



*Research article*

## **Russian economy under sanctions (Case of the northwest of Russia)**

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**Abstract:** The article analyzes the state of the production sector of the economy in the Northwest of Russia in 2022. The problems and prospects of its functioning in new geopolitical conditions are assessed, and the processes of its adjustment to sanctions are studied. The work is based on data provided by the Federal State Statistics Service of Russian Federation, as well as questionnaire surveys conducted by the Vologda Research Center of the Russian Academy of Sciences and the Institute of Economic Forecasting of the Russian Academy of Sciences from April–June 2022. It is shown that the negative consequences of the Western sanctions strengthened in the first half of 2022 turned out to be more severe for the production sector of the region under analysis than for the whole country; many respondents found it important to revise logistics routes, search for new suppliers and consumers of products, and focus on the domestic market.

**Keywords:** survey; production sector; northwest of Russia; sanctions; adjustment

**JEL Codes:** O11, D24, E23

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### **1. Introduction**

In 2022, barely recovered from the crisis caused by the COVID-19 pandemic, the Russian economy faced new challenges. The anti-Russian sanctions intensified after the launch of the special military operation in Ukraine and a general slowdown in the growth of the world economy (primarily

China, the United States and the Eurozone) (IMF, 2022) significantly complicated conditions for the functioning of the domestic economic complex. Certain countries' introduction of a foreign trade embargo (a ban on the supply of many key types of equipment, technologies, and services to Russia, as well as blocking access to a wide range of Russian goods to the Euro-Atlantic region markets), departure of several foreign companies from Russia, personal sanctions against the management of companies, etc. forced domestic producers to urgently launch adaptation processes. This resulted in the transformation of logistics routes, the structure of products, and price proportions, etc.

This study is aimed at analyzing the state of the production sector in the Northwest of Russia in new internal and external conditions, identifying its problems and prospects for functioning, as well as studying adjustment processes. The information base for the analysis is comprised of data of official statistics and surveys of business leaders. We consider the production sector as a set of economic activities related to agriculture, forestry, hunting, fishing and fish farming, mining, processing industries, provision of electric energy, gas and steam, air conditioning, water supply, sanitation, waste collection and disposal, as well as the elimination of pollution.

## 2. A brief literary review

Recently, the impact of sanctions on various aspects of the functionality of the Russian economy have been widely discussed in scientific literature. Much attention is paid to the impact of sanctions on the production sector: metallurgy (Bazhenov, 2022; Ermolovskaya and Lipin, 2022), pharmaceutical and medical (Bako and Aidrous, 2022), food (Safronova et al., 2022), aerospace (Iordanyan, 2022), road transport (Mirzakhonov and Zhuravleva, 2022), electronic (Larin et al., 2022), and industries and agriculture (Savvateev et al., 2022). The following measures are proposed by researchers to solve economic problems caused by the complicated conditions of functioning of production enterprises: support for technological upgrade (Khmeleva, 2022), import substitution (Abdikeev, 2022), and betterment of interregional cooperation (Gataullin and Chuvashaeva, 2022), etc.

With the situation being highly turbulent, surveys of entrepreneurs are an important source of information regarding the state of the production sector and a feedback mechanism to make managerial decisions. When surveyed, the heads of enterprises share their opinions on key indicators of their functionality (Aukutsionek and Zhukov, 2022), problems developing foreign economic activity (Pavlovskaya, 2022), and restrictions in personnel recruitment (Voloshina and Perova, 2022). Specialists of the Higher School of Economics work to monitor the state of the business climate, investments, and presence of restrictions for the real sector (Lipkind and Lola, 2022; Lola, 2022; Kitrar et al., 2022). Monthly materials on the state of the Russian industry by S.V. Tsukhlo make it possible to determine short-term trends and to identify specific factors influencing the economic situation (Tsukhlo, 2022).

The Vologda Research Center of the Russian Academy of Sciences (VoIRC RAS) and the Institute of Economic Forecasting of the Russian Academy of Sciences (IEF RAS) have a long tradition to survey business leaders. Since 1993, the VoIRC RAS has been conducting annual surveys of Vologda Oblast manufacturers to study current problems and development prospects of the regional industry (Shirokova and Lukin, 2021). In 2022, the monitoring coverage has been expanded by manufacturing enterprises of the entire Northwest of Russia. At the same time, the questionnaire

included questions concerning enterprises' adjustments to function under sanctions and to transform their supply chains. Since 1999, the IEF RAS has been conducting all-Russian surveys of enterprises, which relate to both long-term and conjunctural aspects of their activities. Its latest surveys give us the opportunity to assess the impact of the pandemic on the functionality of the production sector (Kuvalin et al., 2021) and to characterize the state of enterprises in the conditions of pressure from tightening sanctions (Kuvalin et al., 2022).

### 3. Research method

The methodological basis of this study consists of the questionnaire surveys conducted from April–June 2022 by specialists of the VolRC RAS and the IEF RAS. The VolRC RAS surveyed 100 production sector enterprises of the Northwest of Russia (with a sample size of 392 enterprises with a 95% confidence probability and a 5% sampling error), representing activities such as mining (agriculture and forestry, hunting, fishing and fish farming), manufacturing industries (ferrous and non-ferrous metallurgy, woodworking, chemical production, mechanical engineering, food and light industries, and construction industry, etc.), and electric power industry (small and medium-sized enterprises comprised 30%, large—70%). The survey of the Institute of Economic Forecasting of the Russian Academy of Sciences comprised of 189 enterprises (electric power industry, ferrous and non-ferrous metallurgy, chemistry, machine-building, building materials industry, forestry, woodworking and pulp and paper industry, light, food and medical industry, agriculture, construction, transport, communications, repair of motor vehicles, healthcare, hotels, and catering) from 47 regions of Russia (small and medium-sized enterprises comprised 30%, large—70%). A detailed description of the results of the IEF RAS survey is given in (Kuvalin et al., 2022a).

The questionnaires of both surveys contained identical questions characterizing various aspects of enterprises' activities, transformation of their production and sales chains, investment activities, and labor capacity and relations with authorities in the new geopolitical conditions. The article compares results of the conducted surveys and the official statistics data provided by the Federal State Statistics Service of Russia (Rosstat).

### 4. Research results

#### 4.1. *General trends in the development of the production sector in the northwest of Russia*

The production sector is the core of the economy of the Northwest of Russia, concentrating almost a quarter of all employees of the macro-region and forming more than 31% of the gross regional product of the Northwestern Federal District (hereinafter NWFD). Its structure is dominated by manufacturing industries (they employ almost 67% of the workers), and the share of enterprises producing and distributing electricity, gas, and water is quite large (17.7%), as well as agriculture and forestry, hunting, and fishing (9.6%; Table 1). The share of mining is high in a number of regions of the Northwest (Nenets Autonomous Okrug, republics of Komi and Karelia, and Murmansk Oblast).

**Table 1.** NWFD production sector structure in 2021, % of the average number of employees in the full range of organizations.

Region	Agriculture, Forestry, Fishing	Mining	Manufacturing	Utilities	Total
Saint Petersburg (33.4%)	0.9	1.2	85.0	12.9	100
Leningrad Oblast (15.3%)	17.2	2.6	62.5	17.7	100
Vologda Oblast (9.4%)	17.3	0.4	66.2	16.2	100
Arkhangelsk Oblast (8.9%)	11.8	2.9	67.4	17.9	100
Komi Republic (6.1%)	9.9	28.9	32.8	28.3	100
Kaliningrad Oblast (6.0%)	11.8	3.6	66.6	18.0	100
Murmansk Oblast (5.9%)	10.6	23.1	36.3	30.1	100
Novgorod Oblast (5.2%)	10.8	1.7	68.4	19.1	100
Pskov Oblast (4.9%)	16.0	1.1	64.5	18.3	100
Republic of Karelia (4.0%)	15.3	14.5	46.8	23.3	100
Nenets Autonomous Okrug (0.9%)	10.0	68.2	4.8	17.0	100
For reference:					
Northwest of Russia	9.6	5.8	66.9	17.7	100

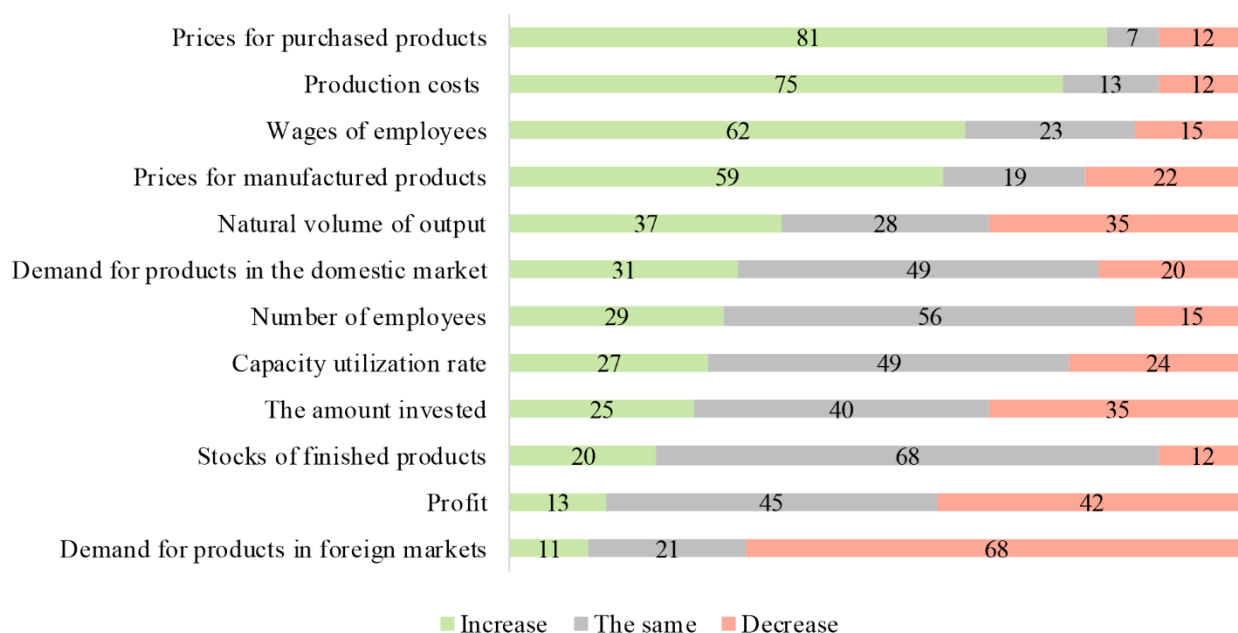
Note: Parentheses after the name of the region presents its share in the production sector of the NWFD (in % of the total).

The sector produces a wide range of agricultural and industrial products: food, gas, oil and petroleum products, electricity, wood products and paper, chemicals and chemical products, cast iron, steel and ferroalloys, finished metal products, machinery, and equipment, etc. The most dynamically developed branches of the production sector in the Northwest are agriculture (mainly livestock) and manufacturing; in 2008–2021, the physical volumes of output in these sectors grew by 42 and 38%, respectively. The forestry and mining enterprises did not increase production volumes during the specified period. According to the Rosstat's operational statistics, the economic sanctions against Russia that intensified after February 2022 have a negative impact on the production sector of the country's economy, especially its northwest regions (Figure 1). The manufacturing industries and forestry are most affected.

Most managers of NWFD enterprises (90%) note a significant deterioration of the economic situation in modern conditions, leading to low self-assessment of enterprise performance in 2022. The share of high ratings went down from 65 to 33%, and low-up from 5 to 17%. Crucial obstacles to enterprises' effectiveness are an increase in prices for purchased products (81% of the respondents), resulting in a higher prime cost of manufactured goods and services (75%), and a reduction in demand in foreign markets (68%; Figure 2). More than a third of the respondents (35%) mention a decrease in the volume of capital investments. A rise in employees' salaries in 62% of the enterprises reflects a positive change.



**Figure 1.** Dynamics of the production sector development in the RF and the NWFD in 2022, % to the corresponding period of 2021.



**Figure 2.** Distribution of answers to the question: “How did performance indicators of your enterprise change in 2022?”, % of the number of respondents (the sum of the answers equals to 100%).

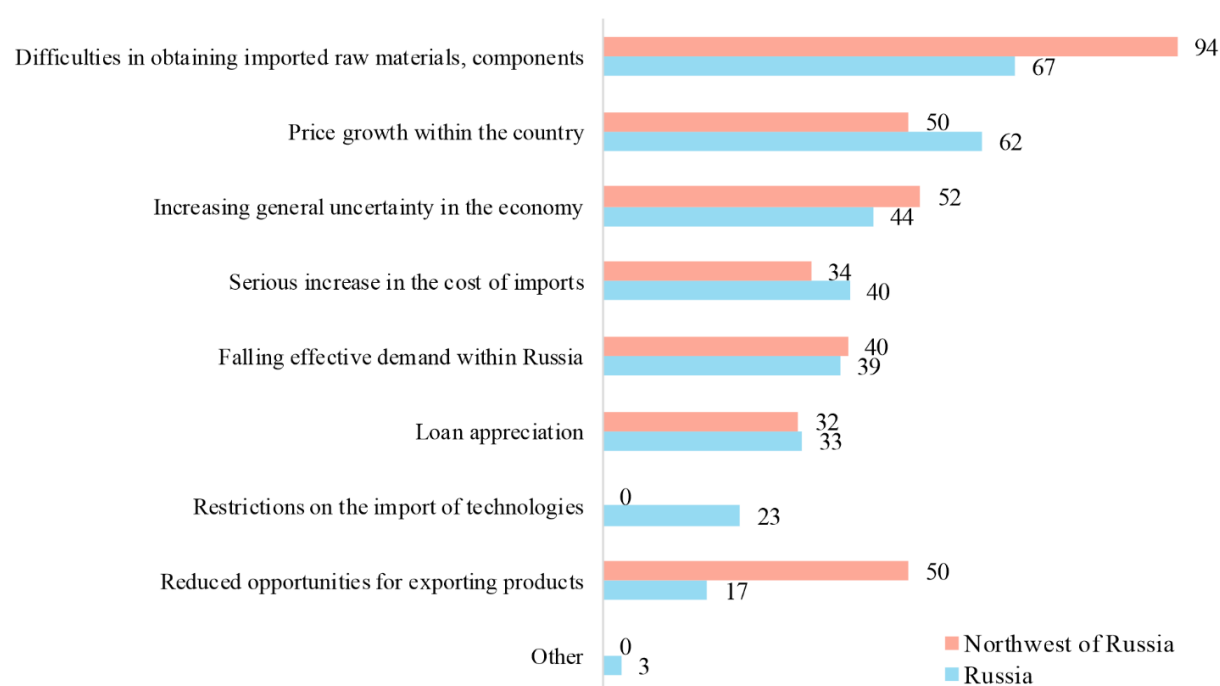
The surveys have confirmed official statistics, showing that the NWFDP production sector experiences greater negative consequences from the pressure of increased sanctions when compared to other regions of the country; approximately 71% of the managers of northwest enterprises state that their organizations suffer from sanctions (59%—the national average), and that in the future, another 24% may suffer (22%—the national average). At the same time, in the Northwest, the proportion of those expecting only adverse effects from the imposed economic sanctions are more than 1.5 times higher than the national average (62 vs. 38%).

Moreover, they identify the following key factors constraining the production sector development: high prices for raw materials, fuel, energy and materials (80% of the respondents), uncertainty of the economic situation (45.7%), insufficient demand in the external (40%) and domestic (34.3%) markets, and shortage and interruptions in the supply of raw materials, fuel, energy and materials (37.1%; Table 2).

It is noteworthy that in 2022, the urgency of issues related to supply disruptions increased almost 2.5 times compared to 2021; the share of the dissatisfied with the insufficient solvent demand factor ratcheted up 2.8 times. Additionally, difficulties in obtaining imported raw materials and components, increased uncertainty in the economy, rising prices within the country and reduced opportunities for exporting products are among the crucial problems associated with the imposition of sanctions (Figure 3).

**Table 2.** Factors constraining the NWFD production sector development, % of the number of respondents.

Factor	2021	2022
High prices for raw materials, fuel, energy and materials	57.6	80.0
Uncertainty of the economic situation	39.4	45.7
Insufficient demand in the foreign market	21.2	40.0
Shortage and interruptions in the supply of raw materials, fuel, energy and materials	15.2	37.1
Insufficient demand in the domestic market	12.1	34.3
High percentage of commercial loans	21.2	28.6
High taxes	30.3	22.9
Lack of funds	21.2	20.0
Lack of skilled workers	24.2	17.1
Deterioration and lack of equipment	21.2	17.1
Competitive imports	18.2	14.3
Late payment for the products sold	9.1	14.3
Absence or imperfection of the regulatory framework	6.1	8.6
Other	12.1	8.6



**Figure 3.** Distribution of answers to the question “What problems related to economic sanctions against Russia are most pressing for your enterprise?”, % of the respondents.

At the same time, the strongest discrepancies between the responses given by the management of enterprises located in the northwest and other regions reflected the specifics of the work of NWFD production enterprises and largely clarified the reasons for the increased impact of sanctions; these are

associated with the deterioration of the conditions for conducting foreign trade activities, in particular, difficulties with the import of raw materials and components (94 vs. 67%) and the export of manufactured products (50 vs. 17%).

#### 4.2. Transformation of value chains

The economic and geographical position of the Northwest predetermined one of the main functions of its regions: ensuring Russia's foreign economic relations with the European Union and a number of other regions of the world. A significant part of the business (chemical industry, metallurgy, timber industry) is focused on maintaining foreign economic relations and developing transport infrastructure (pipeline transport facilities, port facilities, terminals and customs infrastructure). Up to 2022, more than 19% of the goods and services produced in the northwest of Russia were sold in foreign markets (Table 3). Moreover, further processed products manufactured in other Russian regions from the northwest's raw materials and semi-finished products were exported (in general, more than 27% of the products manufactured in the Northwestern Federal District accounted for the national market).

**Table 3.** Sales markets for products manufactured in the Northwest of Russia, % of the total.

Region	Local market	Macroregional market	National market	Foreign market
NWFD	46.5	6.6	27.5	19.4
Pskov Oblast	47.3	26.4	25.2	1.1
Komi Republic	60.3	9.8	24.2	5.6
Nenets Autonomous Okrug	53.8	0.9	38.2	7.0
Kaliningrad Oblast	32.9	2.9	54.4	9.7
Arkhangelsk Oblast	38.8	11.5	32.5	17.1
Saint-Petersburg	52.4	1.8	27.7	18.2
Republic of Karelia	58.0	8.9	9.2	23.9
Murmansk Oblast	41.4	28.6	3.5	26.6
Leningrad Oblast	29.7	18.7	23.8	27.8
Novgorod Oblast	34.1	11.8	21.9	32.3
Vologda Oblast	22.5	7.5	34.9	35.1

Northwest enterprises are deeply integrated into the supply chains that geographically go beyond the macro-region. The results of the conducted survey show that 100% of the respondents have trade and economic cooperation with enterprises from other regions of Russia (53%—EAEU member states and 51%—non-CIS countries). If the expansion of trade and economic cooperation with other organizations of Russia and the NWFD are hindered mainly by high competition in the market and its small capacity, then the development of relations with foreign enterprises is largely hindered by the sanctions policy and the rhetoric (75.8%; Table 4).

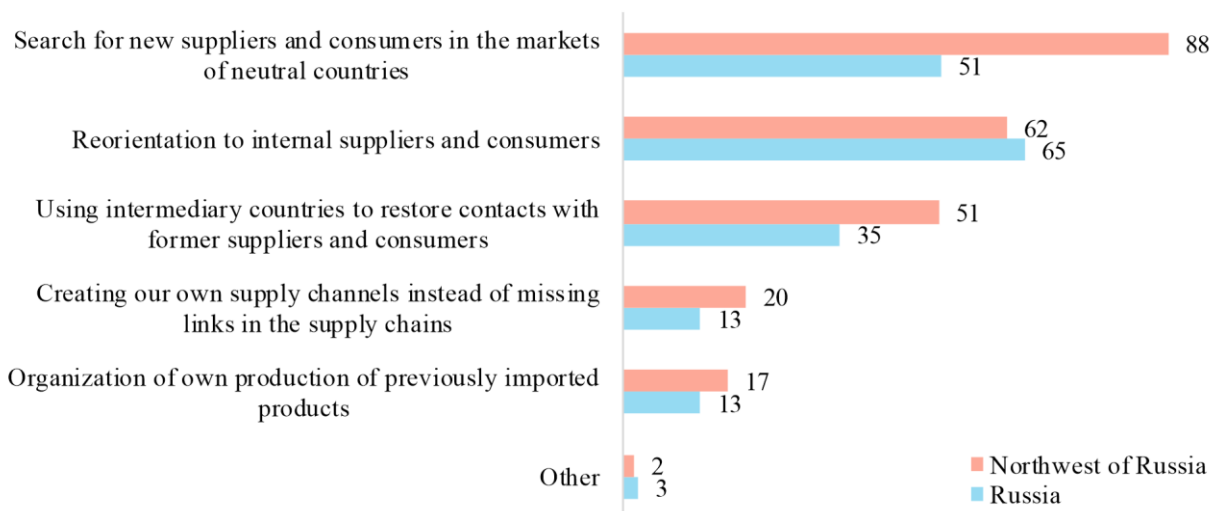
Transformation of supply chains due to the sanctions was expected by 82% of the surveyed managers of northwest enterprises (the national average—49%). As for challenges to be addressed, most managers of northwest enterprises continuously look for new suppliers and consumers in the markets of neutral countries (88%; it is noteworthy that the national average is 51%), 62% of the



respondents seek internal contractors, and 51% intend to use intermediary countries to restore contacts with former suppliers and consumers (Figure 4).

**Table 4.** Distribution of answers to the question “What, in your opinion, hinders the development of trade and economic relations of your enterprise with foreign and Russian organizations?”, % of the number of respondents.

Deterrent factor	World	Russia	NWFD
High competition in the market	21.2	46.7	33.3
Small market capacity	3.0	30.0	40.7
Lack of information about ongoing tenders	9.1	23.3	14.8
Weak assistance on the part of state authorities	9.1	20.0	22.2
Remoteness of potential counterparties	18.2	10.0	11.1
Economic inexpediency	18.2	6.7	14.8
Sanctions policy and rhetoric	75.8	3.3	0
Other	6.1	20.0	14.8
No obstacles	0	16.7	11.1



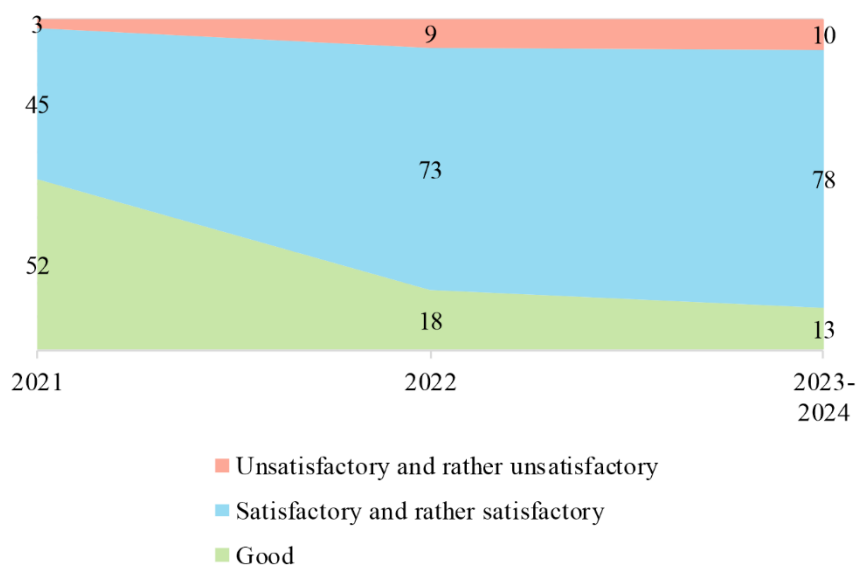
**Figure 4.** Distribution of answers to the question “What measures does your enterprise intend to take for transforming supply chains disrupted due to the sanctions?”, % of the number of respondents.

The problem of restructuring logistics routes is rather acute for enterprises of the Northwestern Federal District. For example, the revision of the production program due to difficulties with the sale of products in the Severstal Management JSC led to a 7% reduction in steel production in the first half of 2022 compared to the same period in 2021. The overload of rail transport contributed to an increase in the share of automobile deliveries of finished products. Promising areas for product market reorientation include China, India, Asia and Africa. Machine-building industries have gained new market niches with the departure of foreign companies from the domestic market and use extensive

opportunities of the northwest, such as developed transport and logistics infrastructure, qualified personnel, favorable economic and geographical location, growing demand for products, and convenience of sales, etc. At the same time, 61% of the respondents are convinced that the current situation will have a positive impact on the development of industrial cooperation within Russia and in the EAEU. Approximately 20% of the respondents intend to manufacture import-substituting products in modern conditions and 15% intend to increase the processing depth.

#### 4.3. Financial standing and investment activity of enterprises

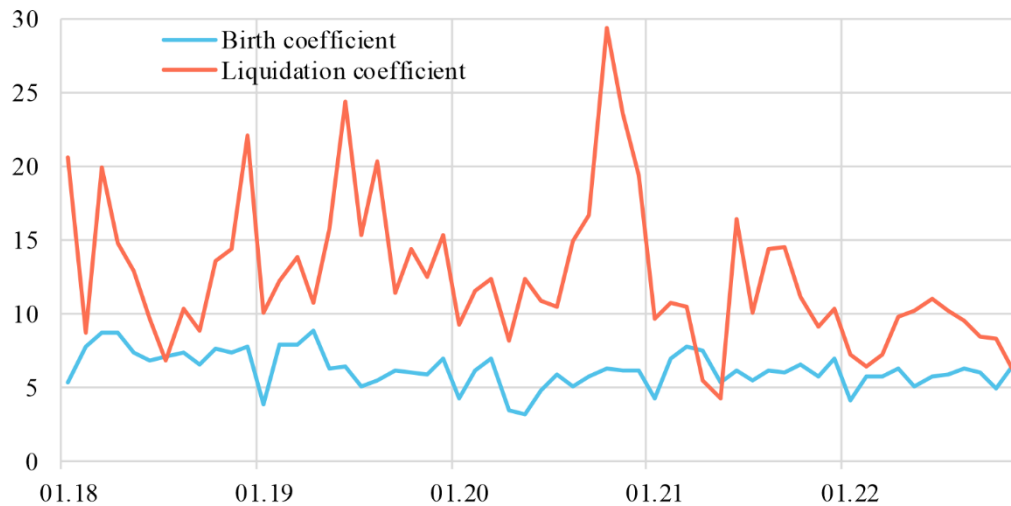
Deterioration of the financial performance of enterprises is one of the reasons hindering the implementation of new investment projects. According to the Rosstat, in 2022, the net financial result (profit minus loss) of the activities of organizations in the Northwest of Russia decreased by 32% compared to 2021 (while exceeding 2019 and 2020 levels by more than 2 times). In 2022, the share of the respondents with a sound financial position decreased to 18% (from 52% in 2021; Figure 5). At the same time, only 9% of the respondents assessed their enterprises' financial situation as unsatisfactory and 2% of the managers anticipate bankruptcy. Additionally, the statistical data do not record spikes in liquidation coefficients (Figure 6). Staff reduction provoked by the crisis was recorded by only 3% of the respondents, with 2% one-time cases of salary delays.



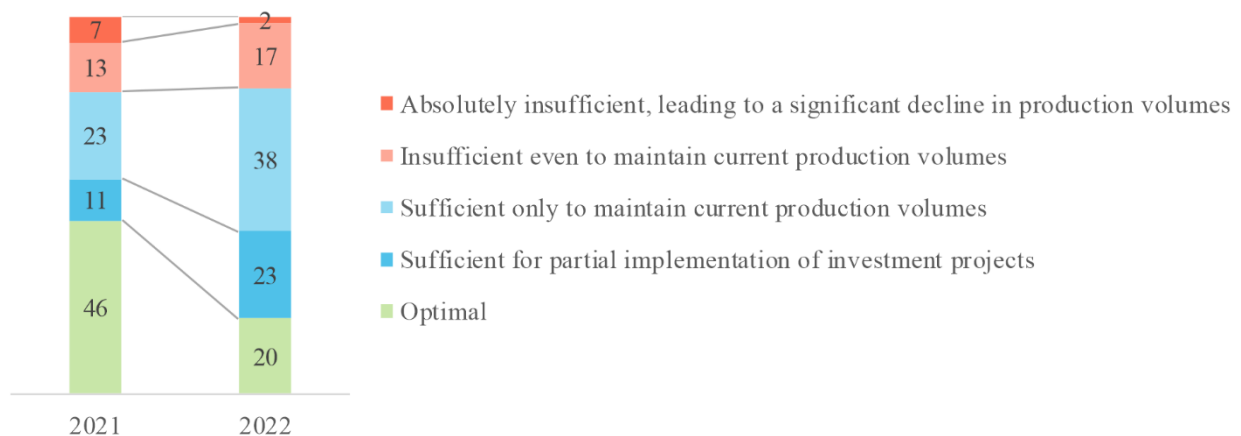
**Figure 5.** Distribution of answers to the question “How do you assess the financial standing of your enterprise?”, % of the number of respondents (the sum of the answers equals to 100%).

The managers' assessments allow us to estimate the change in the level of funds allocated to develop enterprises. Most respondents expect it to decrease in 2022: the share of estimates about the optimal level of financing went down from 46 to 20%, the share of those who believe that the allocated funds will be sufficient for partial implementation of investment projects went up from 11

to 23%, only to maintain current production volumes from 23 to 38% (Figure 7). According to the Rosstat, in 2022, the volume of investments in the economy of the Northwest of Russia declined by 5% in constant prices.



**Figure 6.** Birth and liquidation coefficients of enterprises in the Northwest of Russia in January 2018–November 2022 (per 1,000 organizations).



**Figure 7.** Distribution of answers to the question “How do you assess the level of funds allocated for development of your enterprise?”, % of the number of respondents (the sum of the answers equals to 100%).

First of all, more than half of the respondents note that a high cost of equipment, construction and installation works (63%) and a lack of financial resources (57%) constrain the investment activity at the enterprise. Furthermore, this year will witness restricted access to imported equipment due to sanctions (65%) and unforeseen changes in the ruble exchange rate and bank interest rates (53%).

According to the surveyed, about 65% of production facilities require partial modernization, and about a third do not need any. Approximately 29% of the enterprises participating in the survey did not update production assets in 2022, probably due to reluctance. Recently modernized enterprises used their own funds (83%), less often credit resources (26%) for this purpose. In 2022, 86% of the enterprises were to use their own funds, and 31% used loans. It should be noted at the same time that 66% of the surveyed managers indicate unfavorable conditions for long-term lending.

## 5. Conclusions

The study results give us the opportunity to assess the problems of adjustment to economic sanctions imposed against Russia and the prospects for the production sector functioning in the Northwest of the country. The following key conclusions can be drawn:

1. The Western sanctions had a significant impact on the performance of companies located in the Northwest of Russia. More than 71% of the surveyed northwest enterprises suffered from the imposed sanctions already in the first half of 2022 (the national average—59%); about a quarter (24%) of the managers believed that their enterprises might suffer in the future (the national average—22%). The estimates of private indicators of enterprise development in 2022 were significantly lower than in the previous year.
2. The most pressing problems of enterprises are associated with obtaining imported raw materials, components and the need to replace them. More than half of the respondents are looking for sales markets and suppliers within the country. Besides usual development restrictions, such as high taxes and prices for fuel, energy, raw materials and other materials, the year of 2022 witnessed great uncertainty of the economic situation and aggravation of the low effective demand problem.
3. Most northwest enterprises consider the search for new suppliers of components (63%) and new sales markets (56%) within the country as the most effective measures to adapt to new economic conditions.
4. The sanctions policy prevents Russian enterprises' participation in international value chains. According to manufacturers, the development of intra-country value chains requires formation of specialized structures in the system of authorities responsible for the promotion and coordination of interregional ties; establishment of interregional investment-oriented development institutions (investment, insurance, venture funds, joint engineering centers, development banks); elaboration of coordinated macroregional development strategies; and creation of a single information portal in the field of interregional cooperation.
5. The decline in investment activity forecasted by the respondents will be dictated by the persistence of high prices for equipment and construction and installation work, lack of financing, limited access to imported equipment and unforeseen changes in the ruble exchange rate and bank interest rates.
6. The Russian state authorities were able to provide timely and adequate responses to the challenges that had arisen. The full sale of exporters' foreign exchange earnings on the domestic market was introduced, foreign trade was converted into rubles and its liberalization with friendly countries was carried out (mutual trade with the EAEU countries increased by 12%, China—by

29%, India—by 2 times, and Iran—by 40%). Major investment decisions were made to develop the Southern and Eastern international transport corridors linking Russia with the largest Asian markets.

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## Conflict of interest

All authors declare no conflicts of interest in this paper.

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