the first quarter of 2022 (0.32 million tons). Two thirds of this export go through the Baltic ports.[2] In addition, supplies of Russian petroleum products to Latin America are also growing rapidly: in January—April 2023 alone, 1.5 million tons were exported in this direction, while for the full year 2022, the volume of

[1] The shadow fleet is expanding, *Kommersant*, 20.02.2023, URL: https://www.kommersant.ru/doc/5840103 (accessed 05.09.2023).

[2] Russia is the leading fuel supply to Africa, *Argus*, 21.04.2023, URL: https://www.argusmedia.com/ru/white-papers/2023-russia-the-leading-fuel-supplier-to-africa (accessed 05.09.2023).

supplies amounted to only 0.21 million tons. In this case, as the business media report, a significant share of the supply of petroleum products also goes through the ports of the Gulf of Finland, primarily from Primorsk.[1]

By the end of 2022, there had been an increase in the export of Russian lumber to North Africa, the Near and Middle East (Iran, UAE, Iraq, Jordan, Israel, Tunisia, etc.). Compared to 2021, the increase in lumber exports to this region was 18 %, and the total volume of supplies reached 1.2 million tons.[2] And in this case, the main beneficiaries were the main ports for the export of Russian timber — Ust-Luga and St. Petersburg.

The reorientation of transport flows passing through the Russian Baltic will, apparently, continue. For instance, PhosAgro Group plans to double its fertilizer exports to Africa, taking advantage of the proximity of its new plant in Volkhov to the Russian ports of the Gulf of Finland.[3]

In addition, there has been a notable increase in the export of products from Belarus and other post-Soviet countries through the ports of the Russian Baltic. In particular, in the first half of 2023, the transportation of Belarusian export cargo through Russian ports increased fourfold compared to the first half of 2022 — from 1.5 million tons to 6 million tons.[4] Almost the entire increase in transit from Belarus goes through the ports of St. Petersburg and the Leningrad region. Another example is the transportation of Kazakh coal, the export of which through the ports of the Russian Baltic in August-November 2022 increased by 27 % (to 3.7 million tons) compared to August-November 2021.[5]

Secondly, cargo carriers began to change the types of cargo exported from Russian Baltic ports, which allows them to reload the freed-up capacity. In particular, there have been reports of an increase in the volume of grain exports passing through Baltic ports. In 2023, a significant development took place as one of the terminals at the Vysotsky port in the Gulf of Finland underwent conversion

[1] Which markets do Russian petroleum products go to?, *Oil and capital*, 19.05.2023, URL: https://oilcapital.ru/news/2023-05-19/na-kakie-rynki-uhodyat-rossiyskie-nefteprodukty-2932569 (accessed 05.09.2023).

Zadera, S. 2023, Lumber exports to Africa and the Middle East are up nearly 18 %. How sanctions affected market changes, *Rossiyskaya Gazeta*, 01/23/2023, URL: https://rg.ru/2023/01/23/svoi-v-dosku.html (accessed 05.09.2023).

[3] Sintsova, N. 2023, Fosagro plans to double fertilizer supplies to Africa by 2025, *Vedomosti*, 27.07.2023, URL: https://www.vedomosti.ru/business/articles/2023/07/27/987128-fosagro-planiruet-udvoit-postavki-udobrenii-v-afriku (accessed 05.09.2023).

[4] In Belarus they spoke about the volume of exports transshipped through Russian ports, *EuroAsia Daily*, 18.07.2023, URL: https://eadaily.com/ru/news/2023/07/18/v-belorussii-rasskazali-ob-obemah-eksporta-perevalennogo-cherez-porty-rossii (accessed 10.07.2023).

[5] Potaeva, K., Sintsova, N. 2022, Transit of Kazakh coal to the ports of North-West Russia increased by 27 %, *Vedomosti*, 08.12.2022, URL: https://www.vedomosti.ru/business/articles/2022/12/08/954248-tranzit-kazahstanskogo-uglya-v-porti-severo-zapada-rossii-viros (accessed 10.07.2023).

for the purpose of exporting grain, with a capacity of handling up to 4 million tons annually. The Sodrugestvo Group has announced the plan to construct a new grain terminal in the port of Ust-Luga with a declared transshipment capacity of 10 million tons per year.[1] Since the majority of Russian export grain goes to the countries of the Middle East and Africa, European sanctions are generally unable to cause significant harm to the Russian agricultural and transport sector which supply it.

Besides, there has been a significant increase in cabotage transportation in the direction of the Kaliningrad region. Cabotage transportation of containers between Russian regions in the Baltic increased 35 times in 2023.[2] This made it possible not only to overcome barriers introduced by unfriendly countries for land transportation to the Kaliningrad region, but also to support the Kaliningrad port, whose cargo turnover by the end of 2023 should exceed the results of 2022 by 6—7 %.[3]

Thus, the response of Russia's Baltic ports, as well as transport and manufacturing companies cooperating with them, was not only fast, but also very efficient. It should be noted, however, that the described successes in solving current problems do not in themselves guarantee the elimination of risks and threats of a longer-term nature.

Risks and threats to the long-term development of cargo transportation through the ports of the Russian Baltic. The political background of the sanctions adopted against Russia makes further developments difficult to predict. According to many foreign and Russian analysts, the economic potential of Western sanctions is close to exhaustion.[4] However, as recent events have shown, in attempts to cause damage to Russia, unfriendly countries are ready to resort to direct military pressure and even terrorist acts against foreign trade infrastructure. It was sabotage in the Baltic Sea where the underwater pipelines Nord Stream and Nord Stream 2, intended for transporting Russian gas to Europe, were blown up on September 26, 2022. Official investigations into the terrorist attack, carried out by Denmark, Sweden and Germany, are being conducted extremely slowly

[1] Belaya, A. 2023, Troubled Black Sea: what will happen to Russian grain exports, *Forbes*, 14.08.2023, URL: https://www.forbes.ru/prodovolstvennaya-bezopasnost/494279-nespokojno-cernoe-more-cto-budet-s-eksportom-rossijskogo-zerna (accessed 10.07.2023).

[2] Baltic is gradually reviving container traffic, *Kommersant*, 16.08.2023, URL: https://www.kommersant.ru/doc/6161356 (accessed 10.07.2023).

[3] The Kaliningrad port expects a 7 % increase in trade turnover by the end of 2023, *TASS*, 19.09.2023, URL: https://tass.ru/ekonomika/18788217 (accessed 16.10.2023).

[4] Smirnova, S. 2023, There is a lot to do: foreign trade has returned to the level of last February, *Izvestia*, 01.02.2023, URL: https://iz.ru/1463404/sofia-smirnova/del-ne-v-oborot-vneshniaia-torgovlia-vernulas-k-urovniu-proshlogo-fevralia (accessed 10.07.2023) ; Savenkova, D. 2023, Igor Sechin proposed ways to solve the problems of the Russian oil and gas sectors, *Vedomosti*, 17.06.2023, URL: https://www.vedomosti.ru/business/articles/2023/06/17/981015-sechin-predlozhil-puti-resheniya-problem-rossiiskogo-neftegaza (accessed 16.08.2023).

and opaquely, which, in fact, leaves no doubt that behind the explosion is a coalition of states unfriendly to Russia, ready for extremely dangerous actions of a military-political nature.

He geography of the Baltic Sea indeed presents a strategic challenge, as ships aiming to access the Atlantic Ocean must navigate through the relatively narrow Danish Straits. This passage, being crucial for maritime traffic, could potentially be subject to control or monitoring by warships of nations that are unfriendly to Russia. In this context, if current economic sanctions prove ineffective, there is a possibility that cargo ships traveling from Russian ports to foreign markets and back may face 'unscheduled' inspections and other delays, potentially escalating to a complete blockade of traffic by NATO warships.

Of course, Russia has tools for counter-military-political pressure on unfriendly countries if they try to complicate the movement of foreign trade cargo through the Baltic. However, firstly, an open military-political confrontation can block the activities of almost any maritime transport in the Baltic. Secondly, as the Nord Stream explosion showed, unfriendly countries can successfully shift the blame for hostile actions onto 'unknown terrorists' and not provide clear reasons for retaliatory military-political actions.

When planning the development of the Baltic ports, these risks must undoubtedly be taken into account [21—23]. In this sense, the situation in the Baltic for the Russian maritime transport and port facilities is worse than, for example, in the waters of the Japanese, Barents and Caspian Seas, where organizing a 'soft' blockade of the movement of merchant ships by unfriendly countries will be either extremely difficult or impossible.

Indeed, military-political risks are not the sole threat to Russian maritime transport and port facilities in the Baltic. The industry is susceptible to more conventional challenges as well. The dynamics of maritime transport are intricately tied to the overall economic situation, and traditional issues such as economic fluctuations can impact the industry significantly. Possible economic crises, especially large-scale ones, in the global and/or Russian economy could also seriously undermine the dynamics of cargo transportation and port operations.

Prospects for the development of Russian Baltic ports under new conditions. When assessing the opportunities for the development of maritime transport and port facilities on the Baltic Sea, both positive and negative factors should be taken into account.

The competitive advantages of the Baltic ports of Russia include a high level of development of coastal infrastructure and a large share of modern equipment and technologies. Besides, the coast of the Gulf of Finland is reliably connected by numerous transport routes with key Russian regions producing the main export products — oil, petroleum products, timber, metals, chemical products, etc., as well as with Russian regions that consume a significant part of imported raw materials, components, machinery and equipment. Also, the advantages of

local ports include the fact that the shortest trade routes from Russia to Western Europe, Central and Latin America, Western and South Africa pass through the Baltic.

Important factors for future development include the high adaptive capabilities of the Russian transport complex in relation to various crisis phenomena, confirmed in 2022—2023, and its ability to quickly find new directions for trade relations. In addition, the Russian authorities plan to continue to provide broad financial and institutional support to both the entire national transport complex and its Baltic divisions. Moreover, as noted above, many domestic large companies also intend to develop their activities in the Baltic direction, primarily with the aim of expanding export supplies.

The relative weaknesses of the transport complex in the Baltic include the crowding of ports on a small section of the coast of the Gulf of Finland and the possibility of traffic jams on shipping routes, especially during winter freezing of coastal waters. Besides, the enclave position of the Kaliningrad region, surrounded by unfriendly countries, in modern conditions significantly complicates the full integration of its transport complex with the rest of the Russian economy.

The above-mentioned risks of a military-political nature may also complicate the development of Russian ports and maritime transport in the Baltic. However, it seems that for now the likelihood of attempts to create permanent obstacles to the movement of Russian merchant ships in the Baltic is not very high, since this will lead to a sharp aggravation of the general situation, which will seriously hit the maritime transport flows of the initiators of such aggression.

Historical experience shows that compliance with economic sanctions almost always weakens over time. Business, including those in the countries that initiated the sanctions, while suffering obvious losses, is much less interested in complying with them than the political authorities. As a result, business structures of countries drawn into political confrontation are gradually finding new ways to bypass sanctions, expanding mutually beneficial trade and economic ties [24—26]. Therefore, there is little doubt that in the case of anti-Russian sanctions, a similar development of events will be observed.

Thus, the analysis of the situation shows that at this stage, the prospects for the development of Russian maritime transport and port facilities can be assessed as quite positive. It appears that positive development factors generally outweigh existing problems, risks and threats.

Apparently, the Russian Ministry of Transport also believes that positive development factors prevail over negative ones. As a result, the Ministry of Transport of the Russian Federation published the approved passport of the federal project "Development of railway approaches to the seaports of the North-Western Basin" on August 10, 2023. In accordance with this document, by the end of 2024, the carrying capacity of railway approaches to the ports of the North-Western Basin

will have been increased to 145.6 million tons, and by the end of 2030 — to 220 million tons.[1] The implementation of these plans will, of course, have the most positive impact on the development of Russian Baltic ports.

Conclusion

1. Anti-Russian sanctions and the partial severance of trade and economic relations with European countries have caused considerable damage to the Russian regions. At the same time, a number of industries from regions adjacent to the Baltic Sea basin suffered more than others, since their economic activities were largely focused on cooperation with European partners.

2. The Russian economy, represented by business, federal and regional government structures and households, managed to quickly and flexibly respond to the sanctions, preventing a serious crisis in the country in 2022 and launching recovery growth in 2023. One of the important elements of adaptation to sanctions was the reversal of Russian spatial development policy to the south and east. At the same time, the activities of Russian maritime transport and port facilities have become a success story within the framework of the anti-sanctions policy.

3. The ports of the Russian Baltic suffered from sanctions more than the ports of other sea basins, because they were focused on trade cooperation with European countries, which in 2022 severed a significant part of economic ties with Russia. However, active efforts to find new trading partners and new cargo allowed these ports to refocus their activities on new directions and significantly soften the blow of the sanction crisis.

4. Despite the existing problems, risks and threats, including those of a military-political nature, Russian maritime transport and ports in the Baltic Sea have generally good prospects for further development, including thanks to the deep modernization of the port sector carried out in recent years. The development of maritime transport, in turn, will provide a significant impetus for economic dynamics in the regions of Northwest Russia.

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KNOWLEDGE AND INNOVATION DYNAMICS OF THE NORTHWEST RUSSIA UNDER GEOPOLITICAL CHANGES

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Over the past 25 years, Russia has faced several economic and geopolitical challenges, including the 2008 global financial crisis, sanctions imposed in 2014, and the COVID-19 pandemic. To remain resilient in the face of these challenges, Russia needs to adopt a flexible development strategy and transition to a new path of development. This transition requires the development of new knowledge-intensive industries, expansion into promising markets, strengthening trade and economic partnerships, and achieving technological sovereignty. This study examines the innovation system in Northwest Russia and identifies factors that are critical for its sustainability and innovation security in the face of geopolitical instability. The study uses an integrated approach to trace the knowledge production and innovation process from research findings to the commercialization of new technologies. The study finds that there are strong correlations between innovation activity and R&D investment, patent activity, and the number of innovative organisations. The study also identifies three types of regional innovation systems in Northwest Russia: core, semi-periphery, and periphery. The nature of the regions' involvement in R&D determines the dynamics and specialization of their publications and patents. The study also finds that there is a positive correlation between the volume of innovative products and quantitative factors in the functioning of subsystems involved in knowledge generation and innovation. Finally, the study examines the geography and structure of the international research network that the regions of Northwest Russia had formed by 2022. It shows that the geopolitical transformation requires a significant part of cooperation ties with unfriendly countries to be restructured.

Keywords:
geography of knowledge, geography of innovation, innovation process, scientometrics, publications, R&D, patents, innovations, Northwest Russia, scientific cooperation

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Introduction and Problem Statement

Innovations serve as a catalyst for the reorientation of industrial and technological structures [1; 2], playing a pivotal role in the restructuring of a regional economy and its adaptation to rapidly changing circumstances [3]. During times of crisis, regions that embrace innovative advancements tend to be more successful in navigating the aftermath of shocks. They leverage accumulated internal resources and experience to devise ingenious solutions to external challenges [4; 5]. Assessing the consequences of the 2008—2009 global economic crisis, reports from the governments of certain developed countries underscore the critical importance of innovation for economic recovery post-recession. Regions with higher innovation potential demonstrated greater resilience in withstanding the crisis [3].

In 2022, Russia faced increased sanctions from unfriendly countries (see Russian Federation Government Directive № 430-r of 5 March 2022). They prohibited the export of a wide range of goods and technologies to Russia, suspended software sales and maintenance and technical support services, and restricted access to various online resources and digital systems. The 'cancel culture' targeting Russia has diminished its opportunities for international research collaboration.

The rupture of scientific and technological ties exacerbated the problem of technological dependence, i.e. basing critical national infrastructure and production on foreign technologies. In May 2023, the Russian government adopted the Concept of Technological Development until 2030. According to the document, the primary goal for the next decade is to attain the nation's technological sovereignty. It requires moving into an innovation-driven economy by creating conditions for the sustainable development of production systems. Thus, this study aims to assess the scientific and innovative dynamics of regional development in Northwest Russia in the context of geopolitical changes.

The research object is the regions of the Russian Northwestern Federal District, commonly referred to as Northwest Russia. This choice is determined by their significant role in the innovative development of the country, territorial proximity to the EU countries and associated higher geopolitical pressure. The St. Petersburg-Pribaltic region, characterized by advanced industry and innovation leadership, has traditionally been the front runner in 'accepting' and 'transmitting' external innovations [6]. Current processes are steadily changing the capabilities, external relations and functions of Northwest Russia since it is here that the 'fragility' of cross-border interactions (resulting from the geopolitical and geoeconomic reformatting of the Eurasian space) is most clearly manifested [7].

The St. Petersburg agglomeration and the surrounding regions are expected to be the first to feel the consequences of the crisis [8]. Considering the spatial diffusion of the coronavirus infection in the Russian part of the Baltic macroregion, by parity of reasoning, we assume that St. Petersburg, the Leningrad and Kaliningrad regions (areas with high permeability) will undergo the most profound structural changes, and the Novgorod and Pskov regions — the smallest [9]. At the same time, path dependence, which is especially strong in long-settled areas, can hinder accelerated modernization and adaptation [10].

Theoretical framework

The concept of development trajectories provides the framework for studying growth opportunities against the background of crisis phenomena. There are different pillars of a region's transformation: from sectoral modernization and diversification to the emergence of new activities [11]. The article [12] proposes four directions of regional development through adopting a new industrial path: a) the transformation of the current structure; b) the development of related activities based on accumulated capabilities; c) the transfer and consolidation of industries from outside; d) the emergence of entirely new activities based on advanced technologies, scientific discoveries, business models and innovations.

While *sustainability* means the preservation of the current level of well-being and natural resources for future generations [13], *resilience (*flexibility, sturdiness) refers to a regional economic system's response to crises. Bristow and Healy describe economic resilience as the ability of regions to withstand and/or recover quickly from shocks [3]. The main factors of resilience, or *shock resistance*, include economic diversification and high innovation potential [14].

There are three approaches to the conceptualization of resilience [15].

(1) The ability to return to pre-shock conditions. The level of resilience shows how quickly the system can recover from shocks while retaining its structure and functions [16]. The basis is the idea of the immutability of a current development path, including partial absorption of shocks without significant changes in its structures [17].

(2) Adaptation, reorientation and structural changes in response to a crisis [18]. 'Evolutionary resilience' suggests the emergence of new ways of development as a result of a continuous process of adaptation, regardless of the frequency of shocks [19].

(3) Ability to make the transition to a new sustainable path characterized by a more effective and fair use of resources [20, p. 15]. The idea of 'transformational resilience' suggests that the crisis can not only lead to structural transformations but also become a 'window of opportunity' for a change in the development trajectory [21]. In contrast to a transformative capacity, which shows the ability

of a system to reconfigure in response to future challenges [22], resilience reflects the extent to which shocks can be harnessed to initiate or accelerate radical changes.

Evolutionary economic geography, which considers the development trajectories of countries and regions of the world [23], increasingly supports the view that regions' ability to innovate beyond the existing paradigm underlies resilience [24]. Asheim and Herstad [25] note that innovation is a key factor in economic restructuring, resilience and sustainable development. Technological innovations help to overcome inertia and leave long-established development paths [26].

The relationship between innovation and resilience is complex [3; 27]. A developed innovation system makes it easier for a region to adapt and overcome crises. However, literature [28; 29] provides evidence that innovation activity is more susceptible to the negative impacts of crises and other destabilizing factors. In a period of uncertainty, innovative companies, especially small and medium-sized ones [30], tend to curtail investment projects and reduce their R&D spending, focusing on current activities.

The consequences of the 2007—2008 crisis, the 2020—2021 Covid recession, and the current geopolitical tensions around the situations in Ukraine and Taiwan bring out the low resilience of many created regional innovation systems (for example, in the EU countries). There is a need to shift to challenge-oriented innovation systems better adapted to dealing with shocks [31].

Methods and Materials

Methodological aspects of the innovation assessment

A regional innovation system relies on two interrelated subsystems: knowledge production and innovation. The knowledge production subsystem serves as an indicator of the technological potential of the region, influencing the level of a region's economic complexity. This, in turn, reflects the innovativeness and manufacturability of goods produced and exported by the region. The development of this subsystem is a precondition for innovative and technological changes in high-tech and capital-intensive production [32].

The basis for distinguishing the two subsystems is the difference in understanding the essence of inventions and innovations. According to Schumpeter's approach [33, p. 66], innovations are 'new combinations' of products, processes, production methods, markets, organizational forms or resources. Inventions become innovations only when adopted into practice as part of the innovation process. The idea of the innovation process as linear and sequential, with R&D leading to innovations, is very rough since not all innovations require investment in research and development [34]. An example of the practical diversity of

non-linear technological development strategies is open innovations [35]. Many innovations are not patented, much R&D does not lead to innovations and not all patented products are brought to the market [36].

Different degrees of novelty distinguish adaptive, incremental, and breakthrough innovations. The diversity of innovation types is reflected in the assessment indicators. Innovation indicators can rely on data on research and development, scientific publications, patents, innovative products and processes [36; 37]. The most common are patent- and R&D expenditure statistics [36; 38]. Less common indicators for assessing scientific, technological and innovative potential include [39; 40] the number of computers with Internet access, the share of organizations with a website, the share of Internet users, the number of subscriber devices for cellular communication, the number and volume of between academia, industry and government, the number of students in natural science, mathematics, engineering and medicine, salaries of R&D personnel, the availability of research infrastructure.

Patent statistics have been used to measure R&D output since the middle of the twentieth century [41]. Their limitation is the fact that they reflect inventions rather than innovations. Their strength is that they include only new inventions, not moderate changes in existing technologies [36].

The limitations of using expenditure on R&D as an indicator [42] arise from the fact that the commercialization of the outcomes is not guaranteed. R&D is an input factor for innovation [35]. The amount of expenditure on R&D does not reflect the economic value of the innovation and or the product's technological complexity. Despite these limitations, data on R&D and patents serve as the basis for innovation statistics [43—45].

Another approach to assessing innovation activity is a literature-based innovation output analysis (LBIO), which has become widespread due to digitalization. A scientific literature analysis does not capture all aspects of innovation or replace other indicators, rather it serves as a valuable addition to them [42], being a relatively reliable way to measure the 'radicality' of the innovations generated.

Thus, each indicator captures an aspect of the scientific and innovative process: *R&D* — investments in new developments; *scientific publications* — the effectiveness of the knowledge production system; *patents* — novelty; *innovation* — commercialization of technologies.

Study design

The first stage involves the assessment of scientific activity in Northwest Russia. Indicators for the analysis are the number of commissioned and performed R&D projects and expenditure on R&D by performers and consumers (total and per project). The considered period is 2019—2021. The share of the Northwest

regions in the total performed and commissioned R&D in Russia allows us to assess the size of their scientific systems. This and other indicators in absolute values provide the basis for a comparative assessment of the role of considered regions in the national and district's scientific space.

Accounting for particular fields of knowledge of performed R&D projects in a region allows one to identify its specialization. For each region, we calculate coefficients of scientific specialization according to the following formula

$$KS_{ja} = \frac{S_{ja}/S_{jtotal}}{S_a/S_{total}}, \quad (1)$$

where KS_{ja} is the coefficient of scientific specialization of the region j in the field of knowledge a; S_{ja} is the volume of R&D performed in the region j in a field of knowledge a; S_{jtotal} is the volume of R&D performed in the region j in all fields of knowledge; S_a is the volume of R&D performed in the country in a field of knowledge a; S_{total} is the volume of R&D performed in the country in all fields of knowledge. KS_{ja} above one shows the region's specialization in a particular field of knowledge.

The second stage is an assessment of the effectiveness of the scientific systems of the considered regions through publication and patent statistics analysis. It includes determining their contribution to the total volume of Russian publications in the Scopus database in 2018—2022. A rank method allows for a structural assessment of knowledge areas in regional publication portfolios.

To assess the impact of geopolitical changes on the publication landscape in the regions, we determine the share of their publications co-authored by representatives of 'unfriendly', 'friendly', and 'neutral' countries. The Russian Federation Government Directive № 430-r of 5 March 2022 (with amendments) provides the list of unfriendly countries. Friendly ones include those with which the cooperation continues and there are no flight restrictions. The rest of the countries are neutral.

Formula 2 computes coefficients of inventive specialization in subject areas for each of the regions based on data related to issued patents, encompassing inventions, industrial designs, and utility models

$$KP_{ja} = \frac{P_{ja}/P_{jtotal}}{P_a/P_{total}}, \quad (2)$$

where KP_{ja} is the coefficient of inventive specialization of a region j in a subject area a; P_{ja} is the number of patents in the region j in a subject area a; P_{jtotal} is the number of patents in the region j in all subject areas; P_a is the number of patents in the country in a subject area a; P_{total} is the number of patents in the country in all subject areas. KP_{ja} above one shows the region's inventive specialization in a particular subject area.

The third stage is the assessment of the relationship between scientific and innovative activity in the regions in 2019—2021. A correlation analysis assesses the strength of the correlation between the indicators using the Cheddock scale. The evaluation was performed in the StatTech v.3.1. software environment.

To build correlation dependencies, we use the following innovation indicators: the number of organizations engaged in innovation activities, the volume of innovative goods, works, and services, and innovation expenditure. Research activity indicators include the number of performed R&D projects, the number of patents issued, and the number of publications in the Scopus database.

All indicators by regions are weighted according to Formula 3

$$Y_{norm} = \frac{Y_i}{Y_{max}}, \quad (3)$$

where Y_{notm} is the weighted value of the indicator for region i; Y_i is the absolute value of the indicator for region i; Y_{max} is the maximum absolute value of the indicator in the considered regions (in this study, for all indicators, this is St. Petersburg). Thus, during the correlation and regression analysis, we use not absolute values of the indicators but the relative ones, reflecting the gap between each region and the leader. This approach is consistent with the logic of the comparative cross-regional assessment used in the previous stages of the analysis.

To avoid distortions in the calculation of dependencies, we exclude St. Petersburg from the analysis due to its extremely high values of indicators compared to other regions. Using the linear regression method, we built regression models capturing the relation between the volume of innovative products in 2021 and the factors influencing the functioning of the knowledge generation and innovation subsystems in 2019–2021. Comparing 2021 data with 2019 and 2020 data allows for taking into account the time lag in the scientific and innovative process.

Data sources and methods

The study relies on several data sources

The data source in the first stage was the Unified National Information System for Civil Research, Development and Engineering (EGISU NIOKTR — *Rosrid.ru*). Out of the data on 150 thousand R&D projects downloaded and compiled, only projects launched in 2019—2021 were selected. The array of information included project titles and abstracts, keywords and subject categories, the amount and source of funding, customers and performers.

In the second stage, the authors selected enterprises from the SPARK-Interfax database using the primary national registration numbers (OGRN) of consumers and performers. There are over 15 thousand Russian enterprises participating in R&D.

The third stage involved the creation of a database of publication activity in the Northwest regions. The source of information on publications was the *Scopus online database (Scopus.com)* by Elsevier. It contains 1.95 million Russian publications published since 1864, including 1.16 million publications published since 2010. Scopus overlaps with coverage of other databases (for example, Web of Science). It also forms the basis of the Russian RSCI Core — the highest quality part of publications by Russian researchers [46].

To determine publication activity for each region, the authors used complex search queries taking into account spelling variations of the names of the regions, their cities, and major organizations. The source of information on the organizations was the Russian Index of Research Organizations (RIRO).

The search was limited to three types of publications: ra — research articles; re — review articles; cp — conference proceedings. Information was collected through the Scopus API using program code written in Python (in the IDE PyCharm environment). Subsequent validation of the information was carried out selectively, by manual Scopus queries. The covered period is 2018—2022.

The fourth stage was collecting patent statistics. The open data sets of Rospatent contain information about all inventions, utility models, and industrial designs registered in Russia. Downloaded data supplemented by information found using a patent registration number search service formed the database of all patents registered and re-registered in 2019—2021. The array included information about the authors and patent holders, the region of registration and the subject category.

In the fifth stage, a database of 2019—2021 innovation statistics by region was formed using Rosstat data. The authors obtained aggregate data on companies' innovation expenditure, the volume of innovative goods, works and services, and the number of organizations engaged in innovation activities combined with OKVED2 (i.e. industry type).

Research results

Dynamics of scientific activity

Northwest Russia has significant scientific and technological capabilities, which makes it a national-scale knowledge generator. In 2019—2021, its regions accounted for 14.3% of all R&D performed in Russia and 11.7% of the total expenditure on R&D. Less often, the regions acted as customers of R&D activity.

The scientific landscape here is heterogeneous. The city of St. Petersburg is the leading centre. Figure 1 reflects the differences in the number of projects and the amount of expenditure on purchased and performed R&D among the regions. St. Petersburg leads by far. It has 15.6 times more performed R&D and 6.8 times more commissioned R&D than the Vologda Region occupying the second place, 22.4 times higher expenditure on performed R&D, and 10.6 times higher on commissioned R&D than the Leningrad region and the Republic of Karelia.

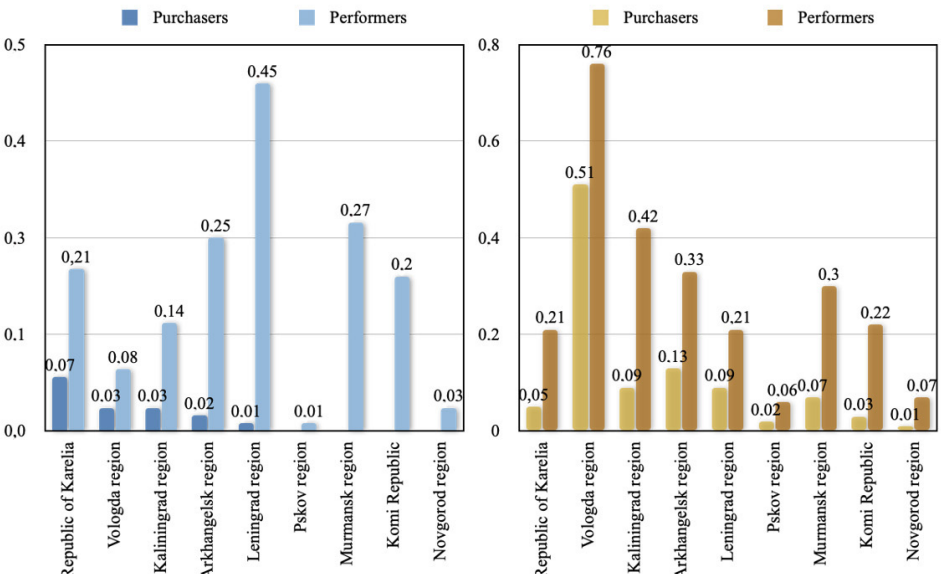


Fig. 1. Geographical distribution of R&D projects and total expenditure on R&D by performers and purchasers by regions of Northwest Russia, 2019—2021, % of the national total

Note: Figure 1 does not show St. Petersburg; its share in the national R&D is 3.47 % by purchasers and 11.77 % by performers; its share of national expenditure on R&D is 0.69 % by purchasers and 10.05 % by performers.

Source: developed by the authors based on EGISU NIOKTR.[1]

The Vologda, Kaliningrad, Arkhangelsk and Murmansk regions are leading in the geography of research projects in the Northwestern Russia. However, the Leningrad region shows the highest expenditure on R&D and, thus, it has the largest projects. The average cost of a performed project in the Leningrad region is 38.4 million roubles, the Republic of Karelia comes second with 17.9 million roubles (less than the national average of 18.2 million roubles). The Pskov and Vologda regions show the lowest expenditure on a performed project in 2019—2021 (about 2 million roubles).

[1] Analytical open data, 2023, *EGISU NIOKTR*, URL: https://rosrid.ru/analytics (accessed 02.08.2023).

The regional average expenditure on a commissioned project ranges from 25.5 million roubles (the Republic of Karelia) to 94 thousand rubles (Komi Republic), while the overall average in the Federal District is 3.6 million roubles. In general, all the regions have more R&D performed than commissioned. The gap in the number of projects ranges from 1.6 times (the Vologda region) to 9.5 times (the Novgorod region) with an average difference of 3.4 times. The differences in total expenditure on R&D by performers and customers are more dramatic. This is especially true for Komi Republic (1,389 times), Novgorod (556 times), Murmansk (103 times), Leningrad (48 times) regions, to a lesser extent for the Kaliningrad (five times), Vologda (three times), Pskov (two times) regions and the Republic of Karelia (three times). This indicates the shift from the absorption of scientific knowledge towards its production and the external management of the scientific agenda of the Northwestern regions.

Figure 2 shows the differences in commissioned and performed R&D in the regions.

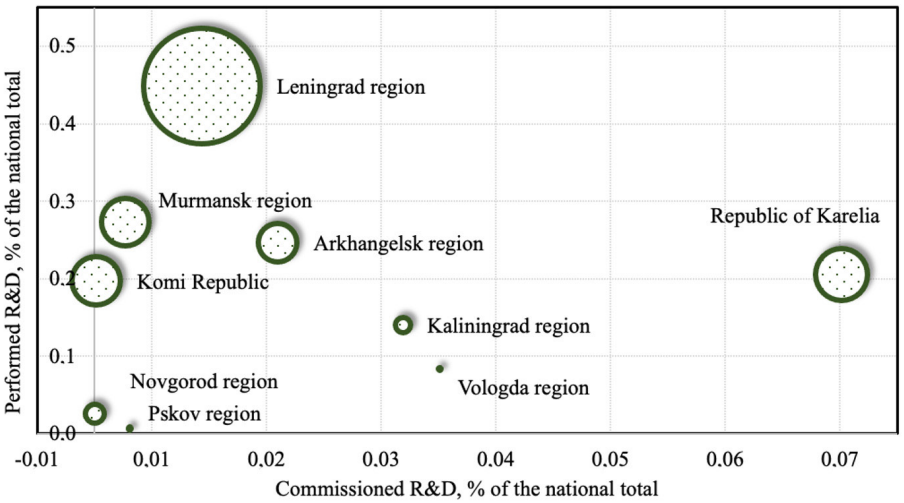


Fig. 2. The regions of Northwest Russia by R&D performed and commissioned in 2019–2021, % of the national total

Note: A circle diameter shows the average expenditure on a performed R&D project. The chart does not show St. Petersburg, whose share of national expenditure on R&D is 0.69 % for those commissioned and 10.05 % for those performed.

Source: developed by the authors based on EGISU NIOKTR, *Rosrid.ru data.*[1]

In general, there are three large groups of regions distinguished by their involvement in research activities:

[1] Analytical open data, 2023, *EGISU NIOKTR*, URL: https://rosrid.ru/analytics (accessed 02.08.2023).

Group 1 — the core, including St. Petersburg and the adjacent Leningrad region, which are far ahead of other subjects of the Federal District in terms of performed R&D, while being purchasers of R&D.

Group 2 includes the Murmansk, Arkhangelsk, Kaliningrad regions and the Republic of Karelia. These regions are the semi-periphery of the scientific space of Northwest Russia, as their R&D indicators are average.

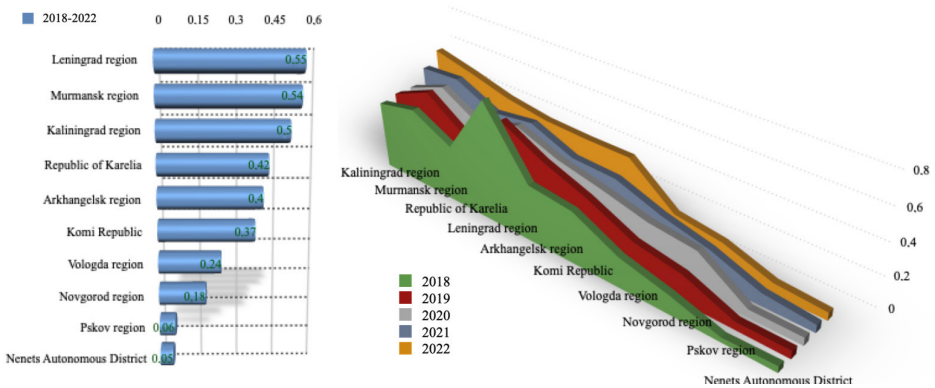
Group 3 unites the regions with the lowest numbers of performed and commissioned research projects (Komi Republic, Vologda, Novgorod and Pskov regions), or 'the periphery'.

Appendix 1 provides the results of a rank assessment of the diversity of R&D performed in the regions of the Northwestern Russia. Ranks were calculated using the formula (1) relying on the coefficient of scientific specialization.

In 2019—2021, the broadest research agenda was in St. Petersburg, the Vologda and Kaliningrad regions — 45, 38 and 31 fields of knowledge. The Pskov and Novgorod regions performed R&D on the smallest number of fields of knowledge — 14 and 18, respectively. In the periphery group, the top 5 fields of knowledge for performed R&D include mainly social sciences and humanities. The semi-periphery shows a combination of social and humanitarian knowledge and natural sciences as leading in scientific specialization. The first group, the core of the research specialization has mainly natural-scientific direction.

Effectiveness of research systems

The assessment of research and development effectiveness includes the analysis of publication and patent activity indicators. Figure 3 shows the regions distributed by their share in the total number of Russia-affiliated papers indexed in the Scopus database in 2018—2022.



a *b*

Fig. 3. Share of the regions of Northwest Russia in publications in 2018—2022, %

Note: The average St. Petersburg share of the national total is 15.3 %.

Source: developed by the authors based on Scopus data.[1]

[1] Scopus, URL: https://www.scopus.com/ (accessed 11.07.2023).

The results of the assessment of the publication activity of the regions of Northwest Russia correspond to the results of the analysis of their involvement in research and development activities. The leaders in the total number of publications in the leading international journals are the subjects of the first group — St. Petersburg (90.1 thousand units) and the Leningrad region (3.2 thousand units). They are followed by the regions of the second group, the semi-periphery of the scientific space of the North-West of Russia: the Murmansk, Kaliningrad, Arkhangelsk regions and the Republic of Karelia. Their shares range from 0.4 to 0.54 %. The regions in the periphery group have the lowest number of publications indexed in the Scopus database — less than 0.4 % of the Russian total in the considered period. The smallest numbers are observed in the Pskov region (329 publications) and the Nenets Autonomous District (295 publications), which is 10 and 11 times less than in the Leningrad region. In 2018—2022, the district leader had 305.6 times more publications indexed in the Scopus database than the outsider.

The dynamics of publication activity in the regions of Northwest Russia differ over the years (Fig. 3*b*). In the first group, St. Petersburg demonstrates a fairly stable annual number of publications (about 18 thousand). The five-year increase was 5.6 %. The Leningrad region, on the contrary, shows a significant curtailment of publication activity in the studied period. This is the only region showing a decline in the annual number of publications: the 2022 figures show a 37.2 % on 2018.

All regions of the second group saw an increase in the total number of publications in the Scopus database. The five-year growth ranged from 20.8 % in the Murmansk region to 50.8 % in the Kaliningrad region. The major breakthrough in the group occured in 2019 compared to 2018 (and the Kaliningrad region in 2021 compared to 2020). In 2022, three out of four regions in this group reported a decline in publication activity compared to 2021. For instance, in the Arkhangelsk region, the number of publications in 2022 increased by 3.4 % compared to the previous year, but before that, the trend was negative for two years.

The regions of the third group, characterized by low baseline numbers in 2018, also showed an increase in publications over five years. The Pskov region gained the largest growth (189 %) due to a small annual number of publications (from 27 in 2018 to 78 in 2022). In general, these regions show the strongest positive dynamics from 2018 to 2020 (the Pskov region in 2021, as well). After that, the annual growth rate reduced. By 2022, it had become negative in some regions.

The regions were ranked not only by R&D but also by the number of publications indexed in the Scopus database in 2018—2022 by fields of knowledge (Appendix 2). The publication profile of the first group regions largely coincides with the national one. The dominant fields include physics, astronomy, engineering, and materials science. Chemistry, biochemistry, genetics and molecular biology

are also significant in the Leningrad Region, and medicine and computer science are important in St. Petersburg. In the Leningrad region, the fields of knowledge of the publications are less varied compared to St. Petersburg.

The second group of regions show a steady range of publications by fields of knowledge. Earth and planetary, environmental, agricultural and biological sciences have a significant role in their structure (in addition to the Russian top-five fields of knowledge).

In the third group, papers on social sciences and humanities have a significant weight in the structure of the publications, along with natural science. The Novgorod, Pskov regions and the Nenets Autonomous District presented publications in the smallest number of fields (among the other subjects of Northwest Russia).

Figure 4 presents the shares of international co-authorship of scientific publications in the North-West. St. Petersburg and the Leningrad Region have the largest share compared to the Russian Federation (19.0 % and 1.8 % respectively). In the second group, the value of this indicator ranges from 0.4 to 0.7 %, while in the third group, it is 0.2 % or less. Figure 4 shows the distribution of the regions of Northwest Russia by the level of scientific cooperation in publications.

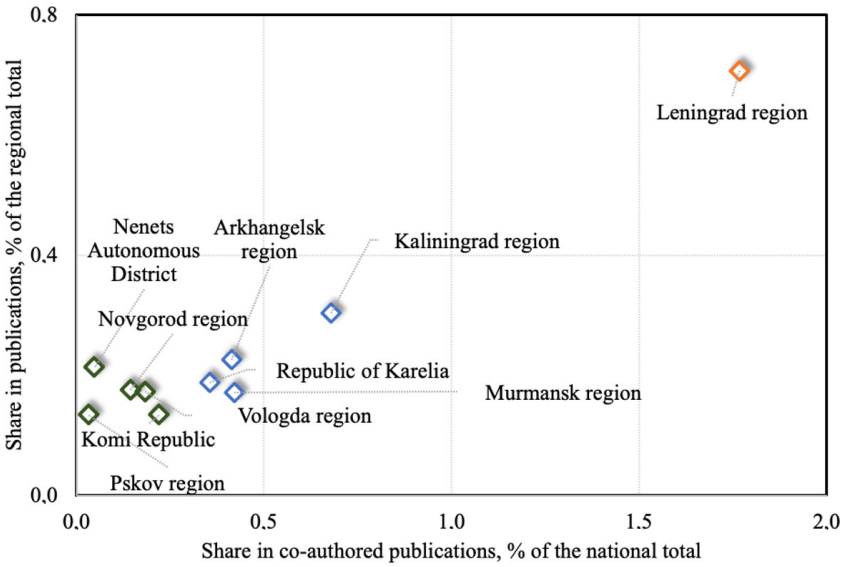


Fig. 4. Regions of Northwest Russia by share of publications in 2018—2022, %

Note: the graph does not represent St. Petersburg, which has 19.0 % of Russian publications co-authored with at least one non-Russian researcher, and 0.27 % of the total number of publications in the region. The first group is orange diamonds, the second is blue diamonds, and the third is green diamonds.

Source: developed by the authors based on Scopus data.[1]

[1] Scopus, URL: https://www.scopus.com/ (accessed 11.07.2023).

The geography of scientific collaboration of the subjects of Northwest Russia in 2018—2022 was diverse (covering 168 countries). After 2022, the geopolitical vector in scientific ties of Russian regions changed: some broke, while others received an additional impetus for development. Appendix 3 shows the countries — scientific partners of the subjects of Northwest Russia in the period from 2018 to 2022 distributed by the categories of 'unfriendly', 'friendly', and 'neutral'.

St. Petersburg and the adjacent Leningrad Region jointly had the widest geography of scientific ties (159 countries) compared to the other groups. However, given a considerable variety of contacts, the largest share of the publications in 2018—2022 was co-authored with researchers from unfriendly countries. The top 25 countries by the number of joint publications include 20 unfriendly (Germany, USA, France, Great Britain, Italy, Finland, Poland, Spain, Switzerland, Czech Republic, Netherlands, Australia, Sweden, Austria, Japan, Canada, Greece, Ukraine, Portugal, South Korea) and five friendly (China, Brazil, India, Belarus, Turkey) countries.

The regions of the second group have a somewhat more modest geography of scientific relations — from 88 (the Murmansk region) to 116 (the Kaliningrad region) countries. These regions' scientific collaboration with Western countries was stable until 2022. In the top 25 countries by the number of joint publications, friendly and neutral countries accounted for only seven in the Arkhangelsk, five in the Kaliningrad, three in the Murmansk regions, and four in the Republic of Karelia. Countries neighbouring these regions (Poland, Finland, Norway) accounted for a significant share of publications co-authored by at least one non-Russian researcher.

The regions of the third group had the least varied scientific relations: from 21 to 59 partner countries. Only Komi Republic stands out. Its researchers published joint publications with authors from 87 countries. However, in 2018—2022, in these regions, the Western European vector also prevailed over the eastern and southern ones. In the top 25 countries by the number of joint publications, friendly and neutral countries accounted for eight in the Vologda, five in the Novgorod and Pskov regions, four in the Nenets Autonomous District, and two in Komi Republic.

Another indicator of the effectiveness of scientific activity is inventive activity closely linked to innovation. As in the case of publications, St. Petersburg occupies a leading position in the Federal District in the absolute number of patents issued. The Vologda region (the second place) has 50 times fewer patents (in 2020 — 65 times fewer). Figure 5 shows the change in patent activity in the subjects of Northwest Russia in 2019—2021. Most regions saw a decrease in the annual number of patents issued, except for the Pskov region, which showed growth, and the Murmansk region and the Republic of Karelia having no stable dynamics.

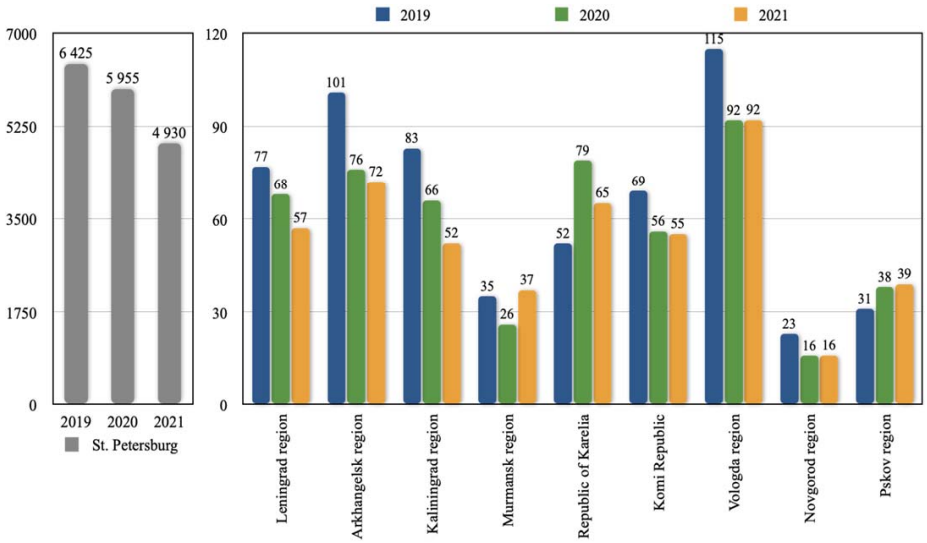


Fig. 5. Patents issued in the regions of Northwest Russia, 2019—2021

Source: developed by the authors based on Rospatent data.[1]

In most regions of Northwest Russia, inventions prevail in issued patents (Fig. 6). In 2019, their share ranged from 52.2 % in the Novgorod region to 80.7 % in the Kaliningrad region. In 2021, compared to 2019, there were significant structural shifts in patent types towards a decrease in the share of inventions in seven out of ten regions under study. Only the Leningrad, Vologda and Novgorod regions saw an increase in patents for inventions in 2021 compared to 2019 (15.7 %, 2.8 %, 10.3 % respectively). The most significant redistribution of patent types occurred in the Republic of Karelia: the share of inventions decreased from 59.6 % to 33.8 %, and utility models increased from 36.5 % to 52.3 %.

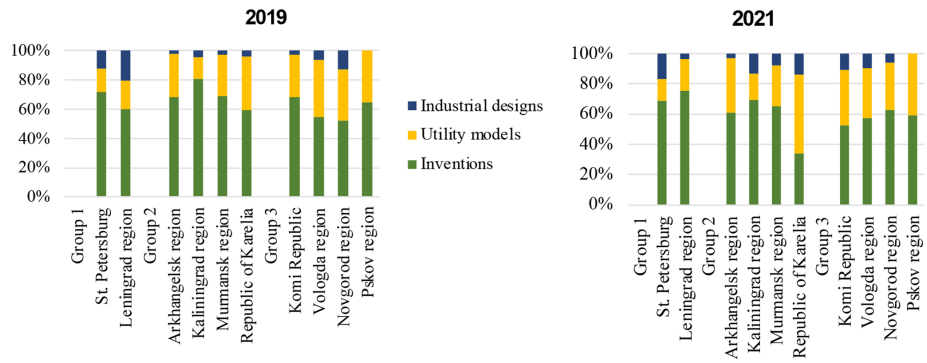


Fig. 6. Patents granted in the regions of Northwest Russia by type, in 2019 and 2021

Source: developed by the authors based on Rospatent data, Openstat.rospatent.gov.ru.[2]

[1] Patent search, *Rospatent,* URL: openstat.rospatent.gov.ru (accessed 02.08.2023).

[2] Ibid.

Among the 82 fields of knowledge in which the subjects of Northwest Russia issued patents, there are 38 most actively developed specializations (with a coefficient of inventive specialization above three in at least one of the regions — Appendix 4). The regions of the periphery and semi-periphery (excluding the Komi Republic and the Vologda region) strongly focus on particular fields of knowledge, while the core regions have broader inventive competencies.

Relation between research and innovation

To assess the relationship between the research and innovation subsystems in Northwest Russia, the authors conducted a correlation analysis of the indicators of patent, publication, research activity and the generation of innovative products. It established a close and statistically significant relationship between the volume of innovative goods, works, and services and the amount of R&D performed in the regions. The correlation coefficient between these indicators was 0.867 (at $p = 0.001$) in 2020 and — 0.721 in 2021 ($p = 0.019$). The tightness, according to the Cheddock scale, is high. The results also show a positive correlation between innovation and patent activity in the regions, however, it has a one-year lag. There was a statistically significant correlation between the number of patents issued in 2019 and the volume of innovative goods, works, and services in 2020 ($p = 0.048$). There was no significant correlation between the indicators of publication and innovation activity in the regions.

The number of organizations carrying out innovative activities positively impacted the volume of innovative products in subsequent years. There was a strong correlation between these indicators in 2019—2020 — 0.818 ($p = 0.004$). In 2021, it slightly weakened — to 0.709 ($p = 0.022$), but remained strong.

The linear regression method was used and a regression model was built to assess the relation between the volume of innovative goods, works, and services produced in the subjects of Northwest Russia in 2021 on the quantitative factors of the functioning of the knowledge generation subsystem (R&D, inventive and publication activity) in 2019—2021. The number of observations was nine. Table 1 presents the results of the regression analysis.

Table 1

The results of the regression analysis of the volume of innovative products in 2021 and the factors influencing the functioning of the knowledge production subsystem

Indicator	B	SE	t	p
Intercept	–0.029	0.038	–0.755	0.475
R&D performed in 2019	4.476	1.701	2.632	0.034*

Note: * — differences in indicators are statistically significant ($p<0.05$).

Source: developed by the authors using StatTech v.3.1.6.

The result of the econometric analysis was the linear regression equation

$$Y_{2021\_Innovations} = -0.029 + 4.476 * X_{2019\_R\&D}, \quad (4)$$

where $Y_{2021\_Innovation}$ is the volume of innovative goods, works, and services in 2021, $X_{2019\_R\&D}$ is the volume of R&D performed in 2019.

An increase in the $X_{2019\_R\&D}$ indicator by 1 is expected to increase the $Y_{2021\_Innovation}$ indicator by 4.476. The obtained regression model has a correlation coefficient of $r_{xy} = 0.705$, which is strong, according to the Cheddock scale. The resulting model is statistically significant ($p = 0.034$) and explains 49.7 % of the observed variance in the volume of innovative goods, works, and services in 2021.

Table 2 shows the results of the assessment of the dependence of the volume of innovative products produced in the regions in 2021 on the quantitative factors of the functioning of the innovation generation subsystem conducted similarly.

Table 2

The results of the regression analysis of the volume of innovative products in 2021 and the factors influencing the functioning of the knowledge production subsystem

Indicator	B	SE	t	p
Intercept	–0.014	0.015	–0.921	0.393
The volume of innovative goods, works, and services	0.888	0.133	6.693	< 0.001*
Innovation expenditure in 2019	0.339	0.122	2.777	0.032*

Note: * — differences in indicators are statistically significant ($p < 0.05$).

Source: developed by the authors using StatTech v.3.1.6.

The following linear regression equation describes the observed relationship between the indicators

$$Y_{2021\_Innovations} = -0.014 + 0.888 * X_{2020\_Innovations} + 0.339 * X_{2019\_Expenditure}, \quad (5)$$

where $Y_{2021\_Innovations}$ is the volume of innovative goods, works, and services in 2021, $X_{2020\_Innovations}$ is the volume of innovative goods, works and services in 2020, $X_{2019\_Expenditure}$ is the volume of innovation expenditure in 2019.

An increase in $X_{2020\_Innovations\ by}$ one is expected to lead to an increase in $Y_{2021\_Innovations}$ by 0.888; an increase in $X_{2019\_Expenditure}$ by one is expected to lead to an increase in $Y_{2021\_Innovations}$ by 0.339.

The obtained regression model has a correlation coefficient of $r_{xy} = 0.705$, which is very strong according to the Cheddock scale. The model was statistically significant ($p = 0.001$) and explains 89.0 % of the observed variance in the volume of innovative goods, works, and services in 2021.

Discussion and conclusions

Geopolitical shifts in the system of international relations in recent years have demonstrated the need for countries to ensure technological sovereignty and innovative security [47]. This is relevant for Russia, which, being involved in a hybrid confrontation with Western countries, is under significant direct and secondary sanctions pressure. The dominance of foreign technologies in its innovative and technological development has led to Russia's high dependence on foreign partners. Its new national targets include import phase-out with at least 75 % of high-tech products being local. The research considers responding to macroeconomic and geopolitical challenges within the framework of transformational resilience. The latter is associated with the search for development opportunities during the crisis through changing an old trajectory.

The study assesses the scientific and innovative potential of Northwest Russia and the impact of external and internal turbulence on it. The study relies on information on R&D, patent and publication activity, as well as statistics on the innovation activity of enterprises from 2019 to 2021, for some indicators — up to 2022. All regions of Northwest Russia were divided into three groups: the core (St. Petersburg in conjunction with the Leningrad region), the semi-periphery (Murmansk, Arkhangelsk, Kaliningrad regions and the Republic of Karelia) and the periphery (Komi Republic, Vologda, Novgorod and Pskov regions).

The results show that, firstly, the regions of Northwest Russia are connected within the framework of the national system of scientific knowledge redistribution. Regional actors perform R&D on external requests and act as purchasers of projects on topics of interest. The regions have more R&D performed than commissioned, which reflects the high level of their research and technological development. However, in some cases, it can indicate the ignorance of regional organizations about localized competencies that allow performing complex projects, or the discrepancy between the specializations of the scientific and innovation subsystems of the regions. This imbalance results in reduced effectiveness of network interaction in spite of a high 'institutional density' [48]. Expanding interregional cooperation by increasing the supply of R&D services to new markets can facilitate the use of the regions' capabilities and increase their innovative capacities by attracting additional funding.

Secondly, the subjects of Northwest Russia have different research specializations. The analysis of the subjects of the performed R&D and indexed scientific publications demonstrates the prevalence of natural science in the 'core' regions and social sciences and humanities in the 'periphery'. In some cases, this difference can hinder the development of collaboration due to the lack of non-territorial proximity [49]. However, this is needed for radical innovations, whose prerequisite is 'unrelated variety' [50]. The research in 'open innovation' [51] shows that it is the adoption of secondary results and related technologies 'from the open market' that allows for breakthrough innovations. A profound shift in the peripheral group towards social and humanitarian research can indicate weak innovation activity in these regions. Thus, there is a need to increase the connectivity between science and business, including through the promotion of entrepreneurial universities and small innovative enterprises.

Thirdly, after 2019, most regions of Northwest Russia show a decrease in the annual number of patents and publications. The analyzed indicators do not immediately reflect the difficulties faced by the regional innovation systems, as patent registration and publication indexing are delayed (the lag is a year or more). We can assume that the decrease in the productivity of the scientific systems of the regions of Northwest Russia in 2021—2022 is associated with previous factors, including the COVID recession [52], increased sanctions pressure, destabilization of financial markets and general uncertainty caused by the armed conflict on the border with Ukraine. Given the transformational course of national policy and the impossibility of returning to the pre-crisis state, the transition to a new development path can be accompanied by a further decrease in the productivity of research and innovation subsystems of the studied regions.

Fourthly, in 2021, compared to 2019, there were significant structural shifts in patent types towards a decrease in the share of inventions in most regions. This is important, given the difference between the invention, utility model and industrial design.[1] The share of R&D results (creation of new products and technologies) is decreasing, while there is growth in the modernization of devices and technologies already on the market and appearance.

Fifthly, until 2022, the regions of Northwest Russia actively integrated into international scientific and innovative processes. Interregional relationships had been developing for many years, including within Russia—EU cross-border cooperation programs [53]. The analysis of the geography of publications prepared in Northwest Russia shows that, before Russia's turn to the East, the

[1] Invention and utility model or industrial design — which is better to patent? 2023, *Guardium,* URL: https://legal-support.ru/information/faq/patent/izobretenie-i-poleznaya-model-ili-promyshlennyi-obrazec-chto-luchshe-patentovat (accessed 14.08.2023).

key partners were institutions in unfriendly countries. Moreover, there is a regularity: the higher the region's scientific and innovative development level, the wider its international scientific collaboration network. The importance of contact with technology leaders is confirmed by the cases of post-colonial countries [54], which, after gaining independence, pursued protectionist policies (import phase-out, strict regulation of technology import and participation in international projects). Nevertheless, sanctions pressure and the cancel culture indicate the need to diversify international partnerships. The reorientation to China, India, Iran, Brazil and other friendly countries is of current interest. This will ensure the possibility of entering international technology and innovation markets and accessing information resources, equipment and consumables.

Future research should assess the role of foreign innovations in the domestic economy to contribute to a fuller understanding of the current situation through the lens of technological sovereignty. Another research avenue is the assessment of the territorial distribution of the innovation process stages, which requires the development of a methodology for identifying cause-effect relationships. One of the questions to answer is which R&D has contributed to the results presented in publications or formed the basis of patents, which became innovations.

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RUSSIAN EXCLAVE ON THE BALTIC SEA

THE BORDER AS A BARRIER AND AN INCENTIVE FOR THE STRUCTURAL ECONOMIC TRANSFORMATION OF THE KALININGRAD EXCLAVE

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This paper aims to study how geopolitical shifts affect regional economies and their structures. Border functions and regimes act as tools for the economy and society to adapt to the redistribution of political influence, movements of people, goods, capital and information between integration associations, individual countries and their cores. A changed environment may slow down the development of some industries (and even cause them to decline) and give a boost to others, with these two processes constituting economic restructuring. In the exclave of Kaliningrad, heavily dependent on international trade and transit trade with mainland Russia, geopolitical changes have naturally had an exceptionally strong effect. The relationship between border functions and economic restructuring was investigated over four periods. The study utilised data from Rosstat and the Federal Customs Service, departmental statistics and findings from expert interviews conducted by the authors. The extent and direction of changes are assessed by examining the ratios between major economic sectors, the structure of foreign trade relations, and the volume and sectoral distribution of investments. Four main ways are identified in which the sharp increase in the barrier nature of the borders between the Kaliningrad region and neighbouring countries since 2014 and especially February 2022 has influenced the region's economy. The significance and effectiveness of the agro-industrial complex have risen, with an increased focus on domestic tourism, and the adoption of advanced public administration practices in collaboration with businesses. This includes implementing mechanisms such as Free Economic Zones and industrial parks, along with a shift towards proactive measures to adapt to the changing environment.

Keywords:
borders, adaptation mechanisms, increased barriers, impact on the restructuring of the economy, Kaliningrad region

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Introduction and problem setting

There are arguably few territories in Russia and abroad whose geopolitical situation has undergone such substantial and rapid changes over the last three decades as the Kaliningrad region. Russia's Spatial Development Strategy 2025 rightfully designates this region, alongside Crimea, the city of Sevastopol, and the Far Eastern regions, as priority geostrategic territories of the nation.

The westernmost region of Russia stands as its sole and the world's most populous exclave. The geographical isolation of the region from the main territory of the country necessitates transit through foreign countries during the overland transport of goods between the territory and mainland Russia. This circumstance objectively amplifies the role of external connections in the region's developmental landscape.

The accession of neighbouring countries, Lithuania and Poland, to NATO and the EU in 2003—2004 further complicated interactions between the region and other Russian territories as they are now determined by not only bilateral agreements but the entire spectrum of relations between Russia and the Western community.

In this study, our objective is to analyse the effects of geopolitical shifts and resulting changes in border functions and regime on the Kaliningrad region's economy, its structure, and its ability to adapt to new challenges. Additionally, we aim to explore options for restructuring the region's economic and territorial framework, drawing from insights gained from past crises.

Literature review and state of research

Border studies are a dynamic and evolving interdisciplinary field of academic inquiry with a strong theoretical framework. A comprehensive review of this field is available in [1]. The contemporary paradigm conceptualises state borders, much like any other formal demarcations, as dynamic social institutions. Notably, these institutions are not static lines but rather variable entities receptive to the ever-changing international landscape, bilateral relationships, currency exchange rates, global price structures, the daily practices of political institutions, cross-border interactions, and media narratives [2]. This process has been denoted as 'bordering' in the English literature.

In most cases, delimitation occurs smoothly, striking an 'equilibrium' between the influences exerted on border functions by various stakeholders: national, regional, and local authorities, as well as communities, businesses, NGOs, and media outlets.

Conversely, changes in the geopolitical status of a territory, such as the accession of an adjacent country into an economic union, precipitate abrupt shifts in the nature of the geographical neighbourhood, which, in turn, result in a reconfiguration of political influence, the flow of goods, capital, tourists and

information between integration associations, countries, and their centres. The functions and regimes of borders, therefore, operate as instruments facilitating the adaptation of both the economy and society to this altered landscape. In response, the state may reinforce the barrier nature of borders by modifying visa requirements and customs regulations, thereby impeding the free movement of citizens, or even going as far as closing the border. Alternatively, state policy may involve the relaxation of border restrictions and the reallocation of border functions as a result of political integration, as witnessed in the case of the Schengen Area. Border adaptation is not the exclusive domain of the state: regional and local authorities, for example, may foster or curtail ties with partners on the other side of the border. Simultaneously, citizens adapt the purposes and frequency of travel to neighbouring countries in response to evolving border regulations, economic dynamics, and the cross-border difference in prices of goods and services [2].

Economic entities also tend to adapt to the new geopolitical situation and border regimes. Altered external conditions cause some industries to decline and others to burgeon, bringing about a restructuring of the economy. These transformations will cause further, thought-out rather than erratic, adaptation of border functions and regime to the new circumstances with a view to launch desired processes and mitigate the consequences of the changes.

The adaptation of a region to a dramatically new geopolitical landscape has been the focus of much research. The most relevant studies draw on the theory of exclaves — territories whose geographical situation predetermines their economic and sociocultural isolation and necessitates tailored support measures [3, p. 297—319]. A number of studies examine the transformation of border functions in Crimea after 2014 and how the population and the economy adapt to this process [4; 5]. These and other works describe a wide range of tools for a successful adjustment of a border's contact functions in this and similar cases, including special legal regulations, preferential treatments for businesses, various forms of cross-border cooperation, etc. The way delimitation affects the restructuring of an economy can be clearly seen in the case of the Kaliningrad region. Here, 'restructuring' refers to industries becoming habituated to the changing competition environment, new facets of market demand, and government regulation [6; 7]. This is a response to both minor shifts and qualitative transformations facilitating the adaptation of an economy to new conditions. The scope and direction of structural shifts are usually assessed by analysing capital markets, namely the volume of investment and its breakdown by industry, the contribution of each sector, and the geographical structure of international trade relations.

Several works depict the restructuring of an economy as a highly irregular process contributing to growing territorial contrasts and modifying the socio-economic space (see, for example, [8]). This evolution can be represented as a sequence of consecutive states, each revealing a period-specific spatial pattern

of external and internal hierarchical interactions [9]. Globalisation, in which the Kaliningrad region actively participated in the early years of the new century, involved the creation of long-distance connections, leading to the emergence of a global financial centre hierarchy to manage these ties.

The resilience of territories of different types to crises relating to susceptibility to innovations and predisposition to positive structural changes traditionally garners significant attention from experts in social geography and regional economics. One of the most well-known concepts, which builds to a large extent on the findings of the American Douglass North and the Russian Rustem Nureev, is that of path dependence, which posits that the previous economic performance of a region or country puts constraints on future development trajectories [10; 11]. In the post-Soviet years, overcoming path dependence was a pressing concern for the region, which strived to take advantage of opportunities and mitigate the limitations imposed on its economy and society by the continually changing geopolitical situation [12].

The history of Kaliningrad as a Soviet and Russian region can be divided into several periods, further subdivided into stages, depending on the intensity and nature of its connections with the neighbours (see, for example, [13—15]). In the context of this research, the most pertinent classification is the functional-temporal typology of the Russian-Polish and Russian-Lithuanian borders undertaken by Lidia Gumenyuk [13], which is grounded in the established concepts of Oscar Martinez and his followers. In contrast to Gumenyuk, we consider one of the recent post-Soviet periods to end not in 2012, when the Small Border Traffic (SBT) regime was introduced between Russia and Poland, but in 2014 when the barrier function of the region's external borders became much more pronounced amid Western sanctions against Russia imposed after the incorporation of Crimea. Nor do we view the years 2020—2022 as a separate stage distinct from the period starting in 2016, when Poland terminated the SBT: the 'temporary' border closures during the pandemic quickly transformed into formidable barriers due to the subsequent rupture between Russia and the West.

The study uses three groups of sources. The first includes statistics from Rosstat, the Federal Customs Service, and executive bodies. Analysing this data is complicated by changes in the methodology for treating socio-economic indicators. For example, investigating structural transformations of the economy required a comparison of data from different classifiers: the Soviet OKONKh (All-Union Classifier of Industries of the National Economy) and the Russian OKVED-2007 and OKVEDd, OKVED standing for All-Russian Classification of Types of Economic Activities. Although the accuracy of such conversion is far from perfect, as a number of works have demonstrated [16; 17], it helped perform an assessment of the most significant structural shifts. The second group of sources used in this study comprises the findings of the field studies that we conducted from the early 2000s (see [18] for more detail). The most recent data were collat-

ed in May—June 2002 by conducting 24 expert interviews with representatives of regional and federal authorities, businesses, academic and expert communities, and NGOs. The interviews were held in the Kaliningrad region and district centres. The third group of sources is basic research carried out by colleagues from Kaliningrad [12; 15; 19—25, etc.].

Border regimes and the crisis of transition: synergy effects as seen in an exclave (1991—2003)

The legal status and regime of the Kaliningrad region's borders first changed in September 1991, when the USSR recognised the independence of the Baltic States. In the summer of 1992, Lithuania introduced a visa regime for travellers from Russia, which was followed by the establishment of economic barriers, including the implementation of border and customs controls, and the imposition of trade tariffs. As a result, cross-border movement of goods became slower and more costly [22; 23]. At the time, up to 70 % of the region's output was exported to other parts of the country, whilst many local industries received raw materials and components from mainland Russia and third countries [20].

These events further exacerbated the effects of chaotic privatization and the disorganization of the economy, leading to the near-complete collapse of the region's previously dominant cross-industry fishing sector, which accounted for 12 % of the country's fish and seafood catch and 33 % of the region's industrial output. The crisis also affected machine engineering, which, comprising 28 % of industrial production, primarily served the interests of the fishing sector and the military [20].

Located in the western part of the USSR, the Kaliningrad region was one of the USSR's strongholds. It housed one of the bases of the Baltic Fleet, numerous garrisons, and military airfields. The concurrent radical downsizing of the military dealt another blow to the region's economy.

A comparative analysis of national land regional macroeconomic indicators leads one to conclude that the economic decline was much deeper and faster in Kaliningrad than across Russia (see Fig. 1). By 1995, industrial production had fallen to 40 % of the 1989 level (compared to the national average of 51 %). As for the sectoral structure, there was a noticeable reduction in the proportion of machine engineering, the food industry and the textiles, clothing, leather and footwear sectors. The increase in the share of the fuel industry and energy in the same year to 13.9 %, compared to 1.3 % in 1989, was a mere symptom of the crisis. Both sectors were in deep recession: oil production suffered from the increasingly complicated process of selling oil to the Mažeikiai refinery in Lithuania, whilst the power industry struggled to obtain electricity from the neighbouring state. Economic contraction continued until 1998. The standards of living in the region were markedly below the national average.

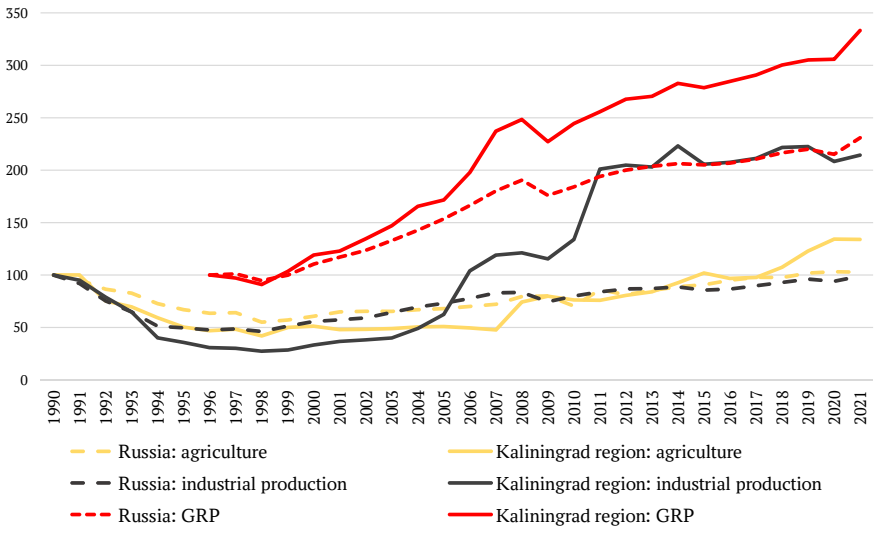

Fig. 1. Macroeconomic indicators, % of 1990 level (1996, for GRP)

Source: compiled by the authors based on Rosstat data.[1]

The adaptation of the region's population and economy to the new conditions was considerably eased by lowering the border barrier between the territory and Poland. Novelties such as shuttle trading and intermediary businesses, which largely contributed to the shadow economy, ensured the influx of inexpensive consumer goods. Economic rent due to the proximity of the border allowed residents of the region's border districts to partially offset the decline in their living standards [19; 25].

An important mechanism helping the economy adapt to the new geopolitical environment was state support, namely the Special Economic Zone (SEZ) regime established in 1996 (SEZ-1996). This regime allowed for duty-free import of foreign raw materials and semi-finished products and the export of the resulting products to the mainland, provided a certain level of value-added, ranging from 15 % to 30 %, was achieved. The rouble devaluation in 1998 increased the attractiveness of this business model for entrepreneurs [14].

The economic shifts that occurred in the Kaliningrad region in the first post-Soviet decade are more accurately described as a structural crisis rather than a restructuring. The main outcomes were the downsizing and, in some cases, complete closure of Soviet-era industries. They were replaced by the involvement of the surviving economic actors in international speculative trade in the interest of major global players. Nevertheless, local businesses, including small and medium-sized enterprises, accumulated unique experiences and competencies in dealing with counterparties in the global market.

[1] Socio-economic Indicators of the Russian Federation in 1991—2021, 2022, *Rosstat,* URL: https://rosstat.gov.ru/folder/210/document/13396 (accessed 17.09.2023).

Border position and border regimes as tools to adopt to a changing geopolitical environment and their role in economic restructuring (2003—2014)

A secondary effect of the 2004 EU enlargement was the Polish-Russian border increasingly emerging as a barrier: now Kaliningraders needed a visa and an international passport to visit the neighbouring country. As early as 2003, the number of crossings of the Russian—Polish border dropped by 20 % compared to 2002; in 2009, the decline was already by a factor of three [26]. Yet, the new metamorphosis of the borders did not lead to any crisis phenomena in the regional economy. On the contrary, from 1999, Kaliningrad's GRP was growing at a rate above the national average, and the margin by which the exclave outpaced an average Russian region continued to increase in the following years (Fig. 1, p. 109). The SEZ mechanism and border permeability to some types of goods prompted the creation of new businesses, which came to account for about 70 % of the region's industrial output and 25 % of GRP. Imported components and technology were used to manufacture the bulk of consumer goods on the Russian market [18]. According to Rosstat, in the mid-2000s, the region accounted for 86 % of televisions and 84 % of vacuum cleaners produced in the country. The automobile assembly company Avtotor was rapidly developing. Statistical analysis shows a phenomenal growth in the contribution of machine engineering in the industrial structure of production according to the value: from 10.6 % in 1995 to 37.1 % in 2004. The proportion of the food industry also increased, having exceeded 30 %. This rise could be attributed, to a large extent, to the launch of new soybean processing facilities (Table 1). The region was making headway towards overcoming path dependence.

Table 1

The structure of industrial production in the Kaliningrad region, %

Industry	1989	1995	2001	2004	2008	2017	2018	2019	2020	2021
Electric power industry	1.3	13.9	9.8	5.8	6.3	5.6	6.0	7.0	7.4	7.7
Petrol industry	1.2	6.8	20.4	10.2	6.8	3.6	2.9	2.8	2.3	2.6
Chemical and petrochemical industry	0.8	0.5	0.3	1	1.9	3.5	4.1	3.5	1.1	3.4
Mechanical engineering and metal processing	27.9	10.6	19.6	37.1	52.2	42.9	47.6	48.9	45.9	45.0
Forestry, wood processing, and pulp and paper industry	10.8	21.3	13	7.4	3.1	4.9	4.1	3.4	3.3	1.9
Construction materials industry	2.6	2.7	1.3	2.7	1.7	2.5	1.4	1.4	1.5	1.2
Textiles, clothing, leather and footwear sector	4.9	2.3	1.7	1.7	2.0	0.7	0.6	0.5	0.5	0.4
Food industry	44.8	32.9	30.3	31.7	21.8	31.6	27.6	27.5	29.3	32.1
Other	5.7	9	3.6	2.7	4.5	4.8	5.6	5.0	9.0	5.5

Source: compiled by the authors based on Rosstat data.[1]

[1] Socio-economic Indicators of the Russian Federation in 1991—2021, 2022, Rosstat, URL: https://rosstat.gov.ru/folder/210/document/13396 (accessed 17.09.2023).

Import substitution was inextricably linked to the continuing explosive growth in international trade, where partners from Germany, South Korea, Poland and China had a central role. Between 2000 and 2004, international trade increased by a factor of 2.8; by 2008, it had reached a level eight times that of 2000. Import operations significantly surpassed export operations: the difference was twofold in 2000, fivefold in 2004 and as large as fourteenfold in 2008 (Fig. 2).

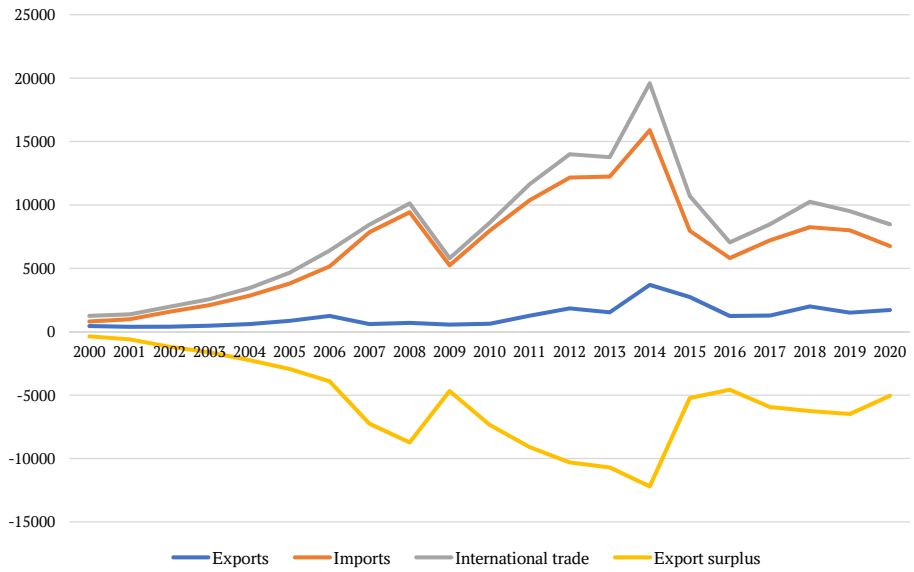

Fig. 2. Changes in the key international trade metrics in the Kaliningrad region, USD million

Source: compiled based on Rosstat data.[1]

The adaptation of Kaliningrad borderlands to the new geopolitical landscape, status, and border regime emerged as the focus of the EU's regional interest. By 2003, Euroregions had become viable platforms for cross-border collaborations, with the region involved in more of these cooperation structures than any other Russian territory. In 2004, when Lithuania and Poland acceded to the EU, participants from the two countries gained access to the financial instruments of the INTERREG programmes, whilst their Russian counterparts could now benefit from TACIS funding. Despite unequal financial opportunities and hence actual results, the programme was conducive to overcoming distrust between the neighbours.

An important step towards stronger cooperation was the conclusion of an agreement on local border traffic (LBT). Poland had lobbied the European Commission for expanding the LBT zone beyond the standard 50 km range [27]. As

[1] Socio-economic Indicators of the Russian Federation in 1991—2021, 2022, *Rosstat,* URL: https://rosstat.gov.ru/folder/210/document/13396 (accessed 17.09.2023).

early as 2013, 3.5 million border crossings were carried out under the LBT regime, which gave a boost to the economies of Polish voivodeships abutting the border with Russia [18; 28].

A new programme, titled Poland—Lithuania—Russia, was launched in 2007. Co-financed by the Russian Government, this initiative paved the way for a more equal cooperation whilst securing a more generous programme budget. Dense networks of years-long partnerships had helped build a foundation of trust and understanding, which made it possible to downplay the barrier properties of the national border.

Despite the successes in overcoming path dependence, economic restructuring remained a major concern to the federal and regional authorities, along with a heavy dependence on external markets, currency exchange rates, current relations with the EU and, therefore, border functions and regimes [29]. The global crisis of 2008—2009 highlighted the precarious state of the economy of the region where the decline in GRP and international trade was more considerable than across the country (Fig. 1).

In 2006, the SEZ-1996 regime underwent extensive reforms. These changes were driven not only by the fragile economic situation but also by the push for closer Eurasian integration, Russia's accession to the WTO, and the concerns of producers from the country's mainland regions. According to the new federal law on SEZ in the Kaliningrad region, which came into effect on 1 October 2006 (SEZ-2006), customs privileges were set to be replaced with tax benefits, starting from 2016. During this ten-year transition period, only SEZ-1996 residents registered before 1st April 2006 could continue to benefit from the old rules. Simultaneously, substantial efforts were undertaken to bolster energy security in the region. From 2002 to 2010, two energy blocks were brought online at the Kaliningrad Thermal Power Plant, and in 2013, an underground gas storage facility was established [30]. Additionally, between 2004 and 2007, ferry services commenced operations between the ports of Baltiysk and Ust-Luga.

2014—2020: sanctions and countersanctions, new functions and regimes of borders, economic adaptation and restructuring

The 2014 geopolitical crisis caused by the Ukraine events led to a dramatic deterioration of relations with the EU. A harbinger of a new stage of restructuring of the region's economy was the transformation of international trade. Sanctions imposed by the EU and Russia's countersanctions changed the border regime for international trade flows, which dwindled in the second half of 2014. The rouble plummeting in response to falling oil prices and other factors further aggravated the situation. The region's international trade decreased by a factor of 1.8 in 2015 and again by 1.5 in 2016. This decline was mostly accounted for by imports, which decreased by two times in 2015 and 1.4 times a year later. All this reduced the negative balance of trade.

As the nature of neighbourhood with EU countries changed and the borders started to act as barriers, the geographical and commodity structure of international trade altered as well. For example, agricultural produce accounted for 30—45 % of exports in 2014 and as much as 74 % in 2016. Soybean and rapeseed oil comprised about half of agricultural exports; waste oil, wheat, and maslin, another 20 %. The geography of exports was changing as well, in response to the volatility of food markets and the situation where the fluctuating rouble exchange rate compelled contracting parties to opt for large but one-time export contracts in shipbuilding and electronics at the end of 2014. In 2013, the region's major export partners were India (26 %), Lithuania (12 %) and Norway (8.6 %); in 2015, Germany (53 %), Algeria (5 %), and Norway (4.7 %); in 2016, Norway (11.1 %), Algeria (10.4 %), Germany (6.2 %), Lithuania (6 %) and Poland (5.8 %).

As before, the bulk of imports consisted of machinery and equipment, comprising 40—50 % between 2015 and 2016, knockdown kits for Avtotor, and electronic and electrical components. The share of agricultural products increased from 18 % in 2014 to 31.6 % in 2016. Soybeans, used as the primary raw material for the Sodruzhestvo-Soya plant, accounted for nearly two-thirds of the agricultural imports. Sanctions and the severance of ties with European partners led to an increase in the share of imports from countries lying far beyond the Baltic region, including China (12.3 %), Korea (10.8 %), Brazil (10.4 %) and Paraguay (7.8 %).

In 2015, the region's GRP decreased by 1.5 %, and industrial production dropped by 7.8 %, compared to Russia's respective – 0.6 % and – 3.4 % decline. The most significant decrease was observed in the automotive industry, where the output halved, and in the production of electronic and optical equipment (by 40 %). The production of sausage products, meat, and fish preserves, which relied on raw materials from the Baltic States and Poland, also suffered.

A new period of the region's adaptation to the evolving geopolitical and geo-economic environment began in 2014, and its borders with EU countries started to assume new functions and meaning. From 2016 to 2019, the region's economy continued to develop faster than that of an average Russian region, at a mean rate of 2.3 %. However, its industrial sector grew at a more modest pace of 0.9 % to 1.8 %, experiencing a five per cent increase only in 2018.

In Kaliningrad, similar to several other Russian regions, agriculture underwent significant adaptation to emerge as one of the primary beneficiaries of restrictions on European agricultural imports, leading to substantial adjustments [31]. The region's food self-sufficiency increased dramatically: agricultural production saw a 10 % growth per year in 2015 and 2016, accompanied by 7—10 % annual increases in crop areas, livestock, poultry stock, milk (16.2 %), and egg production (17.8 %). Regional authorities actively supported agribusiness with subsidies and concessional loans [32]. Regional authorities actively supported agribusiness with subsidies and concessional loans [32]. The investment boom in the industry was associated with both the expansion of production by regional holdings

and companies, including Dolgov Group, Food Products Group, Zalesye Agro-Industrial Complex, Orbita-Agro, and the arrival of agro-holdings from mainland Russia, such as Miratorg. According to Rosstat, between 2013 and 2019, there was a 49 % increase in crop areas, which resulted in a doubling of grain harvest, a 20 % rise in vegetable output, and a 50 % surge in berry production. Simultaneously, agricultural production efficiency increased significantly. For example, annual milk yield per cow rose from 5,486 to 7,771 kg (8,552 kg in 2020) during the same period, whilst grain yield increased from 3.84 to 5.2 tons per hectare — a level comparable to the performance of some black soil belt regions.

The overall shift in the geopolitical situation of the Kaliningrad region, as well as Russia as a whole, pointed in one clear direction: a worsening of relations with European and Western partners, particularly Poland and Lithuania. In contrast to previous stages, urgent preventive measures were taken to adapt to the exclave's borders increasingly turning into barriers. Among other initiatives, the construction of a gas terminal and the Marshal Vasilevsky floating storage and regasification unit was completed in 2015. Four new gas-fired power plants were commissioned between 2018 and 2019, leading the region to enjoy an energy surplus. In 2018, the construction of two new ferries in addition to the two existing ones began [18].

The termination of the LBT regime by Poland and the crisis in cross-border cooperation served as clear symbols of the increasing barrier nature of the border. By the end of 2016, the number of crossings of the Russian—Polish border had already decreased to the level of the early 2000s. Cooperation within such important institutions as the Council of the Baltic Sea States and the Northern Dimension was frozen, and the projects launched in 2007—2013 and completed in 2014 experienced difficulties in receiving final payments.[1]

Global-regional crises as a factor in the new radical restructuring: 2020 onwards

The new restructuring of the border resulted from a clash of two unrelated global crises, whose consequences, however, were closely intertwined. The first one was the COVID-19 pandemic, the second was a fresh round of confrontation between Russia and the West, triggered by the commencement of a special military operation in Ukraine.

The closure of the Polish (13 March 2020) and then Russian and Lithuanian (14 March) borders after the start of the pandemic hit the entire spectrum of humanitarian contacts [33] and cross-border cooperation. According to the Polish Border Guard, the number of border crossings with Russia barely exceeded 740,000 in 2020 and decreased 5.3 times compared to 2017 and 8.8 times compared to the record-breaking 2014.

[1] An interview with Liana Maksimova, Deputy Director of the Agency for International and Interregional Relations of the Kaliningrad region, 30 May 2022.

The effect of the pandemic felt worldwide was aggravated in the region by local factors: high cross-border mobility of Kaliningraders, which predetermined rapid growth and high peaks of morbidity, the dependence of the economy on external links, and the collapse of cooperative ties. External and internal pandemic-related restrictions, complicated logistics and, especially, lockdowns and the ensuing drop in consumer demand disrupted operations in the automotive industry, electronics, and many branches of the service sector. Foreign engineers and workers could not come to Kaliningrad, which caused delays in the implementation of projects in the food, electronic, automotive, and furniture industries.

The first relaxation of the restrictions was made only in June and August 2020. In February 2021 railway transit through Belarus and Lithuania was restored. However, the region's land borders remained mostly closed until 15 July 2022.

Fig. 3. The number of crossings of the Russian—Polish and Russian—Lithuanian borders by Russian and foreign citizens[1]

The closure of borders brought about painful lifestyle changes for many Kaliningraders who were compelled to forsake their familiar consumer habits closely linked to travel to Lithuania and, particularly, Poland. Another victim of the restrictions was the business of shuttle traders who both satisfied the high demand for certain Russian goods procurable in the Kaliningrad region, such as fuel, tobacco and alcohol, and supplied the region with European products, including the foodstuffs covered by Russian sanctions. The flip side of the border closure was

[1] Entry of foreign nationals into Russia 2010—2022, people, 2023, *Rosstat*, URL: https://www.fedstat.ru/indicator/38480 (accessed 17.09.2023) ; Exit of Russian citizens 2010—2022, people, 2022, *Rosstat,* URL: https://www.fedstat.ru/indicator/38480 (accessed 17.09.2023).

the diversion of this additional demand to the products of the regional agro-industrial complex. The closure of the border, however, contributed to growing demand for the products of the regional agro-industrial complex.

The pandemic-indued global economic crisis, to which the region's economy and society had not yet fully adapted, turned into an even more serious and long-term crisis associated with the special military operation and unprecedented Western sanctions against Russia. The region's dependence on imports, measured as the share of imports in local enterprises' expenditures on services, raw materials, materials, semi-finished products, and components for production and sales, was the highest among all Russian regions, reaching 76.5 % between 2019 and 2021 [34]. As shown by Olga Kuznetsova, the sanctions had a particularly strong impact on regions with a high proportion of foreign capital in the economy, investments from unfriendly countries, and a specialisation in the automotive industry [17]. The convergence of these three factors caused the Kaliningrad region to experience a record decline in production from 2020 to 2022, unseen in the rest of the country. There are four primary ways in which the sanctions have affected the socio-economic situation in the region.

The first, most sensitive group includes ***transport and logistics*** difficulties. In April 2022, Russian ships were banned from entering EU ports, and the only company that continued feeder service to Kaliningrad ports was the Chinese COSCO. Increasingly thorough checks at the border with Lithuania starting in March created long queues at road border crossing points and reduced the number of wagon turnovers per month. Russian and Belarusian road haulers were banned from operating in the EU, trucking being one of the region's specialisations. In June, with reference to the general requirements of the EU and in violation of transit agreements, Lithuania closed the transit of sanctioned products through its territory, including construction cargoes. At the end of the year, the transport of fuel was discontinued as well. The counter-sanctions also had an impact. For example, the Belarusian authorities, in response to the European sanctions, banned foreign carriers from operating on their territory, which required the transshipment of goods when entering and leaving the country.[1]

The wagon turnover problem was partly solved by establishing a regional transport company: Novik Group was granted a loan for creating a wagon fleet of its own. The capacity of the ferry service was also increased. Whilst in February 2022 only two ferries operated on the line, in April 2023 it was served by four railway ferries, a RORO vessel, and two multi-purpose dry bulk carriers. Overall, 18 vessels provided supplies to the region on an irregular basis. In the next few years, it is planned to build a new terminal and increase the total number of ferries to ten. In addition, several customs clearance regulations have been changed specifically for the region to ensure a quick response to the changing situation at land borders. Nevertheless, in the absence of an alternative, ferry transport made

[1] An interview with Feliks Lapin, President of the Kaliningrad Chamber of Commerce and Industry, 1 June 2022.

logistics more expensive.[1] Cargo distribution is imbalanced: ferries to the Kaliningrad region run fully loaded, whilst the cargo volume in the reverse direction is considerably lower.

The problems of transport and logistics are closely interconnected with **restrictions on technology imports and trade**. The ban by the US and European countries on trade with Russia in dual-use products, machinery and components containing know-how patented or manufactured in Western countries dealt a serious ban on Avtotor. In 2019, Avtotor's cargoes accounted for about half of Kaliningrad Railway's traffic, 71 % of the container transshipment of the Kaliningrad Commercial Sea Port, and 74 % of the Baltiysk Sea Terminal.[2] The decline in production at this enterprise alone could not but lead to significant problems in the transport sector.

In February 2023, however, Avtotor signed a multilateral agreement with six Chinese companies. In March 2023, manufacturing of the saloon Kaiyi E5 began. The company's management expects its 2023 production to range from 70,000 to 100,000 cars. For comparison, Avtotor, whose total capacity is 250,000 cars per year, produced about 140,000 cars in 2017.

Companies involved in electronics and the manufacturing of other innovative products have also encountered significant problems. To illustrate, the routine setting of numerical control machines requires one-time access codes from the manufacturer, which have been denied by some companies. Similar problems with setting up equipment are experienced by food enterprises. For instance, Russia's sole whisky distillery, constructed with Italian machinery in Chernyakhovsk, has remained non-operational for nearly two years.[3]

The financial restrictions have also aggravated the situation in the import-dependent region. The rouble's nosedive in February—March 2022, the withdrawal of international payment systems from Russia and the SWIFT ban against many Russian banks forced entrepreneurs to look for intermediaries in friendly countries to make payments. They found assistance in Serbia, Turkey and China, whilst taking advantage of business opportunities in EAEU countries. Another complication is that the region's transport flows are centralised through mainland Russia, via which the bulk of sanctioned goods transit is carried out.

The fourth sanction area is the complete suspension of cross-border cooperation between Russia and the EU. Steps taken in this regard include the refusal to prepare new programmes for 2020—2027, the severance of twin city ties and other connections, and the termination of participation in 2014—2020 cooperation programmes, which were to be officially completed only on 31 December 2022. By June 2022, only 13 out of 69 projects had been completed. A challeng-

[1] An interview with Evgeny Perunov, President of the Association of Kaliningrad Furniture Manufacturers 31 May 2022.

[2] Logistics, 2023, *Avtotor,* URL: https://avtotor.ru/pages/logistika (accessed 17.09.2023).

[3] Group and individual interviews with owners and managers of businesses that are tenants of the Khrabrovo Industrial Park, 3rd June 2022.

ing situation arose with major infrastructure projects, such as the reconstruction of water supply and sewerage systems in Guryevsk, Gusev and Chernyakhovsk, which could not be abruptly aborted. As a result, regional and federal financial resources had to be mobilised to solve this problem.

Most of the experts we interviewed still find it difficult to provide a detailed picture of the trajectories along which the restructuring of the region's economy will proceed in the new geoeconomic and geo-economic environment. The likely responses are import substitution and attempts to redirect trade towards friendly Asian countries. Avtotor, for instance, is looking for new partners in South-East Asia, first of all, in China, whilst planning to start production of its electric cars in 2023—2024 in co-operation with one of the subsidiaries of the Rosatom state corporation. Other manufacturers are adopting similar tactics. Food and furniture companies are looking for suppliers and equipment from mainland Russia, China, and Turkey. Often, they have to settle for raw materials of lower quality, albeit procured at higher prices. Many enterprises, such as furniture companies, have completely switched to the Russian market, having lost direct contracts with European manufacturers, which not only offered better prices than mainland Russian companies but also provided technological advantages. As Evgeny Perunov, President of the Kaliningrad Furniture Makers' Association, so vividly put it: 'I say to all our manufacturers: forget that there is such a thing as Europe! Imagine that you've woken up and Europe is no longer there!'[1]

In agriculture, entrepreneurs, supported by regional authorities, are planning to invest in seed and livestock breeding. A pedigree bull breeding company has been established, and approximately ten breeding farms are already in operation. However, like other Russian territories, the region is experiencing difficulties with replenishing its egg-laying chicken stock, which used to be supplemented through purchases in Europe [31]. These purchases are to be replaced with domestic production, making the region a centre of agricultural breeding and genetics.

The tourism industry, one of Kaliningrad's specialisations, has a pivotal role in the structural reorganisation of the region's economy. The closure of the Russian borders in 2020 contributed to the boom in the industry, which began between 2015 and 2019. The regional Ministry of Tourism estimated that in 2014, there were 600,000 visits to the area, and these numbers increased to approximately 1.3—1.5 million in 2017 and 2018.[2] In 2021, after the removal of the most stringent sanitary restrictions, an all-time high of 1.9 million visits was achieved.[3] However, prices for hotel services, rented accommodation, and food increased over this period, especially in the city of Kaliningrad and the seaside

[1] An interview with Evgeny Perunov, President of the Association of Kaliningrad Furniture Manufacturers 31 May 2022

[2] An interview with Andrey Yermakov, Minister of Culture and Tourism of the Kaliningrad region, 2 June 2022.

[3] An interview with an anonymous respondent, a 40-year-old woman, representing the tourism industry, 1 June 2022

resorts. Kaliningraders had no opportunity to holiday in neighbouring countries, whilst increasingly expensive local resorts became overcrowded with tourists from mainland Russia [35]. As a result, both the local residents and, later, tourists shifted their focus to the eastern part of the region, visiting towns like Gusev, Chernyakhovsk, and Zheleznodorozhny.

This growing interest paralleled the development programme for the east of the region, under which many towns boasting a rich cultural heritage are being renovated. The regional authorities managed to pool the resources of the Capital Repair Fund, grants from federal ministries, funds from charitable foundations and private investors to restore cultural heritage sites, reconstruct entire streets, etc.

Regional authorities and businesses expect government—business partnerships and the preferences received by the region to yield tangible results. Although the region continues to take advantage of the well-tested SEZ mechanism, hopes are also being placed on industrial parks, which are already making a noticeable contribution to the structural reorganisation of the economy. To illustrate, the Khrabrovo Industrial Park has brought about a change in machine building; Ecobaltic, in the local pharmaceuticals industry; the Baltic Industrial Park, in construction materials manufacturing and chemical production; Technopolis GS, in high-tech electronics; Danor, in engineering services. Since 2018, the special administrative district on Oktyabrsky Island has registered about 100 companies from foreign jurisdictions, with a combined investment of 60 billion roubles.[1]

Conclusion

The dramatic geopolitical changes in Europe and other parts of the world, such as the collapse of the USSR, the eastward expansion of NATO and the EU at the expense of former socialist countries, the acute conflict between Russia and Ukraine, Russia and the West, could not by trigger radical transformations across the global border system. The functions and regime of Russia's borders with the EU countries were constantly changing: one day, they would become more open and contactable, creating opportunities for joint cross-border cooperation and the development of new forms of partnerships; another day, they would emerge as barriers. After 2014, the barrier function started to prevail over the contact function.

Border functions and regimes are important instruments helping economies and societies to adapt to geopolitical shifts, new world market conditions, and changing political and economic relations between countries both at the national (sometimes, as in the case of the EU, supranational) and regional levels. Bordering theory sees the adjustment of the functions and regimes of the border system as a continuous process.

[1] An interview with Andrey Tolmachev, director general of the Corporation for the Development of the Kaliningrad region, 2 June 2022.

The Kaliningrad exclave, a territory heavily dependent on international trade and transit trade with mainland Russia, was particularly affected by geopolitical changes. After the shock and acute crisis of the 1990s, attempts to utilise the advantages of the region's border position began to bear some fruit: Kaliningrad outpaced other Russian regions in terms of GRP growth rates and some other metrics. The intensification of foreign trade and the promotion of cross-border cooperation, which were facilitated by simplified border crossing procedures, became crucial mechanisms for the region's economy to adjust to the changing geopolitical and geo-economic landscape. These measures aimed to encourage the restructuring of the economy and overcoming path dependence. However, the deteriorating relations between Russia and the West, global instability and crises quickly revealed the fragility of a highly import-dependent economic system.

A lesson was learnt from the negative experience of the Kaliningrad region's exclavisation due to the EU enlargement and the Union's reluctance to take into account Russian interests, which was conspicuous in the late 1990s and early 2000s. A transition was completed from reactive measures to adapt the region's economy to the changing geopolitical landscape to preventive measures, which made it possible to mitigate the negative consequences of sanctions and counter-sanctions. The region's energy, transportation, and food security were bolstered. Moreover, the subsequent de facto closure of the region's external borders, first in response to the pandemic and then due to Western sanctions, encouraged attempts to convert the region's dwindling dependence on external ties into accelerated structural reorganisation and sustainable development of the economy, followed by a radical transformation of the geography of international cooperation.

Despite the considerable difficulties, the Kaliningrad authorities and businesses have shown flexibility in adapting to the current circumstances. Valuable lessons have been learned from the previous decades: the region has got experience of working with neighbouring countries and on the world market, whilst embracing programme and project approaches through cross-border cooperation with EU countries. 'Thanks to the experience gained in cross-border cooperation programmes, we have learned how to prepare high-quality grant applications. The use of different funding sources in solving complex problems is a necessary skill within cooperation programmes. We prepare projects in advance, long before the competition is announced. We know exactly what we want to do, and then we just adapt the application to the terms of the grant,' said in the interview an official from the Chernyakhovsky municipality.[1]

It is too early to assess successes and failures at this challenging historical moment. Although it is difficult to make forecasts and draw up detailed plans in conditions of uncertainty, the strategic objectives are clear: overcoming critical

[1] An interview with Viktor Voblikov, the first deputy head of the Chernyakhovsk Municipal District Administration, 6 June 2022.

dependence of certain industries and enterprises on imports, developing high-tech industries, and ensuring more active participation in the national division of labour.

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PRIORITIES FOR THE DEVELOPMENT OF MANUFACTURING INDUSTRIES IN THE KALININGRAD REGION

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The Kaliningrad region is a socio-economically developed area with a steadily increasing population. Its economy is predominantly influenced by manufacturing industries, whose growth is supported by the region's strategic geographic position on the Baltic coast and the Special Economic Zone (SEZ) regime. However, the region's exclave status, which makes it reliant on external factors, hinders its development. Any change in these external factors could necessitate a restructuring of manufacturing industries. The severing of former foreign economic and social ties, the discontinuation of cross-border cooperation due to the actions of unfriendly countries, and the imposition of eleven packages of unlawful anti-Russian sanctions have had a more pronounced impact on the regional economy compared to the country's inland regions. Logistics between the region and the main part of the country have been significantly complicated. Manufacturing industries have faced disruptions in the supply of essential foreign-made semi-finished products. The exports of several regionally-produced goods have been restricted, and transit through the Baltic States has become more difficult. This article aims to assess the impact of these restrictions on the development of manufacturing industries in the region. Another goal is to provide a rationale for the restructuring of specialization and changes in the geography of external relations in these increasingly complex external circumstances. Recommendations based on the findings obtained will contribute to the region's sustainable development, characterized by dynamic growth and proportional development.

Keywords:
Kaliningrad region, manufacturing industries, anti-Russian restrictions, external relations, economic restructuring

Introduction

Kaliningrad is one of Russia's more socio-economically prosperous regions with numerous manufacturing businesses, whose development was supported by the Special Economic Zone regime (SEZ 1996, 2006). Whilst location along the Baltic Sea coast is an advantageous factor, the exclave nature of the territory hampers its development by creating economic dependence on external players.

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Changes in the geoeconomic landscape of the Baltic Sea area have more than once caused a restructuring of the region's manufacturing industry. A factor with unclear implications is proximity to EU countries, with which the region had enjoyed close economic, academic, social, and other transboundary ties before the war of sanctions was waged on Russia. Kaliningrad boasted a range of joint companies engaged in manufacturing, catering to both Russian and international markets. Competition with cheap imports from the neighbouring states, however, tended to impede the development of local businesses.

The external conditions of the region's economic development have been changing since 2014, when unfriendly states introduced restrictions, i.e., unlawful sanctions, against Russia. This process is having a particularly pronounced effect on the manufacturing industry. This article aims to describe the effect of restrictions on the development of regional manufacturing companies, measure the resilience of such businesses to external impact, and provide a rationale for the necessary sectoral restructuring and changing the geography of external ties. To this end, we analyse the literature and employ economic statistical methods to process company-specific statistical data on production for 2022 and the first six months of 2023.

Transformation of strategic development areas for the Kaliningrad region since the early 1990s

The region's manufacturing facilities came to a near standstill in the 1990s, prompting the search for specialisations the region could embrace in the changed environment. Not only was the idea of creating an amber processing cluster widely discussed in Kaliningrad but also a correspondent goal appeared in the national programme for industrial and business development in the region.[1] A range of studies provided a rationale for cooperation in the Baltic area, a course of action viewed as mutually beneficial in the geopolitical environment that evolved after the collapse of the USSR. Kaliningrad scholars published on the theory of transboundary regions, whilst striving to link theoretical insights with economic practice [1; 2]. Mutual ties were also the focus of Western researchers [3; 4]. The book *Kaliningrad in Europe*, published at the initiative of the Council of Europe, provided a platform for Russian and Polish scholars to discuss various aspects of cooperation [5]. However, some of the regional strategy proposals contained unacceptable suggestions to isolate Kaliningrad from mainland Russia, introduce governance of the territory by an international consortium, etc. One of the articles, on one hand, discusses the region's participation in several European

[1] Resolution of the Government of the Kaliningrad Region of 25 March, 2014, on the State Program of the Kaliningrad Region 'Development of Industry and Entrepreneurship', 2022, *Electronic repository of legal and regulatory documents*, URL: https://docs.cntd.ru/document/460293912 (accessed 11.08.2023).

cooperation networks and, on the other, groundlessly depicts the territory as a possible tool for creating threats to other states of the Baltic Sea region (see [6] for a detailed analysis).

Polish researchers have made a noticeable contribution to the study of transboundary ties. Prof. Tadeusz Palmowski of the University of Gdansk provided a theoretical framework for the bipolar socio-economic system Tricity (Gdansk—Gdynia—Sopot)—Kaliningrad [7]. Experts from McKinsey, a management consulting company, drew up a strategy for the region with a focus on tourism development.[1] Finnish professor Urpo Kivikari outlined a theoretical underpinning for integration processes in the Baltic region [8]. Several experts pointed out problems that the region could experience in its relations with Russia and other countries [9; 10].

The 1990s and the early 2000s witnessed animated discussions in Russia and abroad about potential development trajectories for the Kaliningrad region. One of the proposals centred on the idea of a 'region of cooperation' [11]. The early 2000s strategic document for the region's development had a befitting name — A Strategy for the Development of Kaliningrad as a Region of Cooperation.[2] However, it became increasingly evident that implementing such a strategy would be challenging, particularly due to the external environment, which notably changed after the Baltic States acceded to NATO and the EU in 2004. Necessary amendments were made to the regional strategy.[3] The changed circumstances prompted Russian experts to turn their attention to the economic security of the Russian Baltic exclave, whilst the state saddled itself with ensuring the region's self-sufficiency as regards natural gas, electricity, and food products [12].

After the EU imposed sanctions against Russia in 2014, Russian—(Western) European trade dwindled. This reduction occurred mostly in terms of physical volumes. In terms of value, as the RIA Novosti agency reports with a reference

[1] McKinsey Experts: An oceanarium should be built in Kaliningrad, 23.11.2012, *Komsomolskaya*, URL: https://www.kaliningrad.kp.ru/online/news/1303220/ (accessed 11.08.2023).

[2] Resolution of the Administration of the Kaliningrad Region of 15 July 2003, № 392 'On the 2010 Strategy for the Socio-Economic Development of the Kaliningrad Region as a Region of Cooperation', *Electronic repository of legal and regulatory documents,* URL: https://docs.cntd.ru/document/469726126?marker (accessed 10.07.2023).

[3] Resolution of the Government of the Kaliningrad Region of 9 March 2007, № 95 'On the Strategy for the Medium — and Long-Term Socio-Economic Development of the Kaliningrad Region', *Electronic repository of legal and regulatory documents*, URL: https://docs.cntd.ru/document/469731701 (accessed 10.07.2023) ; Resolution of the Government of the Kaliningrad Region dated August 2, 2012, № 583 'On the Strategy for the Socio-Economic Development of the Kaliningrad Region for the Long Term', *Electronic repository of legal and regulatory documents*, URL: https://docs.cntd.ru/document/469728648 (accessed 10.07.2023).

to Eurostat data, 2002 saw an increase in Russian—European trade by 2.3%[1] due to the growing global prices of goods constituting Russia's exports [3]. The country's Baltic regions, once dubbed a 'window to Europe' were becoming less visible as economic players [13].

Western authors are increasingly viewing Kaliningrad from the geopolitical rather than economic perspective, focusing on its socio-economic situation and relations with neighbours against the backdrop of the events of 2022 and 2023. Even scholars from remote countries such as the US and Australia address the region in their publications[2] [14].

An entire 2022 issue of the Finnish journal *Baltic Rim Economies* was dedicated to Kaliningrad, featuring publications from international and Russian authors, with Kaliningrad transit through Lithuania and the region's transportation links with the rest of Russia garnering significant attention [15; 16].

Much is being written about the need for a military confrontation with Kaliningrad as an allegedly militarised territory threatening NATO countries [17; 18]. Other publications explore presumed changes in the social well-being of Kaliningraders [19].

In the new external environment, organisations with well-established foreign economic ties not only faced challenges relating to development but often struggled with performing routine operations. Several Russian authors have explored the business activities of the region's manufacturing industries, identifying production companies with the most potential. For instance, Anastasiya Kuznetsova emphasises the low value-added generated by enterprises enjoying SEZ 1996 customs privileges and engaged in import substitution. She also stresses the massive budgetary expenditure on compensating for the customs duties levied on such companies under SEZ 2016, which came to replace SEZ 2006 [20]. Therefore, it appears necessary to raise the value-added target for such organisations. In the same series of articles, Vladislav Ivchenko investigates the possibility of maritime transport as the backbone of economic cooperation between the region and St. Petersburg [20]. The literature also pays attention to the prospects of reverting the fishing industry to its past capacity [22], embracing new technology, introducing innovation into production, and creating innovative clusters [23; 24].

[1] Bilateral trade between Russia and the EU reached an eight-year high, 07.03.2023, *RBC,* URL: https://www.rbc.ru/rbcfreenews/6406ceed9a7947b3912b3c98 (accessed 04.09.2023).

[2] Kaliningrad. Russia's Westernmost Outpost, Is Again a Flash Point in East-West Relations, 22.06.2022, *The New York Times,* URL: https://www.nytimes.com/2022/06/22/world/europe/kaliningrad-russia-lithuania.html (accessed 07.09.2023).

In his annual message, Governor Anton Alikhanov stressed *inter alia* the need to reorient international ties towards Belarus, other CIS states, and South and Central Asia.[1]

The current strategy for the region's socio-economic development defines as priorities the following industries:

— information technology;

— mechanical engineering, with a focus on motor vehicle production and shipbuilding;

— the amber and jewellery cluster;

— fishery;

— food processing.[2]

Along with these sectors, experts see as promising the pharmaceutical industry,[3] and the national spatial development strategy lists as many as thirteen production areas.[4] Below we will investigate the situation in the Kaliningrad region in greater detail, including the developments the occurred between 2022 and 2023. We will also discuss possible trajectories of economic development in the changing external environment.

Stages in the development of manufacturing companies, from 1991 to 2023

By the early 2020s, the Kaliningrad region had established itself on the national level as a significant manufacturing centre. In 2021, its companies accounted for 1.2 % of the national manufacturing production, whilst the population of the region did not exceed 0.7 % of the Russian total. The production output, both in absolute terms and relative to the national figures, had increased significantly

[1] Message from Governor Anton Alikhanov on the priority areas and the performance of the Government of the Kaliningrad Region between 2023 and 2027, 07.09.2023. *Government of the Kaliningrad Region*, URL: https://gov39.ru/poslanie/poslanie2023-2027/ (accessed 30.08.2023).

[2] Strategy for the socio-economic development of the Kaliningrad region, *Government of the Kaliningrad Region*, URL: https://gov39.ru/working/ekonomy/strategy/ (accessed 30.08.2023).

[3] The Minister of Industry and Trade named six industrial priorities for the region, 15.11.2017, *New Kaliningrad*, URL: https://www.newkaliningrad.ru/news/briefs/community/15841325-glava-minopromtorga-regiona-nazval-6-prioritetov-v-razvitii-kaliningradskoy-promyshlennosti.html (accessed 30.08.2023).

[4] The 2025 Spatial Development Strategy of the Russian Federation, approved by the order of the Government of the Russian Federation on 13 February 2019, № 207-r., *Ministry of Economic Development of Russia*, URL: https://www.economy.gov.ru/material/dokumenty/rasporyazhenie_ot_13_fevralya_2019_g_207_r.html (accessed 07.08.2023).

compared to the 1991 level. Yet, this rise followed the decline of the 1990s, which was more dramatic in the region than across the country. In 1998, local production facilities performed at 11 % of their 1991 capacity (Fig. 1). The territory also lost its previous specialisation in the fishing, pulp and paper, and machine engineering industries.

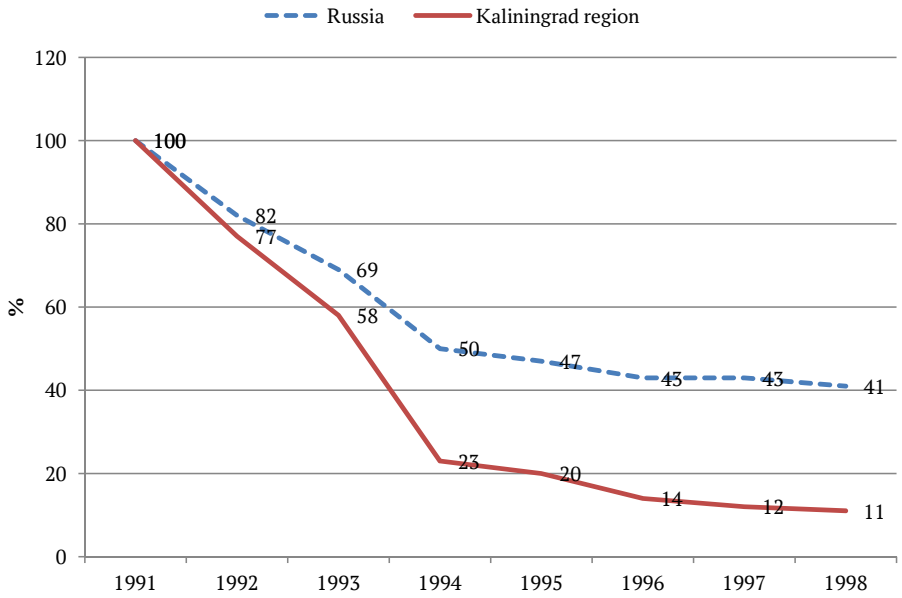

Fig. 1. Manufacturing industry production indices,
1991—1998, % of the 1991 level

Prepared based on the data from index of production (percentage, value of the indicator for the year), *EMISS*, URL: https://www.fedstat.ru/indicator/43047 (accessed 02.08.2023).

Starting from 1999, when the aftermath of the 1998 financial crisis was largely overcome, the Special Economic Zone (SEZ) established in 1996, along with the customs privileges granted to its tenants, began to exhibit effectiveness. New investors were arriving, and manufacturing industries started to develop at a faster pace than the national average (Fig. 2). Industries other than the Soviet-time premier sectors were gaining prominence, including the food industry and assembly (motor vehicles, televisions, computers, and household appliances). Most raw materials and semi-finished products for enterprises engaged in these fields were imported, whilst finished goods were mainly shipped to mainland Russia, with a smaller proportion remaining in the regional market or being exported.

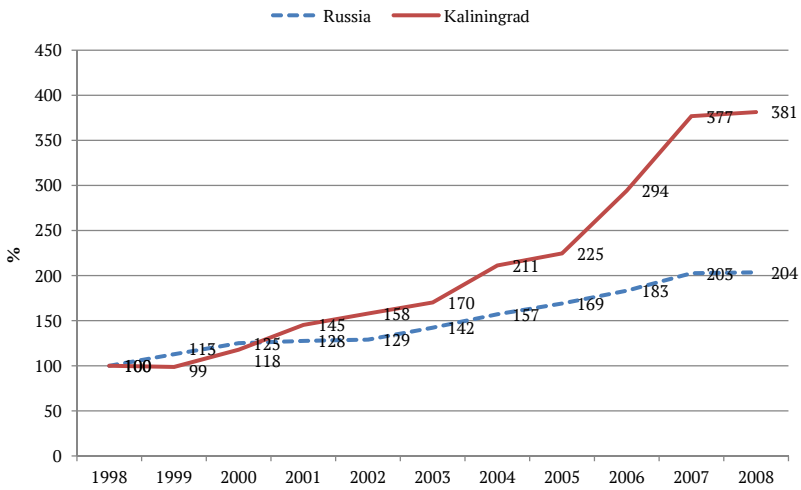

Fig. 2. Manufacturing industry production indices, 1998—2008, % of the 1998 level

Prepared based on data from index of production (percentage, value of the indicator for the year), *EMISS*, URL: https://www.fedstat.ru/indicator/43047 (accessed 02.08.2023).

In 2006, a new law regulating the SEZ scheme was adopted to stimulate production through tax incentives rather than customs benefits. Although its effect was disrupted by the 2008 global economic crisis, sustainable production growth began as early as 2010, resulting in the establishment of new businesses supported by SEZ tax zones (Fig. 3). Manufacturing industries achieved considerably higher production levels per employee and per capita compared to the national average. By 2014, the production levels surpassed those of 1991 by a wide margin.

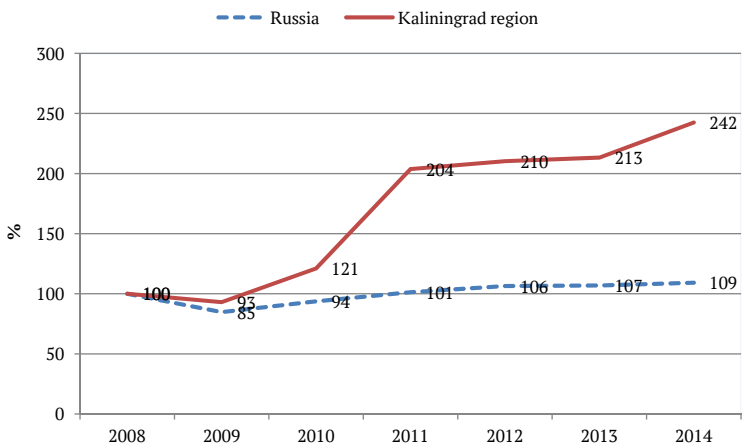

Fig. 3. Manufacturing industry production indices, 2008—2014, % of the 2008 level

Prepared based on data from Index of production (percentage, value of the indicator for the year), *EMISS*, URL: https://www.fedstat.ru/indicator/43047 (accessed 02.08.2023).

The region is more sensitive to the restrictions imposed by unfriendly nations compared to Russia's inland regions (Fig. 4). After their introduction in 2014 and subsequent tightening, international ties with Baltic neighbours were suspended on the initiatives of the latter. The 11 sanctions packages imposed by the EU have prohibited the import of many hundreds of goods into Russia, supposedly with military significance, but often impacting the consumer market. Russian airlines have been banned from EU skies, and transit shipments by land have been limited as well. A growing proportion of freight transportation from mainland Russia to the region is now conducted by maritime transport, and the majority of passenger transportation is carried out by aviation, bypassing the Baltic States over the waters of the Baltic Sea. Connections with partners from friendly countries are strengthening, particularly with other Russian regions. For example, a considerable portion of both freight and passenger transport to other Russian regions is now conducted through St. Petersburg and the Leningrad region.

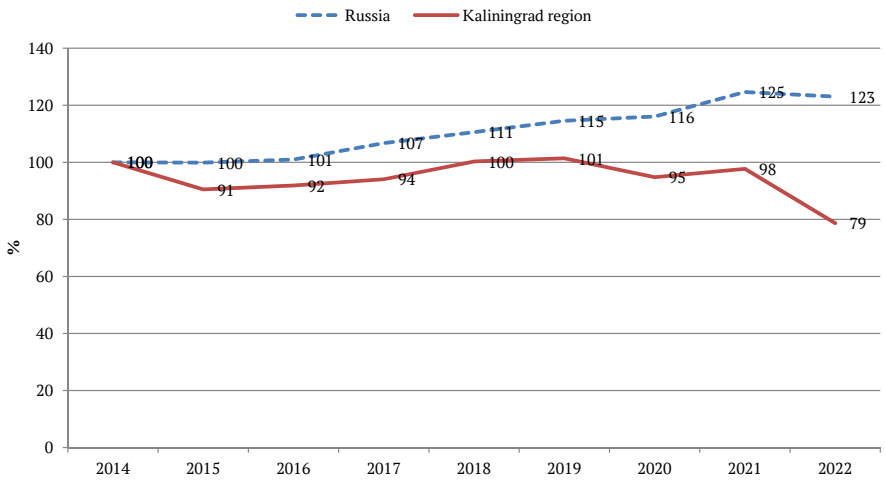

Fig. 4. Manufacturing industry production indices, 2014—2022, % of the 2014 level

Prepared based on data from Index of production (percentage, value of the indicator for the year), *EMISS*, URL: https://fedstat.ru/indicator/57806 (accessed 06.08.2023).

The situation in 2022 and 2023

Despite stagnation in the region's manufacturing industries observed from 2014 to 2021, the volume of goods shipped, work completed and services provided per employee exceeded 10 million roubles in 2021, which is 1.6 times the national average.[1]

[1] Calculated based on data from Kaliningrad Region in Digits, 2022. A statistical digest in two volumes. Kaliningrad : Kaliningradstat, 2022. Vol. 2 ; An Annual Russian Statistical Digest, 2022. Moscow : Rosstat, 2022; Average employment figures since 2017, *EMISS,* URL: https://fedstat.ru/indicator/58994 (accessed 30.08.2023).

In 2022 and 2023, Russia's economy was developing in the conditions of increasing restrictions. After the 11th sanctions package was placed by the EU on 21 June 2023, the restrictions cover, according to our estimates, 1,124 types of goods, specified to from two to eight digits of international trade classification codes. These goods account for 78 % of the imports and 16 % of the exports of Kaliningrad production facilities, as seen in 2021. [1]

This list includes, amongst other things:[2]

'<…>

Musical instruments, percussion (e.g., drums, xylophones, cymbals, castanets, maracas);

Swords, sabers, rapiers, cutlasses, bayonets, pikes, and similar weapons, parts of the listed weapons, scabbards, and sheaths;

Non-electric lamps and lighting equipment;

Parts of lamps and lighting equipment made of glass;

Products and accessories for all kinds of billiards;

Games operated by coins or tokens, excluding equipment for bowling;

Playing cards;

Game consoles and video game equipment;

Other entertainment goods, tabletop or indoor games;

Skis, ski bindings;

Other skis and other equipment for skiing;

Windsurfing boards;

Water skis and equipment for water sports;

Hockey sticks, sets;

Golf balls.'

As one can see, these are consumer goods that are unsuitable for use in the special military operation, but the discontinuation of their supply may temporarily cause inconvenience the civilian population.

Since 2022, international trade logistics has declined in Kaliningrad and other Baltic regions of Russia due to the sanctions imposed by unfriendly countries. Trade turnover with the Baltic region countries, formerly long-standing trading partners, as well as with other states, has also decreased. Being faced with bans or restrictions on exporting a wide range of goods and importing Western high-tech and other products, manufacturing industries have borne the brunt. Kaliningrad has been severely impacted by transit restrictions on Lithuanian transit, with local companies having to resort to more costly maritime connections between the

[1] The data were collated by Dr Anna Novikova and colleagues at IKBFU's Institute for Geopolitical and Regional Studies whilst implementing the government assignment Analysing the Problems of Ensuring Russia's Security in the Kaliningrad Region in the Current Geopolitical Situation (2023).

[2] Restrictions by the EU, the US, the UK, Japan, Switzerland, Canada and Australia on import and export operations with Russia, 2023, *Alfa-soft,* URL: https://www.alta.ru/tnved/forbidden_codes/ (accessed 12.09.2023).

ports of Kaliningrad and Leningrad regions. The refusal of access to EU skies has required rerouting flights from Kaliningrad to other regions of the country through the neutral waters of the Baltic Sea.

In the region, sanctions have severely affected the development of all manufacturing companies relying on raw materials and/or semi-finished products imported from unfriendly countries. The operating structure of these businesses, which explains their heavy dependence on exports and imports, calls for a thorough restructuring, as is the case with international trade ties. A viable solution is stimulating productions that rely on Russian raw materials and semi-finished products, including those from Kaliningrad, as well as on imports from friendly states. From 2017 to 2021, two sectors demonstrated outstanding results: the food industry (primarily, oil and dairy manufacturing), motor vehicle assembly, as well as the chemical, plastics, and pulp and paper industries.[1]

Table 1 shows the most imported commodity groups as of 2021, their composition explaining the manufacturing dynamics of 2002 and the first half of 2023.

Table 1

Most imported commodity groups for the Kaliningrad region, according to value, and the exporting countries, 2021

Commodity	Proportion of regional imports, %	Exporting country
Land vehicles, excluding railway and tramway rolling stock	30.4	South Korea, Slovakia, Germany
Soya beans	14.3	Brazil, Paraguay, Argentina
Electric machines and equipment, sound recording and reproducing devices, devices for recording and reproducing television images and sound	7.5	China, South Korea, US, Germany
Equipment and mechanical devices	7.4	South Korea, Germany, Slovakia
Meat and meat products	3.2	Brazil, Paraguay
Furniture	2.5	South Korea, US, Slovakia
Ferrous metals	2.0	China, Lithuania, Germany, Ukraine
Fish and fish products	1.3	Vietnam, Thailand
Optical, photographic, cinematographic, measuring, controlling, precision, medical or surgical instruments and devices	1.2	South Korea, Germany, China
Ships, boats and floating structures	1.1	China, Netherlands

Prepared based on data from overall results of foreign trade. Kaliningrad region. January—December, fourth quarter 2021, *Kaliningrad Regional Customs*, URL: https://koblt.customs.gov.ru/statistic/vneshnyaya-torgovlya-kaliningradskoj-oblasti/2021-god (accessed 11.02.2023).

[1] Calculated based on data from Industrial production in the Kaliningrad region, Kaliningrad : Kaliningradstat, 2022.

The two principal manufacturing sectors, the food industry and motor vehicle assembly, demonstrated varying degrees of resilience to restrictions in 2022 and the first half of 2023. Motor vehicle assembly, once a regional leader in terms of output (it accounted for 44 % of regional output and 12.7 % of national automotive production[1]), experienced the most significant decline in output compared to other industries. This reduction was largely a result of dependence on components and parts sourced entirely from unfriendly countries. Yet, agreements have been reached to date to replace previous suppliers with partners from China. The assembly of cars from Chinese brands has already begun,[2] but the establishment of mass production requires a considerable amount of time.

Meanwhile, food production, the region's second-largest sector in terms of output in 2021 (35 %) and the largest in terms of employment (29 %; Table 3), has grown. In Kaliningrad, the sector focuses on oilseed, meat, fish, dairy and bakery goods production. Represented by the Sodruzhestvo group of companies, oilseed processing is the region's major food specialisation, Sodruzhestvo produces vegetable oils and meal — feed additives used in animal nutrition, its principal raw material, soybeans, being sourced from South America (Table 2).

Table 2

Manufacturing industries from 2021 to 2023

Production sectors	Kaliningrad region			Russia	
	A	B	C	B	C
Manufacturing industries	1.2	80.5	88.6	98.7	**106.2**
Foodstuffs	**3.0**	**106.8**	97.9	**100.4**	**105.3**
Beverages	0.6	84.1	**125.7**	**103.1**	**102**
Tobacco products	**1.4**	91.1	81.4	92.9	**103.7**
Textiles	0.9	66.8	70.7	91.7	99.1
Clothing	0.3	86.8	76.2	**102.1**	**105.9**
Leather and leather goods	0.4	77.7	91.3	98.3	**111.7**
Wood processing	0.2	92.2	90.6	87.5	90.2
Paper and paper products	**0.7**	67.3	94.6	**100**	97.5
Printing	0.3	93.4	74.7	**107.8**	93.6
Chemicals	0.4	93.1	118.9	96.2	**102.1**
Pharmaceuticals	…	**106.4**	64.8	**108.6**	92.7
Rubber and plastic products	0.4	**108.9**	**101**	99.2	**106.1**
Other non-metallic mineral products	0.5	**106.6**	**112.8**	99.8	**100.1**
Metallurgy	0.1	84.9	93.5	99.2	**104.9**
Finished metal products, excluding machinery and equipment	0.4	96.5	99.8	107	**129.7**
Computers, electronic and optical products	**1.3**	63.2	**129**	**101.7**	**130.4**

[1] Kaliningrad region in digits, 2022. Kaliningrad, 2022. Vol. 2. P. 61.

[2] Avtotor has started the assembly of a second Chinese automobile brand, 04.04.2023, *Vedomostsi,* URL: https://www.vedomosti.ru/auto/articles/2023/04/04/969431-avtotor-vtoroi-kitaiskih (accessed 24.08.2023).

The end of Table 2

Production sectors	Kaliningrad region			Russia	
	A	B	C	B	C
Electrical equipment	0.1	79.2	64.4	96.3	**122.0**
Machinery and equipment not classified elsewhere	0.2	67.8	97.2	**101.9**	**104.7**
Motor vehicles, trailers and semi-trailers	**12.7**	31.6	12.6	55.3	89.3
Other vehicles and equipment	0.1	88	67.3	95.8	**122.1**
Furniture	**3.0**	56.1	49.3	97.4	**114.5**
Production of other finished goods	0.5	**110**	**109.2**	97.5	**100.1**
Maintenance and assembly of machines and equipment	0.5	87.8	76.5	95.2	99.7
Proportion in the total Russian population, %	0.7	—	—	—	—

Comment: A — stands for the produce shipped, works performed and services rendered by region companies (output), % of the national total, 2021; B — stands for 2022 output, % of the 2021 level; C — is the output from January to June 2023, % of that of the first six months of 2022.

The values highlighted in bold in column A exceed the region's share in the national population; in columns B and C, they are equal to or above 100 %. In the left column, industries associated with values equal to or exceeding 100 % in both periods (2022, January—June 2023) are highlighted in bold and those values of 100 % or above in one of the periods are indicated in italics.

Prepared based on data from production Index, *EMISS*, URL: https://fedstat.ru/indicator/57807 (accessed 06.08.2023) ; Kaliningrad Region in Digits, 2022,A statistical digest in two volumes. Kaliningrad : Kaliningradstat, 2022. Vol. 2 ; Kaliningrad Region in Digits, 2023: A statistical digest. Kaliningrad : Kaliningradstat, 2023 ; An Annual Russia Statistical Digest, 2022. Moscow : Rosstat, 2022 ; Average employment figures since 2017, *EMISS,* URL: https://fedstat.ru/indicator/58994 (accessed 30.08.2023).

A comparison of the performance of the region's two largest organisations leads one to agree with the opinion voiced by Prof Vardomsky that Avtotor, a major motor vehicle assembly company, is in a more precarious position than Sodruzhestvo, which relies on both international and domestic demand and is capable of creating global value chains [25, p. 41]. Most importantly, Sodruzhestvo procures raw materials from friendly nations, whilst Avtotor used to ship knockdown kits and parts from unfriendly states, which discontinued the deliveries.

Other industries experiencing a dramatic decline are furniture manufacture and electric appliance production. The production of computers, electronic, and optical devices, once Kaliningrad's third-largest manufacturing industry compri-

sing 3 % of total regional output in 2021, plummeted in 2022 but started to recover in the first half of 2023. The decline in the furniture industry, which depends on both imports and exports, continued in 2023 (Table 2).

The proportion of manufacturing companies in the total regional employment seems to provide a clearer picture of the industrial structure than the volume of produce shipped, works performed and services rendered. Although it seems reasonable to replace the latter metric with distribution by value added generation, the author was unable to access such data. The motor vehicle industry employs fewer than 5 % of all local residents engaged in the economy, which is significantly below employment in the food industry (28 %) and some other sectors (Table 3).

Table 3

The number of those employed by manufacturing companies in Kaliningrad compared to national levels

Industry	Kaliningrad region			Russia	
	A	B	C	B	C
Manufacturing	0.72	100.0	**104.3**	100.0	**100.3**
Foodstuffs	**1.17**	**29.3**	**101.8**	17.9	**102.1**
Beverages	0.5	1.1	**117.7**	1.6	**110.2**
Tobacco products	**5.94**	**0.7**	97.8	0.1	**103.6**
Textiles	**0.96**	**2.2**	**100.8**	1.6	93.3
Clothing	0.51	2.9	96.3	4.0	**100.7**
Leather and leather goods	0.47	0.5	**125.3**	0.8	**103.6**
Wood processing	0.52	4.4	**140.7**	6.1	**101.0**
Paper and paper products	**0.95**	**2.2**	**105.7**	1.7	94.6
Printing	0.51	1.2	**111.9**	1.7	92.3
Chemicals	0.28	1.7	**112.1**	4.3	**102.6**
Pharmaceuticals	0.41	0.6	**140.0**	1.1	97.5
Rubber and plastic product	0.53	2.7	95.8	3.6	**100.6**
Other non-metallic mineral products	0.68	5.1	92.4	5.4	**100.1**
Metallurgy	0.12	1.0	**108.6**	5.8	**100.1**
Finished metal products, excluding machinery and equipment	0.49	6.2	**108.8**	9.1	99.4
Computers, electronic and optical products	0.59	3.7	99.5	4.5	**102.4**
Electrical equipment	0.29	1.2	**119.9**	3.1	93.2
Machinery and equipment not classified elsewhere	0.45	3.4	**101.2**	5.3	95.0
Motor vehicles, trailers and semi-trailers	**0.83**	**4.8**	99.0	4.1	98.2
Other vehicles and equipment	0.84	7.5	**100.3**	6.4	98.5
Furniture	**1.48**	**7.7**	**106.0**	3.7	**103.6**

The end of Table 3

Industry	Kaliningrad region			Russia	
	A	B	C	B	C
Production of other finished goods	**1.73**	**3.0**	**104.6**	1.2	**112.4**
Maintenance and assembly of machines and equipment	**0.93**	**6.9**	96.9	5.3	**101.4**

Comment: A — stands for the proportion of those employed in the industry in the total national employment in the industry, 2021; B — stands for the contribution of the industry to the total employment in manufacturing, 2021; C — stands for the number of those employed in the industry in 2022 as the percentage of 2021 levels.

The values highlighted in bold in column A are above the proportion of the Kaliningrad region in the total national population (a 2021 average of 0.70 %); in columns B, the highlighted values are above the corresponding national average; in C, they are at 100 % and above.

Prepared based on data from average employment figures since 2017, *EMISS*, URL: https://fedstat.ru/indicator/58994 (accessed 04.08.2023).

The number of those employed in manufacturing as a whole increased in Kaliningrad in 2022, as was the case in most of the manufacturing industries operating in the region, the growth being more substantial than across the country (Table 3). Employment in other manufacturing industries declined slightly, from 1 % to 4 %, except for the manufacturing of other non-metallic mineral products, where the decrease was as large as 8 %. Even in motor vehicle assembly, the reduction in employment did not exceed 1 %, which was partly due to government support. The 2022 federal budget allocated 62.5 billion roubles to address issues in the labour market.[1] Growing employment means that affected businesses place hopes on restructuring and expect recovery when having forged new trade partnerships and adjusted the companies' specialisation. Moreover, there is still room for local organisations to benefit from the introduction of innovations.

Conclusion

The abrupt change in the international factors affecting the development of the Russian economy has called for the restructuring of Kaliningrad's manufacturing industries. Proposals for a substantial, i.e., dynamic and proportional, development of regional manufacturing industries in a complex and rapidly changing environment follow two paths.

[1] Report by Governor A.A. Alikhanov on the Regional Budget for 2022 and the Planned Period of 2023 and 2024, 11 November 2021, *Government of the Kaliningrad Region,* URL: https://gov39.ru/poslanie/doklad2022/ (accessed 25.08.2023).

The first group of proposals concerns changes to external ties ensuring the imports of raw materials and semi-finished products and the exports of finished goods. Such measures may include expanding connections with friendly nations and other Russian regions to compensate for the trade operations with unfriendly countries.

The second group focuses on changes to the industrial structure: downsizing some materials-intensive industries, especially those whose development would demand trading with unfriendly nations. A list of such industries and companies cannot be produced at present as each case requires an individual investigation. Yet it is worth noting that clothing and footwear production accounts for a modest proportion of production output and employment in regional manufacturing industries. This circumstance merits attention since organisations engaged in the industry flourished in the Soviet period. In the novel situation in the consumer goods market, clothing and footwear production may once again prove effective.

Except for a few general comments, the urgent problems of technological re-equipment of production facilities lay beyond the scope of this study. Nor did the research encompass the introduction of innovations into production facilities, migration and the rational use of workforce as factors in the development of manufacturing industries. Yet, the data quoted in this study on raw materials and semi-finished goods imports (Table 1), production dynamics in 2022 and the first six months of 2023 (Table 2), and changes in employment (Table 3) may help pinpoint objects for a more detailed study. Yet, preliminary conclusions can be drawn about the region's two major manufacturing industries — motor vehicle assembly and oil production.

1. Industrial restructuring in manufacturing is closely linked to overcoming path dependence. This suggests finding solutions to development problems encountered by the industries created in conditions very different from those required for economic development today. The motor vehicle assembly industry was affected more than others. Its prospects seem inextricable from reaching out to new suppliers of parts and knockdown kits, with Chinese companies being the only viable candidates, and, more importantly, from cooperation with organisations based in mainland Russia, chiefly St. Petersburg and the Leningrad region.

2. Sodruzhestvo, whose raw materials supplies can be described as steady, should optimise its consumer geography, redirecting much of its produce to mainland Russia and Belarus.

For the meat, dairy, fish and preserves branches of the food industry, it is advisable to work towards self-sufficiency in terms of raw materials and

focus on the local consumer market by creating agro-industrial clusters and developing animal husbandry, fisheries and fish farming, and crop farming, respectively.

The regional government has already embraced a cluster policy in industry. A promising measure is establishing shipbuilding and amber processing clusters designed to evolve into interregional constellations by incorporating businesses from other Baltic regions of Russia into a unified value chain. This cluster is intended to operate within the territorial system comprising St Petersburg and the Leningrad and Kaliningrad regions. There is a need to enhance collaboration amongst the three territories in the economy and social sphere by forming a multi-industry spatially distributed cluster [26]. Referred to in the recent past as a 'window to Europe', now they are expected to become one of the many 'windows to the global world'.

In conclusion, the migration influx into the region continues despite the challenges in economic development due to restrictions from unfriendly states. In 2022, the net migration rate reached 60 people per 10,000 residents.[1] The population of the region is increasing due to immigration, making it possible to address the staffing needs of new and restructured production facilities.

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MUNICIPALITIES OF THE RUSSIAN BALTIC SEA REGION

THE MODERN ECONOMY OF RUSSIA'S BALTIC REGIONS IN THE MUNICIPAL CONTEXT

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This article analyses the differentiation of municipalities at the municipal and urban district levels in the Kaliningrad and Leningrad regions based on their economic development and the response of their economies to the crises of 2020 and 2022. Emphasis is placed on the possibilities of conducting such assessments by merging Rosstat statistics with publicly available accounting and tax reporting data from the Federal Tax Service. The contribution also assesses the role of small businesses in municipal economies and their effect on employment, income levels of the population, and business activities. It is shown that over the ten years from 2012 to 2021, municipalities in the Kaliningrad region became more homogeneous in terms of the level of taxable income for individuals and individual entrepreneurs. In contrast, in the Leningrad Region, the level of differentiation remained unchanged, albeit with diverse income trends across municipalities.
The study highlights municipalities' specialization as a factor influencing changes in local companies' revenue, particularly in 2022. The research illustrates that small businesses have a significantly smaller impact on the official income of the population compared to their role in employment. Furthermore, there are no discernible patterns in how municipalities differentiate based on the contribution of small businesses, as this can vary depending on the local economic development level and the ratio of urban to rural population. In particular, the decline of small businesses is noticeable in regions with high incomes and abundant employment opportunities at large organizations. This trend is also observed in economically challenged peripheral areas characterized by low demand for the products and services provided by small businesses.

Keywords:
municipalities, Kaliningrad region, Leningrad region, Rosstat statistics, accounting, tax reporting, state policy

Problem Statement

Traditionally, in Russia, the differences in the level and dynamics of the economic development of territories are considered for regions (constituent entities of the Russian Federation) and macroregions (usually federal districts). The stud-

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ies of the differences among smaller territorial units are much less common, and they focus mainly on demographic issues or the development of certain types of territories: agglomerations, single-industry towns, and rural areas.

The reasons are understandable: it is not only the laboriousness of working with municipalities but also,[1] to an even greater extent, the significant gap in regional and municipal statistical data that researchers are well aware of. However, the gap is gradually narrowing, especially by supplementing Rosstat statistics with information from other sources (including other public authorities). Moreover, municipal issues are growing in importance, including within the federal spatial development policy [1].

This article has two interrelated objectives. The first one is to emphasize the differences in the economic development among the municipalities in the Russian Baltic region (in the economic development level and the response of their economies to recent crises) to create a more accurate picture of the situation in this macroregion. The second one is to demonstrate the possibilities for conducting such assessments using the broadest possible range of open statistical data. We use publicly available data to suggest 'repeatable' methodological approaches that any researcher can apply to study any subject of the Russian Federation.

The objects of the analysis are the Kaliningrad and Leningrad regions (Russian Baltic regions), or rather their municipal areas (MAs), municipal districts (MDs), and urban districts (UDs). We do not consider St. Petersburg due to the specific nature of municipalities in the city of federal significance and the unity of the urban economy explaining the particular model of local self-government in the cities of federal significance. The period under consideration is 2018—2022 due to the availability of statistical data and the research logic. Although it is fairly short, this period still allows for assessing the differences among municipalities in their economic response to the COVID-19 pandemic and the dramatic changes in the geopolitical and geoeconomic situation in 2022.

The analyzed municipalities exhibit internal heterogeneity, particularly those encompassing both urban and rural areas or varying settlement sizes. It is essential to acknowledge that economic statistics are specifically reported for municipalities, primarily focusing on municipal areas/districts and urban districts. However, in the Kaliningrad region, there has been no settlement-level local self-government in recent years, and statistical data on settlements have not been available since 2018. Consequently, municipal statistics represent the sole official data upon which micro-level research can rely. Despite this, it is crucial to consider differences in municipality sizes and settlement systems when interpreting the results obtained, following a practice observed in economically developed countries that utilize territorial typologies for spatial development monitoring [2].

[1] In Russia, there are more than 2.3 thousand urban districts and municipal areas/districts (2,329 as of January 1, 2023, hereinafter, according to Rosstat statistics, unless otherwise indicated), not to mention settlements at the lower level of local self-government.

Literature Review

The theoretical basis of this article is quite broad. It includes the entire layer of scientific knowledge on the laws of spatial development, primarily centre-periphery relations, gradients along the city-countryside line, agglomeration processes, coastalisation (especially significant for the regions under consideration), and a set of factors of socio-economic development of territories. That also includes investigations into regional shock resistance, i.e., territories' resistance to various shocks ([3] provides a literature review on this topic), given the crisis nature of recent years.

The studies closest to the research topic are those directly related to the development of the Kaliningrad and Leningrad regions (recent large-scale research includes [4; 5]) and especially to the analysis of the socio-economic development of their municipalities. There is a plethora of such works, especially on the Kaliningrad region. As for the Leningrad region, the situation is more complex since a more 'acute' topic of the development of the St. Petersburg agglomeration (which includes only part of the Leningrad region) overshadows the analysis of the spatial structure of the entire region's economy and the differences across its municipalities. This covers the assessment of the scale of commuting within the agglomeration [6], the differentiation of St. Petersburg's outskirts [7; 8], the agglomeration's internal structure [9; 10], and cooperation between the two regions [11]. The most large-scale research is a monograph on St. Petersburg agglomeration [12]. According to it, in addition to St. Petersburg and its satellite towns and suburbs, the agglomeration includes the Sosnovy Bor UD, the Vsevolozhsky, Gatchina and Tosno MAs (the latter three have some exceptions), the Lomonosovsky and Kirovsky MAs (both without two settlements), three settlements of the Vyborg MA and one settlement of the Priozersky MA. The authors estimate the population of the St. Petersburg agglomeration at 6.5 million people, out of which 5.6 million people live in St. Petersburg. Since the total population of the Leningrad Region is more than 1.9 million people, it is easy to calculate that the agglomeration includes less than half of the residents of the Leningrad Region and, at least partially, only seven of the 17 municipal areas.

The Kaliningrad and Leningrad regions have different approaches to the territorial foundations of local self-government (LSG). The Kaliningrad region, from the very beginning of the formation of the current LSG system,[1] tried to minimize the role of the settlement level, creating only three municipal areas and 19 urban districts. Although, in 2009, there were 15 and seven, respectively, by 2017, they had returned to the original scenario, and by 2019, the three remaining areas had transformed into urban districts. By 2022, under the new federal regulations (2019 amendments to the law on LSG), only ten municipalities retained the status

[1] In accordance with the Federal Law of 06.10.2003 № 131-FZ 'On the General Principles of the Organization of Local Self-Government in the Russian Federation'.

of urban districts, while 12 became municipal districts.[1] As a result, research on the Kaliningrad region is limited by official statistics being available only for the 'upper' level of municipalities, especially in recent years, and there is a plethora of such studies. In the Leningrad region, there is only one urban district and 17 municipal areas in the Leningrad region. Therefore, there are statistics on the settlements available, which allows researchers to conduct larger-scale studies (there are papers on settlements in the Leningrad region [13; 14]), although some difficulties still arise (see below).

The choice of the object of research on municipalities is significantly influenced by the availability of statistical data, which is determined by the relative simplicity of data collection and the importance of developing specific sectors of the economy. Currently, the most detailed data is found in demographic statistics, with the population being the only indicator available for cities and towns, irrespective of their municipal structure. Numerous studies concentrate on the settlement systems of the two regions and the geodemographic characteristics of their municipalities [7; 15—20]. With the heightened state interest in ensuring food security, there are relatively detailed statistics available for the agriculture sector. This is the only segment of the municipal economy for which Rosstat publishes data for all enterprises, not just the large and medium ones. These statistics encompass production indices and non-monetary indicators such as acreage, yield, and livestock. Notably, there is fundamental research on agriculture and rural areas in the Kaliningrad region [21], and studies on the spatial development of agriculture in the Leningrad region [5; 22].

Another sector of the economy that has gained increased attention is tourism. A study [23] delves into the development of tourism in municipalities.

The location of regions on the coast of the Baltic Sea brings about research assessing the role of their geographic position in the socio-economic development of their municipalities, including the possibilities for cross-border relations [13; 24—27] and the shipbuilding specialization characteristic of coastal territories [28].

In the Kaliningrad region, the differences between coastal and inland, central and peripheral municipalities are very pronounced: a study [29] presents the typology of municipalities distinguishing between nearer and outer suburbs and periphery; another paper [30] shows the differences between the territories in living standards. Therefore, a separate issue for the Kaliningrad region is the development of its southeastern municipalities [31; 32]. In the Leningrad region, the location of industries is more complex (less related to its coastal position), while the issue of single-industry towns is more pronounced [33].

[1] At the same time, there was no drastic revision of the municipalities' boundaries, only their statuses. Thus, we can study the same time series of data for the Kaliningrad and Leningrad regions. We use the current names of the municipalities of the Kaliningrad region. In the Leningrad region, there have been no revisions of the territorial foundations of local self-government at the municipal level.

Among the works on the Kaliningrad region, studies concerning digitalization have significance in the current context (due to the COVID-19 pandemic). They focus on the differences across municipalities, their causes and consequences [34; 35].

The novelty of this research lies in the comprehensive analysis of a broader range of economic indicators than ever before, with a strong emphasis on the changes in the economies of municipalities in the context of the two most recent crises. While there are papers assessing the impact of both the COVID-19 pandemic and the events of 2022 on individual territories at a regional level [36; 37], this article adds value by providing a more in-depth understanding of the overall situation in the regions of North-West Russia.

An important aspect highlighted in this research is the higher dependence of these regions on international trade relations [38], particularly with European states that are currently referred to as unfriendly to Russia. Consequently, the situation in the North-West in 2022 was notably challenging.

Materials and Methods

The analysis of economic development at the municipal level warrants special attention, primarily due to the absence of data on the gross municipal product (GMP) in official statistics. Unlike the subjects within the Russian Federation, which can be assessed by a gross regional product (GRP) as a metric, researchers face the absence of a universally applicable unit of measurement for gauging the scale of a municipal economy. Various attempts have been made to develop methodological approaches for calculating GMP, with papers [1; 39] presenting examples. Notably, the study [39] proposes a new methodology for calculating gross value added.

It is essential to acknowledge that all existing approaches to calculating GMP are based on certain assumptions, which are not always accurate. More precise estimates, as demonstrated in [39], rely on large-scale primary information collection from enterprises and organizations. However, these estimates are often neither verifiable nor repeatable. Consequently, I will consider the aggregate of existing statistical indicators, recognizing that the gross product indicator alone does not provide a comprehensive description of an economy.

This study analyses the structure of municipal economy, its recent transformations, and the evolving contributions of municipalities to regional indicators. This approach facilitates a comparative assessment of economic dynamics across various territories. Notably, one of the key indicators employed for evaluating economic development is per capita. However, the widespread use of such indicators is constrained by varying reasons. In the Kaliningrad region, one impediment lies in the revision of population data at the municipal level based on the 2021 census. For instance, population growth was underestimated in the Guryevsk MD, a suburb of Kaliningrad, where, according to the statistics,

as of January 1, 2022, the number of residents was 146.6 % compared to that of January 1, 2021. In the Baltiysk UD, the situation was the opposite and the same indicator was 77.4 %. These are the most striking but not the only examples. In the Leningrad region, the current population registration data do not noticeably differ from census results. However, the municipal development in per capita indicators (especially in personal income tax accounted for by the place of work not residence) strongly depends on the scale of commuting to St. Petersburg, and here the differences are profound [6]. There are no accurate data on the number of commuters. As of the mid-2010s, estimates ranged from 21—47 % of the labour force in the region [6], in 2020, they were 18.3 % of the working-age population.[1]

In Rosstat statistics, the basis for analyzing the situation in municipalities is the Indicators of Municipalities (IM) database. It contains statistics on industrial shipping, retail turnover, employment and payroll by OKVED (Russian National Classifier of Types of Economic Activity) categories. The major limitation here is the lack of data on small businesses. Since the role of small businesses varies across industries and municipalities, it is impossible to gain a complete and objective understanding of the scale and structure of the economy of a territory. Apparently, realizing this problem, Rosstat has supplemented the IM database with a new Accounting Statements section. It presents data on the number of economic entities and net revenues from sales of goods, products, works, and services (excluding value added tax, excise taxes and other similar obligatory payments). The data on the total number of legal entities (that is, both large and medium-sized companies and small ones) are available for 2019—2021, while the data on the revenues are available only for 2021. However, private information agencies have been collecting data on companies' revenues from accounting statements for several years. For instance, at the time of preparation of this article, the SPARK-Interfax system had publicly available data on industries and municipalities for 2018—2022. There are examples of using data on companies' revenues in economic and economic-geographical studies (for instance, [12]).

As mentioned above, the data on companies' revenues include statistics on legal entities regardless of their size (which gives them a considerable advantage over the IM data). However, they do not have any information on sole proprietors (SPs) and do not reflect the activities conducted at the expense of state funds. The inclusion of data on revenue in the analysis gives a fuller (compared to the IM database), although not complete (due to the lack of accounting for SPs) picture of the commercial sector of municipalities, but does not allow finding the ratio between the public and private sectors. Strictly speaking, this is an unsolvable

Back and forth: Leningrad region becomes national leader in commuting, 24.09.2020, Delovoi Peterburg, URL: https://www.dp.ru/a/2020/09/23/tuda_sjuda_obratno (accessed 18.07.2023).

problem for municipalities. Even for regions, it can be estimated only approximately (part of the OKVED sections, such as health care, education, etc., is traditionally considered predominantly public, the other part — private, although this division is very rough). In addition, Accounting Statements data do not reflect the employment information.

In the analysis of territorial discrepancies, inaccuracies in revenue data emerge due to the apparent practice of accounting for branches of legal entities based on the place of the company's registration. An illustrative example among the regions under analysis is the Sosnovy Bor Urban District (UD) in the Leningrad Region. The major enterprise of the municipality is the Leningrad NPP, but since it is a branch of Rosenergoatom Concern JSC,[1] its activities are not reflected in the municipality's revenues.

Research on municipal issues tends to underutilize data from the Federal Tax Service (FTS), despite some papers incorporating them [8; 12; 40]. Specifically, I refer to reports on the tax base and the composition of tax accruals generated by Russian regions, as these reports also furnish data at the municipal level. The following indicators can be used to assess the economy of a municipality:

— the number of individuals receiving income and the total personal income (with SPs' data presented separately) broken down by income types or codes (in the reports on personal income tax (PIT));

— the number of taxpayers under the Simplified Tax System (STS) and the income received by these taxpayers divided into companies and SPs. The STS reports, unlike the register of sole proprietors, indicate how many SPs filed a non-zero tax return, allowing for the assessment of the number of active SPs;

— the number and total income of payers of the unified agricultural tax (UAT) divided into companies and sole proprietors;

— the number of sole proprietors under the patent taxation system (PTS) and the amount of annual potential income of SPs.

Thus, in the end, albeit with some errors,[2] the following information can be collected:

— the exact number of employees in a municipality by summing up the number of individuals who received income under code 2000 (remuneration received by taxpayers in return for employment, and payments to servicemen and equivalent categories of individuals), as well as all sole proprietors (paying PIT or using special tax regimes, such as STS, UAT or PTS). By comparing the obtained results with Rosstat data on employment in large and medium-sized enterprises, it is possible to assess the role of small businesses in the economy of municipalities;

[1] According to: Investment portal of the Leningrad region, URL: https://lenoblinvest.ru (accessed 19.07.2023).

[2] These errors occur because the same individuals can work simultaneously in different municipalities, thus, they are taken into account more than once. This does not distort the ratio of jobs by municipality.

— the income of sole proprietors not included in the revenue of companies (these are actual revenues under STS and UAT and potential ones under PTS, and this is another calculation error);

— personal income (including that of SPs) subject to PIT, with separate data on employment income and income from dividends, securities transactions, etc. In this study, the total gross payroll in the Kaliningrad region is the sum of earnings under the codes specified in form № 5-NDFL; the total gross payroll in the Leningrad region is income accrued under the employment or civil law contracts from form № 7-NDFL (due to the availability of data from the Federal Tax Service, no unified approach could be applied here). This amount does not include the income remaining at the personal disposal of SPs using special tax regimes.

Unfortunately, tax reporting data do not allow us to assess the sectoral structure of the economy of municipalities since reports on tax revenues by types of economic activity are published only for the subjects of the Russian Federation (regions). The problem of working with tax reports is that there is no consolidated form, data for different municipalities and different taxes are presented in separate files. In the case of the Leningrad region, the complexity of the work lies in the fact that information is not always summarized for municipal areas (data on individual settlements have to be summed up). Thus, the below analysis is more comprehensive for the Kaliningrad region.

It should be noted that Rosstat has begun to publish data on taxable personal income for municipalities (still only for the 'upper' level) (and in a convenient consolidated form). They have been available since the very beginning of the 2010s. The indicator uses the same tax as the one for calculating the personal income tax and income of SPs but expanded, for example, it includes interest on deposits and money transfers. To date, this is perhaps the most accurate description of the municipalities' economic development (for instance, the indicators of the Sosnovy Bor UD reflect the payroll of the Leningrad NPP). However, this indicator is not operational and is published with approximately the same lag as the GRP for the RF regions (for example, 2021 data were published only at the very end of March 2023). This is quite understandable since the final PIT data appear only after all tax refunds have been paid, which happens after the end of the tax year.

Thus, to analyze the level and long-term trends in municipal development, one can use Rosstat data on taxable personal income (the major income indicator), operational data available on employment, revenue, personal income and income of sole proprietors. At the same time, data on revenue and salaries have their peculiarities. The payroll data seem to show positive shifts in the economy (primarily in the commercial sector) since its significant increase is hardly possible without an actual increase in the production of goods and services. But this indicator reflects crisis phenomena less adequately, as it is common knowledge

that in all recent crises, management has tried to keep both employees and their salaries (because of the difficulties of finding qualified personnel later and some support from the authorities to maintain employment). The change in the number of employees in the municipalities, especially compared to the changes in gross payroll, clearly shows the flow of personnel between them. The companies' revenues seem to reflect the economic situation in the municipalities better, however, it is determined not only by actual changes in the scale of production of goods and services but also by market fluctuations. Therefore, it is better to use a set of available indicators.

Results and discussion

For a basic assessment of the municipalities by the level of their economic development, we use Rosstat data on taxable personal income and income of sole proprietors (Tables 1 and 2, with the data on the population added to characterize the territories). The regions differ markedly, one of the reasons is that the economic centre of the Leningrad region, St. Petersburg, is a separate subject of the Russian Federation. In addition, St. Petersburg includes the administrative centre of the Lomonosov district.

Table 1

Population and taxable personal income and the income of sole proprietors in the Kaliningrad region

Municipality	Population			Taxable income					
	Thousand people	Share, %	Urban, %	Share of the regional, %				% of the average	
	As of 01.01.2023			2012	2019	2020	2021	2012	2021
Kaliningrad	489.7	47.44	100.0	78.67	68.49	69.68	68.97	171.0	142,4
Bagrationovsk MD	32.9	3.19	19.4	0.93	1.24	1.25	1.26	26.1	39.2
Baltiysk UD	29.1	2.82	97.9	2.58	2.05	1.91	1.99	67.9	54.3
Gvardeysk MD	29.3	2.83	47.7	1.09	1.37	1.24	1.34	34.7	47.3
Guryevsk MD	107.4	10.4	25.8	2.96	6.73	6.7	6.37	51.6	89.6
Gusev UD	37.5	3.64	76.8	1.39	1.59	1.54	1.60	35.3	44.4
Zelenogradsk MD	39.2	3.80	43.7	1.38	2.50	2.59	2.51	40.4	63.7
Krasnoznamensk MD	11.0	1.07	30.6	0.25	0.29	0.28	0.31	18.9	28.1
Ladushkin UD	3.7	0.36	97.7	0.18	0.10	0.11	0.11	44.2	29.0
Mamonovo UD	8.5	0.82	97.5	0.26	0.30	0.26	0.32	30.0	39.1
Neman MD	15.4	1.50	59.7	0.69	0.63	0.64	0.71	32.9	39.9
Nesterov MD	11.8	1.14	28.3	0.48	0.48	0.46	0.50	28.4	34.6
Ozersk MD	12.7	1.23	34.1	0.26	0.42	0.39	0.43	16.2	34.1

The end of Table 1

Municipality	Population			Taxable income					
	Thousand people	Share, %	Urban, %	Share of the regional, %				% of the average	
	As of 01.01.2023			2012	2019	2020	2021	2012	2021
Pionersky UD	12.9	1.25	100.0	0.49	0.81	0.78	0.81	40.0	65.4
Polessk MD	17.1	1.66	40.6	0.45	0.97	0.78	0.92	22.3	52.0
Pravdinsk MD	18.2	1.76	21.6	0.45	0.69	0.70	0.74	22.3	41.2
Svetly UD	27.6	2.67	76.3	1.94	3.05	2.92	2.85	65.4	102.4
Svetlogorsk UD	20.7	2.01	80.8	1.05	2.20	1.82	2.18	66.0	105.6
Slavsk MD	15.8	1.53	25.5	0.45	0.55	0.54	0.59	20.7	32.4
Sovetsk UD	38.6	3.74	100.0	1.89	2.21	2.12	2.19	43.0	58.1
Chernyakhovsk MD	45.9	4.44	77.8	1.92	2.91	2.90	2.89	36.30	64.20
Yantarny UD	7.2	0.70	90.8	0.22	0.44	0.40	0.40	32.9	62.5
Total	1032.3	100.0	76.6	100.0	100.0	100.0	100.0	100.0	100.0

Source: Rosstat municipal database and the author's calculations.

In the Kaliningrad region, its administrative centre, Kaliningrad, is predictably the economic leader in the share in the total and per capita incomes. At the same time, the long-term (since 2012) trend in the indicator under consideration is the reduction of intermunicipal differences. Over the past years, the Guryevsk MD has assumed growing importance in the region's economy. This area in the suburbs of Kaliningrad has been the leader in housing development since 2010, with over 50 % of the total regional volume in 2015—2016. From the beginning of 2012 to the end of 2022, the population of the Guryevsk MD almost doubled, while the total region's population grew by 9 %.[1] The Svetlogorsk and Svetly UDs show incomes higher than the regional average. The former is a popular Baltic resort, while the latter is a home for the region's largest (by revenue) company — the Sodruzhestvo agro-industrial complex. Over the past decade, only two municipalities, namely Baltiysk and Ladushkin (the latter being the smallest in terms of population), have lagged behind the regional average. In 2020, the year marked by the COVID-19 pandemic, there was a shift in the municipalities' contribution to the regional indicators. However, the scale of the changes roughly corresponds to the annual fluctuations, so they cannot be explained only by the pandemic crisis. At the same time, 2020 saw a fall in absolute taxable income only in the Svetlogorsk UD (due to understandable problems with the influx of holiday-makers) and the agricultural Polessk MD — by 2 and 4 %, respectively.

[1] The paper [41] gives special attention to the provision of housing in the municipalities of the Kaliningrad region.

Table 2

Population and taxable personal income and income of sole proprietors in the Leningrad region

Municipality	Population			Taxable income					
	Thousand people	Share, %	Urban, %	Share of the regional, %				% of the average	
	As of 01.01.2023			2012	2019	2020	2021	2012	2021
Boksitogorsk MA	51.0	2.52	77.0	2.44	2.40	2.33	2.08	77.7	80.1
Volosovo MA	50.2	2.48	23.2	1.80	1.47	1.45	2.98	60.0	106.1
Volkhov MA	79.4	3.92	72.5	4.60	3.82	3.56	3.50	81.2	74.3
Vsevolozhsk MA	554.3	27.39	71.0	18.77	24.71	27.54	27.42	116.2	102.7
Vyborg MA	195.4	9.65	64.6	14.47	11.90	12.08	10.30	118.0	97.0
Gatchina MA	261.9	12.94	59.2	11.03	11.19	11.21	12.30	77.1	97.5
Kingisepp MA	83.8	4.14	70.0	6.68	8.69	7.79	8.29	141.3	208.2
Kirishi MA	59.9	2.96	88.3	7.16	4.83	4.50	3.99	185.4	121.2
Kirovsk MA	108.5	5.36	89.4	5.78	5.35	4.94	5.48	93.5	95.4
Lodeynoye Pole MA	27.5	1.36	71.1	1.48	1.04	1.02	1.00	82.1	66.8
Lomonosov MA	85.3	4.22	23.1	5.10	5.75	5.83	6.05	121.8	138.7
Luga MA	75.3	3.72	53.6	3.44	2.65	2.53	2.45	74.4	65.7
Podporozhye MA	25.5	1.26	89.5	1.77	1.03	1.01	1.05	94.7	72.1
Priozersk MA	57.0	2.82	39.3	3.12	2.47	2.36	2.27	83.2	69.8
Slantsy MA	45.2	2.23	75.5	1.67	1.37	1.35	1.39	64.20	60.9
Tikhvin MA	66.3	3.27	81.9	4.41	4.91	4.27	3.57	104.1	96.3
Tosno MA	133.1	6.58	65.9	6.27	6.44	6.23	5.87	82.3	88.2
Sosnovy Bor UD	64.1	3.17	100.0	7.78	7.22	6.92	6.00	194.5	165.7
Total	2,023.8	100.0	67.2	100.0	100.0	100.0	100.0	100.0	100.0

Source: Rosstat municipal database and the author's calculations.

In the Leningrad region, the scale of municipal differences in per capita income did not change dramatically in 2012—2021 (Table 2), while the positions of individual municipalities changed. Only six of them improved their relative positions, while for 11, they worsened. In recent years, the Vsevolozhsk MA has been the regional leader in the scale of the economy. Its population more than doubled from the beginning of 2012 to the end of 2022. This St. Petersburg suburb has a metro station, and throughout the considered period, it ranked first in housing development with a maximum share in total regional volumes in 2017 (69 %). However, the per capita income is only slightly higher than the regional

average (due to commuting and the lack of highly profitable industries). The margin in the Sosnovy Bor UD's per capita income slightly narrowed. The Kingisepp MA, with its large industrial enterprises and Ust-Luga port, overtook this leader. In general, the positions of municipalities are determined by their industrial specialization[1] and can change every year due to changes in a particular industry. It is worth noting that the positions of the Vyborg MA, mostly oriented towards cross-border cooperation with Finland, had deteriorated since 2014 while the region's major agricultural district, the Volosovo MA, enjoyed a sharp increase in income. They grew only in 2021 by almost 2.4 times in absolute terms, most probably due to major industrial investment projects in the area. The impact of the coronavirus crisis on the municipalities of the Leningrad region is not observable. Absolute income grew almost everywhere. Only two municipalities saw a fall (in actual prices): the Vyborg MA in 2021 (by 2 %) and the Tikhvin MA for two consecutive years (by 1.5 % in 2020 and by almost 4 % in 2021).

The companies' revenues, as mentioned above, were more 'sensitive' to economic changes. These data are available for 2022 (Table 3, 4). When comparing the two crises, the 2020 COVID-19 pandemic and the 'sanctions' crisis of 2022, it becomes evident that the Kaliningrad region experienced a decline in revenue only in 2022, whereas the Leningrad region faced a decline solely in 2020. The common feature is the fact, that throughout the years, the economic changes in municipalities were multidirectional and often unstable (this can partially be explained by the uneven distribution of revenue by year with relatively stable production).

Table 3

Revenue of companies of all industries by municipalities of the Kaliningrad region

Municipality	Share of the total regional revenue, %				Year-on-year growth, %			
	2019	2020	2021	2022	2019	2020	2021	2022
Kaliningrad	68.02	72.01	74.38	66.24	111.4	127.2	147.6	68.1
Bagrationovsk MD	0.88	0.90	0.65	0.84	121.1	123.2	102.5	99.4
Baltiysk UD	0.42	0.35	0.26	0.23	90.8	100.5	106.2	65.5
Gvardeysk MD	0.87	0.91	0.53	0.78	115.6	125.5	82.5	113.0
Guryevsk MD	9.86	5.96	4.65	6.46	162.6	72.6	111.6	106.2
Gusev UD	0.53	0.44	0.40	0.57	66.1	99.4	132.3	107.1
Zelenogradsk MD	1.66	1.34	1.12	1.37	109.2	97.0	119.8	93.7
Krasnoznamensk MD	0.08	0.05	0.05	0.05	109.3	76.7	129.0	76.1

[1] Single-industry towns and municipal districts of the Leningrad region, *Investment portal of the Leningrad region,* URL: https://lenoblinvest.ru/o-regione/monogoroda_i_rajony/ (accessed 19.07.2023).

The end of Table 3

Municipality	Share of the total regional revenue, %				Year-on-year growth, %			
	2019	2020	2021	2022	2019	2020	2021	2022
Ladushkin UD	0.07	0.06	0.04	0.06	99.3	99.2	87.4	135.2
Mamonovo UD	0.16	0.09	0.04	0.05	133.0	68.9	66.5	82.0
Neman MD	0.16	0.16	0.09	0.17	148.7	120.4	85.7	142.2
Nesterov MD	0.17	0.16	0.09	0.10	110.5	114.3	82.0	82.7
Ozersk MD	0.11	0.14	0.10	0.11	117.0	149.0	97.1	86.0
Pionersky UD	0.28	0.23	0.18	0.18	109.9	98.6	112.4	78.0
Polessk MD	0.29	0.29	0.28	0.49	89.3	120.0	138.1	134.9
Pravdinsk MD	0.56	0.58	0.62	1.23	83.3	123.5	152.8	152.0
Svetly UD	11.07	12.15	13.17	16.73	90.0	131.9	154.8	97.2
Svetlogorsk UD	0.44	0.36	0.33	0.51	106.3	97.8	131.2	119.8
Slavsk MD	0.29	0.25	0.24	0.32	133.4	103.1	141.1	99.7
Sovetsk UD	1.84	1.57	1.31	1.69	113.7	102.8	119.0	99.1
Chernyakhovsk MD	2.00	1.81	1.30	1.59	109.3	108.6	102.9	93.3
Yantarny UD	0.25	0.19	0.17	0.24	108.6	91.6	126.4	105.7
Total	100.0	100.0	100.0	100.0	111.3	120.1	142.9	76.5

Source: author's calculations based on SPARK-Interfax data.[1]

In the Kaliningrad region, Kaliningrad is a leader in revenues in all sectors of the economy (more than 50 %) except for agriculture. There are several reasons for that. The first one is the traditional concentration of the service sector in the region's administrative centre (both social public institutions and commercial companies). The second is the registration of companies operating both in the city and beyond. For instance, Kaliningrad accounts for about 75—80 % of the revenue from mining in different years (Lukoil's offshore oil production), more than 90 % of the revenue from fishing and fish farming, and all revenue from financial and insurance activities. The third reason is the presence of large industrial enterprises, for instance, the Avtotor car assembly enterprise, one of the biggest companies in the region, Kaliningrad TPP (Kaliningrad's share in energy revenue is 85—90 %). Specialization in the automotive industry was one of the contributors to a significant (by more than 50 %) drop in manufacturing revenue in 2022.

The structure of revenue varies significantly among municipalities, reflecting their specific characteristics, and is subject to fluctuations. The Ozersk MD takes the lead in the share of agriculture, exceeding 75 % in 2020—2021. Additionally, in certain years, the Nesterov, Polessk, Pravdinsk, and Slavsk MDs reported figures of over 50 %. Mining has a significant role in the revenue structure only in the Yantarny UD, where amber is mined. Manufacturing industries occupy the largest share (more than two-thirds of revenue) in the Bagrationovsk MD

[1] Statistics, *SPARK-Interfax,* URL: https://spark-interfax.ru/statistics (accessed 16.07.2023).

and the Sovetsk UD, the smallest in the Yantarny (about 2 % in the last three years), slightly higher in the Krasnoznamensk and Ozersk MDs (6.3—6.4 % in 2022). The largest share of transportation and storage in revenue was predictably in the Baltiysk UD (20—25 %), substantial in the Ladushkin UD and the Chernyakhovsk MD (in 2022 — 15—16 %). In the Baltiysk UD, the worst revenue dynamics was in 2022, it was associated with the decline both in this sector (by almost 50 %) and in the manufacturing industry (by almost 70 %), as the largest production enterprise of the municipality is a shipyard). Its share in the Baltiysk UD's revenue had already decreased from 45 % in 2018 to 39 % in 2021, but in 2022 the fall was dramatic — to 18 %.

A characteristic specific to the Kaliningrad region was a notable upsurge in the revenue share of finance and insurance in 2020 (reaching 16.0 %) and 2021 (rising to 25.5 %), followed by a decline in 2022 (falling to 14.2 %). This shift can likely be attributed to the increased role of the Special Administrative Region (SAR) established in 2018 on Oktyabrsky Island within the city of Kaliningrad. In Kaliningrad, the share of these activities in revenue in 2020 and 2022 was about 22 %, which fully compensated for the 4 % decline in the manufacturing industry in the Covid year and mitigated the production decline in the 'sanctions' year. Another similar example, although of local significance, is the gradual increase in the revenue share of culture and sports (from 16.3 % in 2018 to 34.5 % in 2022) in the Zelenogradsk MD, home of one of the four Russian gambling zones.

In the Kaliningrad region, the emergence of the Special Administrative Region (SAR) and the challenges encountered in 2022, more pronounced for the exclave than for any other Russian region, resulted in a progressive decline in the revenue share of manufacturing industries. This share dwindled from 40 % in 2018 to 26.5 % in 2022. Notably, last year, there was a noteworthy surge in the trade sector, registering a substantial increase of 10 percentage points and reaching 33.4 %. It is noteworthy that the figure for 2021 represented the minimum within the five-year period under consideration. In the Kaliningrad region, the shares of municipalities in the total revenue roughly correspond to their shares in the income (Table 1, 3). In the Leningrad region, the discrepancies are much more marked (Table 2, 4). This is most likely a consequence of the diversity in the territories' specialization: with highly profitable enterprises (mainly raw materials industries), the share of a municipality in revenue significantly exceeds its share in personal income, while with the dominance of low-yielding ones, the situation is the opposite. For instance, the Kingisepp MA (that has the highest per capita income and at the same time occupies the 4th place in the region in the share of income and the 2nd place in revenue) the largest companies in revenue are Novatek-Ust-Luga, Phosphorite, Ust-Luga Oil, Eurochem North-West; in the Lomonosov MA, the largest is the Philip Morris Izhora tobacco company.

Table 4

Revenue of companies of all industries by municipalities of the Leningrad region

Municipality	Share of the total regional revenue, %				Year-on-year growth, %			
	2019	2020	2021	2022	2019	2020	2021	2022
Boksitogorsk MA	1.43	1.45	1.11	0.36	101.7	94.0	91.9	36.2
Volosovo MA	0.61	0.78	0.72	0.71	115.8	118.5	111.9	109.4
Volkhov MA	1.18	1.33	1.10	0.75	85.4	104.0	99.5	76.2
Vsevolozhsk MA	23.30	25.18	24.10	24.26	96.4	99.9	114.8	112.0
Vyborg MA	7.39	7.48	7.66	7.87	104.2	93.7	122.7	114.4
Gatchina MA	11.74	11.58	12.20	14.32	119.9	91.2	126.4	130.6
Kingisepp MA	15.37	13.06	18.22	19.91	103.1	78.6	167.2	121.6
Kirishi MA	4.22	4.29	2.60	2.68	76.5	94.0	72.8	114.6
Kirovsk MA	5.22	5.66	5.18	4.89	100.3	100.4	109.7	105.0
Lodeynoye Pole MA	0.24	0.28	0.30	0.27	99.6	109.2	128.2	100.9
Lomonosov MA	12.54	14.27	14.01	12.46	102.8	105.3	117.7	99.0
Luga MA	1.07	1.26	0.82	0.87	98.5	109.7	78.0	117.3
Podporozhye MA	0.55	0.53	0.62	0.27	110.9	88.6	140.3	48.1
Priozersk MA	1.36	1.23	1.25	1.37	98.0	83.6	121.4	122.3
Slantsy MA	0.68	0.84	0.98	1.17	89.0	114.6	140.0	131.9
Tikhvin MA	4.68	3.96	3.52	2.25	112.2	78.2	106.5	71.1
Tosno MA	6.40	4.72	4.15	4.36	91.4	68.1	105.4	117.1
Sosnovy Bor UD	2.02	2.09	1.45	1.23	114.5	96.1	82.9	94.4
Total	100.0	100.0	100.0	100.0	100.9	92.5	119.9	111.3

Source: author's calculations based on SPARK-Interfax data.[1]

The Leningrad region is more industrial than the Kaliningrad region. The share of processing industries in the revenue was about 48—50 % in 2018—2021, with a slight decrease (to 47 %) in 2022. The leaders in this indicator are the Tikhvin MR (its largest enterprise is the Tikhvin Carriage Works), where the share of processing industries, even against the background of a noticeable decline, remained above 80 % in 2022 (and before reached 85.5 %) and the Boksitogorsk MR (here the well-known single-industry town of Pikalyovo is located), where the figure was even higher (88—89 %) in 2020—2021 but decreased to 63 % in 2022. In the Kingisepp MA, the share of processing industries in the revenue increased to 77—78 % in the last two years, while in the Lomonosov MA, it remained at the level of about 65 %.

The share of mining in the Leningrad region, as well as in the Kaliningrad region, is small. It is significant only in the Priozersk MA (increasing from 32 % in 2020—2021 to 41 % in 2022), with resources for the construction materials

[1] Statistics, *SPARK-Interfax,* URL: https://spark-interfax.ru/statistics (accessed 16.07.2023).

industry, and the Podporozhye MA (6 and 17 % in the same years). The share of processing industries in the Priozersk MA is minimal — less than 10 % in 2022 and 14—17 % in the previous four years.

In both regions, the most peripheral municipalities, with a low level of economic development, the Krasnoznamensk MD and the Podporozhye MA, were among those suffering the most substantial drop in revenue in both 2020 (the pandemic year) and 2022 (sanctions year).

To assess the role of small businesses in the economy of municipalities (Table 5, 6), as mentioned above, we combine Rosstat data on large and medium-sized enterprises and tax reporting. At the same time, we need to allow for the fact that the share of small businesses in the payroll will be somewhat underestimated due to the impossibility of taking into account the personal income of sole proprietors using special tax regimes. However, as the data provided shows, the share of such sole proprietors in total employment is small — an average of 6—7 %, with a maximum of less than 10 % in individual municipalities.

Table 5

The role of small business in the economy of the municipalities of the Kaliningrad region

Municipality	Share of small business in employment*, %		Share of small business in the total payroll*, %		Share of SP using special tax regimes in employment, %		The ratio of income of SP using special tax regimes to the companies' income and revenues, %	
	2021	2022	2021	2022	2021	2022	2021	2022
Kaliningrad	58.6	57.3	31.0	28.7	6.4	7.0	5.1	8.0
Bagrationovsk MD	61.1	59.6	31.5	29.2	5.1	4.9	11.8	11.7
Baltiysk UD	30.7	32.9	3.8	5.6	4.6	5.1	20.0	26.5
Gvardeysk MD	66.7	69.5	42.4	42.3	4.8	5.3	12.5	13.3
Guryevsk MD	70.0	72.8	39.4	41.5	8.2	7.7	12.6	12.7
Gusev UD	49.8	52.6	26.2	26.3	5.5	4.8	12.6	15.5
Zelenogradsk MD	66.8	65.5	35.9	33.5	7.6	8.2	15.7	18.8
Krasnoznamensk MD	68.3	64.7	39.3	21.7	6.9	6.6	20.4	28.6
Ladushkin UD	69.2	72.4	42.6	46.0	8.3	7.1	15.9	13.7
Mamonovo UD	64.9	64.1	39.6	41.7	8.0	8.5	22.7	36.4
Neman MD	59.7	60.5	27.9	25.9	6.5	6.4	23.3	23.9
Nesterov MD	60.2	59.6	30.0	29.7	4.5	4.4	23.5	28.5
Ozersk MD	51.2	52.9	20.3	21.8	4.1	3.7	15.9	17.0
Pionersky UD	51.7	53.6	17.3	18.9	6.9	7.2	20.1	31.0
Polessk MD	70.4	69.7	52.5	50.3	6.0	6.0	12.1	10.9
Pravdinsk MD	46.9	42.5	2.4	<0	5.9	5.5	6.4	4.9
Svetly UD	59.8	61.7	29.6	27.4	3.5	3.5	0.8	0.9

The end of Table 5

Municipality	Share of small business in employment*, %		Share of small business in the total payroll*, %		Share of SP using special tax regimes in employment, %		The ratio of income of SP using special tax regimes to the companies' income and revenues, %	
	2021	2022	2021	2022	2021	2022	2021	2022
Svetlogorsk UD	62.2	65.1	28.8	29.4	7.5	8.0	24.6	23.4
Slavsk MD	61.0	63.0	37.9	39.2	5.7	5.7	12.5	14.7
Sovetsk UD	53.3	55.0	24.8	24.4	6.0	5.6	7.2	7.4
Chernyakhovsk MD	63.5	64.3	43.7	41.0	5.8	5.6	6.7	8.9
Yantarny UD	51.4	55.5	14.4	21.3	3.5	7.2	11.3	14.6
Total	59.2	59.1	31.1	29.5	6.3	6.7	5.5	7.8

Note: * For our purposes, small business was defined as the difference between the data of the Federal Tax Service for all taxpayers and the data of Rosstat for large and medium-sized enterprises.

Source: the author's calculations based on the Rosstat municipal data and the Federal Tax Service data

Table 6

Role of small business in the economy of municipalities of the Leningrad Region, 2022

Municipality	Share of small business in employment*, %	Share of small business in the total payroll*, %	Share of SP using special tax regimes in employment, %	The ratio of income of SP using special tax regimes to the companies' income and revenues, %
Boksitogorsk MA	48.3	19.0	4.3	31.8
Volosovo MA	58.8	29.6	6.1	20.6
Volkhov MA	47.1	18.9	3.9	21.2
Vsevolozhsk MA	65.8	33.6	6.8	12.2
Vyborg MA	52.6	21.7	5.8	7.9
Gatchina MA	47.7	7.0	6.7	7.3
Kingisepp MA	60.2	21.6	3.6	1.6
Kirishi MA	41.2	15.9	4.2	5.8
Kirovsk MA	52.7	15.9	9.8	8.2
Lodeynoye Pole MA	53.4	29.1	5.7	22.8
Lomonosov MA	61.6	28.0	4.8	4.1

Municipality	Share of small business in employment*, %	Share of small business in the total payroll*, %	Share of SP using special tax regimes in employment, %	The ratio of income of SP using special tax regimes to the companies' income and revenues, %
Luga MA	58.5	45.4	6.0	20.1
Podporozhye MA	64.1	42.3	5.0	23.9
Priozersk MA	57.6	30.2	5.1	14.4
Slantsy MA	66.6	21.9	4.9	12.6
Tikhvin MA	43.2	15.3	4.4	8.9
Tosno MA	54.7	26.8	4.7	8.3
Sosnovy Bor UD	52.0	5.9	2.4	15.2
Total	56.1	22.8	5.6	8.1

Note: * For our purposes, small business was defined as the difference between the data of the Federal Tax Service for all taxpayers and the data of Rosstat for large and medium-sized enterprises.

Source: the author's calculations based on the Rosstat municipal data and the Federal Tax Service data.

The findings lead to several conclusions. First of all, Rosstat's municipal statistics for large and medium-sized enterprises show numbers less than half of the employed, which differs from the existing estimates of the role of small businesses in the Russian economy (although also ambiguous). In this case, the errors are related to Rosstats accounting since the number of employees based on the Federal Tax Service's data is close to the figures published for the regions under consideration as subjects of the Russian Federation. At the same time, Rosstat data reflect employment in the public sector. For instance, in the Baltiysk UD (the base of the Russian Navy fleet), the 'Public administration and military security; social security' in 2019—2022 accounted for 51—52 % of employees of large and medium-sized enterprises. In Kaliningrad, the same section accounts for about 16 % of the employed, education and health care for 12—13 % each. The higher share of small business employees (per the author's calculations) in the Kaliningrad region than in the Leningrad region can be explained by a higher share of the service sector. We can assume that the quality of Rosstat statistics on municipalities is essentially the same.

According to statistics, there is a significant imbalance between the role of small businesses in employment and payroll (data on employment and payroll are comparable since they include the same enterprises). In the Leningrad region, this imbalance is more pronounced, and it is not related to underestimating the income of SPs using special tax regimes. There are two possible explanations. The first is the large informal sector in small business. The second is markedly

lower incomes, which may indicate that small business in Russia is more of a way to survive when no other jobs are available than a progressive sector of the economy. Most probably, that is a combination of both.

It is not easy to identify conclusive patterns in the differentiation of municipalities by the role of small businesses in their economy (most likely due to differences in the character of small businesses). In municipalities with a higher level of economic development, the importance of small businesses can be either higher or lower. It is higher when a small business is developing, as there is demand for its products or services. It is lower when there are not many workers available due to the high share of employment in large organizations (or due to their specific activities far from being entrepreneurial, as is most likely in the case of the Baltiysk or Sosnovy Bor UDs). The situation is similar in the municipalities with a lower level of economic development. There, the importance of small businesses can be higher if it has a compensatory role, creating jobs in the absence of large prosperous enterprises. It can be lower when the low personal income does not allow for developing businesses designed to serve the local population.

The ratio of the dynamics of revenue and income of sole proprietors confirms this. There is data on the income of sole proprietors using 'simplified tax' available for the Kaliningrad region. Here, the income of such SPs grew faster than revenue in 2019—2022, the growth was also observed in 2022, meaning that small business acted as a stabilizer. However, the situation was different across municipalities. For instance, in Kaliningrad, there was also an increase in the income of SPs in 2022, while the Baltiysk UD showed the most significant decline among the municipalities (by more than 15 %).

The connection between small business development and the ratio of cities and rural areas is also ambiguous. On the one hand, Kaliningrad, as the regional 'capital', does not stand out from other municipalities in the importance of small business. On the other hand, it is higher in the largest suburban municipalities of both regions (the Guryevsk MD and the Vsevolozhsk MA). In the Kaliningrad region, a higher share of SPs in employment is still characteristic of urban districts, while in the Leningrad region — of suburban municipalities: not only the Vsevolozhsk, but even more so the Kirovsk and the Gatchina MAs.

Conclusions

The study shows that currently assessing a municipality's economic development is quite possible as accounting and tax reporting data provide a considerable amount of information supplementing Rosstat data. However, federal agencies do not consolidate tax reporting data, and researchers have to undertake a very time-consuming task of aggregating them. There are some positive developments. Rosstat started publishing accounting data, and the Federal Tax Service began to calculate integral data for municipal districts (at least in the Leningrad Region) although, as of now, they are very limited and do not include all the major indi-

cators. Thus, there is a need for further advances in this direction, including in the interests of the public authorities, since the aggregation and synthesis of data from various sources will at least increase their reliability.

Practically speaking, greater opportunities for analyzing the economic development of municipalities can provide the information basis for both the federal (the need for this was mentioned in [1]) and regional spatial policy. As the paper [42] shows, current socio-economic development strategies adopted in the constituent entities of the Russian Federation consider spatial problems mainly from the point of view of ensuring the development of the regions rather than their municipalities.

The conducted analysis confirms that the state economic policy should consider the individual features of municipalities since their development is uneven and the impact of a crisis is often local. In addition, the analysis of the municipalities provides a better understanding of economic development patterns, particularly, in small businesses.

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