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Research Report

Reorientation and rocket launchers? Regional insights into Russia's wartime economy

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BOFIT Policy Brief 2023 No. 13

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Lauri Vesala

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Abstract

This policy brief examines regional economic development in Russia since the brutal invasion of Ukraine in February 2022. We focus on the logistics, construction, and industrial sectors as they are closely related to the structural changes in Russia's economy due to the war and sanctions. We examine available regional-level statistics concerning these sectors and form hypotheses for the regional variation observed. We also utilize official Russian publications and news items. We find that the shift in Russia's trade flows and sanctions related to trade logistics have had a limited effect on rerouting trade. This seems largely due to the constraints of existing infrastructure, logistical bottlenecks, and the robustness of Russian oil export volumes. Barring a few regions, infrastructure development related to the reorientation of the economy has no noticeable impact on construction. Construction growth in regions bordering Ukraine is driven by war-related construction. Military-industrial production seems to be the national driver for most fast-growing industrial sectors. Regional-level data reflects this high growth in many traditional military-industrial hubs.

Keywords: Russia, regional economic development, logistics, trade, infrastructure, construction, industry, military industry, Ukraine, Russia-Ukraine war

1. Introduction

The purpose of this policy brief is to examine regional-level economic development in Russia since the invasion of Ukraine in February 2022. The goal is to find out how the structural changes caused by the war and the ensuing sanctions have affected economic development at the regional level. It is further hoped that analyzing regional-level data enhances our understanding of federal-level trends. We focus on three sectors of the economy: construction, logistics, and manufacturing industries associated with the military-industry complex. These sectors are closely linked to the Russian economy's ongoing structural adjustment. Additionally, construction and certain fields of manufacturing are of interest as they are some of the drivers of Russia's unexpectedly strong economic performance in spite of the negative consequences from invading Ukraine. Logistics and infrastructure construction are intricately interconnected.

Russia's ongoing invasion of Ukraine and the ensuing sanctions have had varying economic effects at the regional level. Sanctions have diverted Russia's trade flows away from the EU and other "unfriendly" countries to countries such as China and India.¹ The shift in trade has impacted trade logistics. Supply chains have lengthened, and freight transport has become costlier. More of Russia's foreign trade now flows through ports in the Black Sea or the Pacific. Constraints of the existing infrastructure, especially railway capacity, have been a barrier to larger shifts. With the exception of a few regions, construction data does not seem to reflect infrastructure development related to economic reorientation.

Regions dependent on industries subject to sanctions and the exodus of foreign firms from the Russian market have faced the worst economic outcomes. Car-producing regions provide a clear example. Northwestern Russia has suffered particularly much from the departure of foreign firms. The industries that have fared best at the federal level are largely related to import-substitution and military procurement. This is reflected at the region level as well. While little statistical information concerning the military-industrial complex is directly available, many Russian officials and news articles suggest it is a key driver of industrial growth. In some military-industrial regions, strong industrial growth can reasonably be assumed to relate to specific factories. The direct economic effects of the invasion can also be seen in strong construction growth in regions bordering Ukraine due to war-related construction such as fortifications.

This policy brief addresses two levels of Russian regional administration. Federal districts (FDs), such as the Northwestern Federal District, encompass "federal subjects",² referred to here as "regions" (e.g. the Leningrad region and the Republic of Karelia). Russia has a total of eight federal districts and 83 federal subjects or regions.³ Terms such as "Southern Federal District" and "Southern Russia" or the "Republic of Dagestan" and "Dagestan" are used interchangeably. The figures reported in italics for the *Republic of Crimea* and the *City of Sevastopol* are included despite being Ukrainian territory that Russia has illegally annexed. The reported statistics for these places have relevance for analysis of Russia's wartime economy. The value of such analysis is apparent in section 3.3. which takes up the impact of fortification-building on construction statistics.

The main sources used in this policy brief are regional statistics mostly published by Russia's Federal State Statistics Service (Rosstat), other official Russian publications, and news items. While concerns have been raised regarding the accuracy of Russian official statistics, we are unaware of any

¹ See, for example, Simola (2023).

² The six types of federal subjects are *oblast* (region), *krai* (territory), *republic*, *federal city*, *autonomous oblast*, and *autonomous okrug* (district).

³ Not including the regions of Ukraine Russia has illegally claimed to annex.

instances of deliberate falsification. Moreover, they are often the only data available for many subjects of interest. All percentages in this note have been rounded to the nearest whole number.

The rest of this note is organized as follows. Section 2 looks at the changes that have taken place in the logistics sector. Section 3 focuses on construction. Section 4 examines the industrial sector with a particular focus on fields strongly associated with the military industry. Section 5 concludes.

2. Logistics

The rounds of sanctions imposed on Russia since its 2022 invasion of Ukraine have led to a dramatic shift in Russia's foreign trade. Trade flows to, for example, China and India, have increased, while trade with the EU and other "unfriendly" countries has decreased. The shift in trade flows, sanctions, and the withdrawal of foreign transport firms from the Russian market have had an impact on trade logistics.

According to the Central Bank of Russia's June regional economy report (CBR, 2023C), cargo flows between Russia and European countries using pre-war routes declined by 40% in 2022, and freight transport flows shifted to the east and south. Supply chains also lengthened. The cost of freight transport, even on fixed-length routes, increased substantially faster than consumer prices. Dramatic increases in freight transport demand on some routes led to logistical bottlenecks; most notably in Eastern Russia, on the Trans-Siberian and Baikal-Amur Mainline (BAM) railways, collectively referred to as the "Eastern Polygon" of Russia's railways. The Eastern Polygon's limited capacity impacts certain industries (and regions dependent on them) more than others due to the way Russian Railways prioritizes different types of cargo. The limitations of railway and seaport capacity led to an increased demand for trucking (CBR, 2023C). Transport times have doubled or tripled for some routes (CBR, 2023C).

This section examines how these changes are reflected in regional statistics in the logistics sector, i.e., the freight transport price index and seaport and railway cargo statistics. We complement regional statistics with information from other official reporting and news items.

2.1. Freight transport prices

This section is based on freight transport price index statistics. One key aspect to note while considering the information presented is that the index does not consider structural changes in the composition of freight. The index is calculated for constant weights and distances. The "true increase" in transportation costs is arguably greater than the increase in the index as supply chains have lengthened due to the shift in Russia's foreign trade. Many of the freight transport rates that make up the index are essentially administrative and do not necessarily reflect market prices. For example, index increases in railway tariffs must be approved by the Russian government, and the tariffs have clearly not increased sufficiently for demand to adjust to the limited capacity of the Eastern Polygon of Russia's railways.

Freight transport prices have increased substantially faster than inflation after Russia's invasion of Ukraine. The cumulative increase compared to December 2021 reached 45% nationally in May 2023. Most of the post-invasion increase took place in mid-2022. The increase has been largely driven by the price of pipeline transmission: the corresponding figure for all other modes of transport is 24%. Regional variance in price growth in 2022–2023 has been exceptionally large compared to the 2016–2021 period. Regional variance seems to be largely driven by composition effects, i.e., the relative

weights of the various modes of transport that make up the index, and particularly the weight of pipeline transmission.

Table 1. Regions with the highest and lowest freight transport price growth, December 2021 to December 2022

Region	Growth	Region	Growth
Perm Territory	105%	Smolensk Region	-2%
Tyumen Region	78%	Jewish Autonomous Region	-2%
City of Moscow	64%	Republic of Kabardino-Balkaria	0%
Republic of Dagestan	60%	Republic of Northern Ossetia Alania	0%
Volgograd Region	46%	Republic of Altay	0%
Nizhny Novgorod Region	39%	Kostroma Region	2%
Republic of Komi	36%	Ulyanovsk Region	2%
Murmansk Region	34%	Magadan Region	2%
Sverdlovsk Region	34%	Stavropol Territory	3%
Republic of Tuva	34%	Altay Territory	3%

Sources: Rosstat, CEIC.

Table 2. Regions with highest and lowest freight transport price growth, December 2022 to May 2023

Region	Growth	Region	Growth
Republic of Dagestan	125%	Volgograd Region	-14%
Tomsk Region	115%	Kostroma Region	-13%
Republic of Komi	108%	Perm Territory	-11%
City of St. Petersburg	51%	Tyumen Region	-5%
Magadan Region	36%	Republic of Bashkortostan	-4%
Sakhalin Region	29%	City of Moscow	-2%
Stavropol Territory	25%	Belgorod Region	-1%
Penza Region	22%	Jewish Autonomous Region	-0%
Republic of Karelia	15%	Ivanovo Region	0%
Republic of Buryatia	14%	Republic of Kabardino-Balkaria	0%

Sources: Rosstat, CEIC.

Table 3. Regions with highest and lowest freight transport price growth, December 2021 to May 2023

Region	Growth	Region	Growth
Republic of Dagestan	259%	Kostroma Region	-11%
Republic of Komi	184%	Jewish Autonomous Region	-2%
Tomsk Region	178%	Smolensk Region	-2%
Perm Territory	82%	Republic of Kabardino-Balkaria	0%
City of St. Petersburg	72%	Republic of Altay	0%
Tyumen Region	69%	Belgorod Region	5%
City of Moscow	61%	Altay Territory	6%
Murmansk Region	44%	Ulyanovsk Region	6%
Nizhny Novgorod Region	43%	Republic of Udmurtia	8%
Sverdlovsk Region	40%	Republic of Karachay-Cherkessia	9%

Sources: Rosstat, CEIC, BOFIT.

At the federal district level, freight transport prices increased most in Northwestern (NW) Russia. The index more than doubled showing a 105% growth rate between December 2021 and May 2023. The increases were especially large in early 2023.

The index weight given to pipeline transmission seems to be a key driver of growth rates in both the highest and lowest growth regions. Within NW Russia, the increase was especially large in the Republic of Komi, where freight transport prices grew cumulatively by 184%. The increase in Komi was driven by and large by pipeline transmission. Dagestan, Tomsk, and Tyumen are also examples of regions where large increases seem to be driven by a relatively high weight of pipeline transmission.

Supply and competition factors (most notably the departure of foreign logistics firms from the Russian market) likely explain some of the cost increases observed in such regions as Moscow, St. Petersburg, and NW Russia generally. These are regions where Western firms presumably held relatively larger market shares in the sector.

The regions with the lowest increases in freight transport costs are generally those with little to no pipeline activity, as well as those largely unaffected by the shift in trade flows or the departure of foreign firms from the transport sector.

2.2. Seaports

Seaports are vital to Russia's foreign trade. Before the war, around 60% of Russian foreign trade went through seaports (Mingaleva et al., 2022). Sanctions⁴ and withdrawal of some foreign shipping companies from the Russian market, have affected the shipping industry since Russia began its full-scale invasion of Ukraine. As the CBR (2023C) reports, Russia was heavily dependent on foreign containers pre-war, but has since adapted. An example of this is the widely-reported "shadow fleet."⁵ These effects have been especially pronounced in the Baltic Sea basin (CBR, 2023C). Therefore, it is of interest whether seaport cargo statistics show significantly different dynamics across regions and sea basins. The statistics presented in this section are based on BOFIT calculations and data from the Russian Sea Trade Ports Association,⁶ CEIC, and the Federal Agency for Maritime and River Transportation.

The physical volume of cargo processed in Russia's seaports slightly increased after the invasion began (by 1% in 2022 and 11% y/y in H1/2023). The volumes for both dry and liquid bulk cargo increased, with liquid bulk volumes growing faster. There has been some regional variation in the change in cargo volumes, but less than one might expect given the radical shift in Russia's trade flows. This is reflective of the difficulty of rerouting trade due to the location of existing infrastructure (e.g., oil refineries) and capacity limitations, as well as the robustness of oil (product) export volumes.

⁴ Examples include the ban on Russian-flagged ships entering EU ports and the crude oil price cap.

⁵ See e.g., this Reuters' article. <https://www.reuters.com/business/autos-transportation/ship-insurers-warn-russian-oil-price-cap-evasion-risks-dark-fleet-2023-04-27/>

⁶ Ассоциация Морских Торговых Портов in Russian.

Table 4. Seaport freight turnover in selected regions

Region	Freight volume, 2022, million tons	Freight volume growth, 2022	Freight volume growth, H1/2023	Share of dry bulk, 2022
Russian Federation	842	1%	11%	48%
Baltic Sea Basin ⁷	246	–3%	5%	39%
<i>incl. City of St. Petersburg</i>	39	–37%	4%	72%
<i>incl. Leningrad Region</i>	199	10%	6%	31%
Arctic Sea Basin ⁸	99	4%	2%	30%
<i>incl. Murmansk Region</i>	58	5%	7%	41%
Black Sea Basin	264	3%	21%	46%
<i>incl. Krasnodar Region⁹</i>	236	3%	17%	43%
Pacific Sea Basin	228	2%	8%	68%
<i>incl. Primorsky Territory¹⁰</i>	149	4%	10%	66%
<i>incl. Khabarovsk Territory¹¹</i>	43	–10%	7%	75%

Sources: Russian Sea Trade Ports Association, Federal Agency for Maritime and River Transportation, CEIC, BOFIT.

Overall, the change in seaport cargo volumes during the war has not been overly dramatic in Northwest Russia. A moderate decline in the Baltic Sea basin cargo in 2022 turned to moderate growth in the first half of 2023, whereas Murmansk has seen growth throughout the war. Examining the figures broken down by dry and liquid bulk cargo, however, reveals some structural change. In the Baltic Sea basin in 2022–H1/2023, dry bulk volumes declined by 13% compared to the 2021 average, while liquid bulk volumes were up by 10% – a divergence far greater than in any other basin. Dry bulk collapsed by 18% in 2022, but then fast recovered (17% y/y growth) in H1/2023. Liquid bulk cargo grew by 10% in 2022 and declined by 3% y/y in H1/23. Liquid bulk cargo overwhelmingly consists of Russian crude oil and petroleum product exports. The robust cargo processing volumes recorded for NW Russia likely reflect the challenge of quickly rerouting trade to other seaports, logistical bottlenecks in other regions, and the robustness of oil (product) export volumes. It seems plausible that NW Russia's seaports managed to compensate for the initial war-related shocks by increasing oil and petroleum product exports to non-EU destinations.

Seaports in Russia's Far East benefitted from the reorientation of trade less than one might expect. Cumulative growth has been similar to the national average. This in line with reports that the limited capacity of supporting infrastructure restricted rerouting of Russian trade to Far Eastern

⁷ Major ports in the Baltic Sea basin include the Great Port of St. Petersburg, the Port of Kaliningrad, and the ports of Ust-Luga and Primorsk in the Leningrad region.

⁸ Major Arctic Sea basin ports include the Port of Murmansk, and the LNG port of Sabetta in Yamalia.

⁹ Major ports in the Krasnodar region include Russia's largest port in Novorossiysk as well as the ports of Taman, Tuapse, and Kavkaz.

¹⁰ The major ports in the Primorsky territory include the Port of Vostochny and the Ports of Vladivostok and Nakhodka.

¹¹ The Port of Vanino is the main port in the Khabarovsk territory.

seaports.¹² The CBR (2023C) claims that these problems came to a head between November 2022 and January 2023 and have since largely been resolved. The highest on-year growth figures in Far East cargo volumes during the war were recorded in March-June 2023 (some of this can likely be attributed to the low basis reference in the same period a year earlier).

Most of the increase in seaport cargo during the war has taken place in Southern Russia or the Black Sea basin. Southern Russia accounts for the vast majority of cumulative growth observed nationally since December 2021. Dry bulk cargo volumes have grown especially fast, rising by a third in H1/2023. The CBR (2023B) reports that ports in the Caspian Sea basin, although minor in significance compared to major sea basins, experienced difficulty coping with increased cargo demands due to the lack of adequate infrastructure.

2.3. Railways

According to the CBR (2023C), the shift in Russia's trade flows had a significant effect on railway logistics. Eastward cargo traffic surpassed westward traffic for the first time in H2/2022 (CBR, 2023C). Limited capacity, especially in the Eastern part of Russia's railways, became a logistical bottleneck. The CBR (2023C) reports that Russia's railway infrastructure was been unable to cope with the increased cargo flows to seaports in Southern Russia and the Far East, as well as those going through the land borders with Asian countries. Railway transit in the Eastern Russia is heavily reliant on two railway lines, the Trans-Siberian Railway and the Baikal-Amur Mainline (BAM), collectively referred to as the "Eastern Polygon". It was estimated in mid-2022 was that in 2021 demand exceeded capacity by 70 million tons in the Eastern Polygon and that demand could exceed capacity by 100 million tons in 2022.¹³

Limited capacity has had a disproportionate effect on certain industries, and regions dependent on them. Russian Railways are required to prioritize cargo transfers in a specific order with raw material exports ranking low on the list. The CBR (2023A) reports, for example, that ferrous metals production and trade has diminished largely due to limited rail capacity.¹⁴ Russian Railways has had to prioritize other types of cargo including "socially-important" and "other intra-Russian" transfers, and railway transit of ferrous metals declined by 15% y/y in Q4/2022 (CBR, 2023A). The need to prioritize between different categories of cargo due to the limited capacity of the Eastern Polygon was widely reported even before the war.¹⁵ However, as the CBR (2023A) implies, the problem was exacerbated by the shift in Russia's export markets. For more analysis on the Eastern Polygon's limited capacity and its effects, see, e.g., Tóth-Czifra (2023).

The invasion of Ukraine likely has some direct effect on railway capacity, but how much is difficult to estimate. The greatest stress on the rail system likely occurred during the troop build-up phase in the months preceding the invasion.

With the exception of the Far East, railway freight volumes in 2022 were significantly below their peaks of the early and late 2010s in every federal district. Railway freight volumes reported for 2022 declined compared to 2021 in every federal district with exceptions of the Far East and Urals FDs (where they grew by approximately 10% and 2%, respectively). Nationally, the decline was 4%. This was driven by an 11% decline in international railway traffic, which in turn was driven by a 40% decline in traffic with "unfriendly countries"¹⁶ (CBR, 2023C). By and large, the regions with the

¹² For example, CBR (2023C) reports congestion and long wait times at Far Eastern seaports due to limited container terminal, border check, warehouse, and railway capacities.

¹³ <https://portnews.ru/news/345217/>

¹⁴ Other reasons mentioned include diminishing domestic and international demand as well as sanctions.

¹⁵ For example, Kommersant reported on coal's deprioritization on 17.2.2022. <https://www.kommersant.ru/doc/5218153>

¹⁶ In the context of rail transport, this primarily means the EU countries and Ukraine.

highest growth in railway freight carried in 2022 were located in the Asian part of Russia (especially the Far East) or in the North Caucasus.¹⁷

Regions bordering Ukraine mostly saw declines in railway freight carried raising the question of whether military hardware transfers were included in the statistics and potentially crowded out civilian traffic.

The Kaliningrad region recorded a 16% decline, which may be largely explained by the EU restriction on rail transit of sanctioned goods in place for little over a month in the summer of 2022.

While extensive 2023 figures are unavailable, CBR (2023C) reports that the Far East (9% y/y), and especially Zabaikalsky Territory (26% y/y), led freight growth in H1/2023. These limited observations are certainly in line with the notion that rail capacity might be an issue in Eastern Russia, even if not elsewhere in the country.

Table 5. Regions with highest and lowest growth in railway freight carried in 2022

Region	Growth in railway freight carried, 2022	Region	Growth in railway freight carried, 2022
Republic of Kabardino-Balkaria	97%	Republic of Marii El	-67%
Republic of Buryatia	23%	Chechen Republic	-46%
Republic of Northern Ossetia Alania	18%	City of Moscow	-31%
Primorsky Territory	17%	Perm Territory	-24%
Pskov Region	17%	Republic of Dagestan	-24%
Amur Region	16%	Orel Region	-23%
City of St Petersburg	13%	Rostov Region	-22%
Zabaikalsky Territory	11%	Ivanovo Region	-21%
Astrakhan Region	10%	Tver Region	-21%
Republic of Tatarstan	9%	Penza Region	-20%

Sources: Rosstat, CEIC, BOFIT.

3. Construction

Russia's construction sector has experienced strong growth during the war in Ukraine and has been a driver of Russia's better-than-expected economic performance. In real terms, the value of construction grew 5% y/y in 2022, and between January and May 2023 by 9%.

While no breakdown of construction value by types of construction is available, growth seems to have been driven by infrastructure and other non-residential construction. The CBR (2023A) regional economy report mentions transport, logistics, and warehouse construction as having activated.¹⁸ Despite robust construction growth, the floor area of completed residential buildings declined by 3% y/y in January-May 2023.

Regional variance in construction growth has been significant. This section examines regional-level data on construction and presents potential explanations for especially strong construction growth in certain regions. Infrastructure development related to the reorientation of the economy is only visible as a driver of strong growth in a couple of regions. Northwestern Russia's construction sector has fared significantly worse than that of the rest of the country. This is likely explained by a combination of foreign firms pulling out of the Russian market, sanctions, and the reorientation of

¹⁷ The North Caucasus also includes many of the regions with the lowest growth. Statistical data in the North Caucasus is often considered unreliable, however.

¹⁸ With the latter particularly connected to increased online retail.

the economy. Construction growth in the regions bordering Ukraine seems to have been driven by directly war-related construction.

3.1. Statistical insights

Russian construction value statistics tend to be highly seasonal and (especially at the regional level) subject to large monthly fluctuations. The value statistics are based on completed works. Thus, the completion of major projects can have a big impact on the monthly figure. The distribution of construction value by type of construction is unavailable. The total area and floor area of completed residential buildings are indicators that can be used to assess whether construction growth is driven by residential or other types of construction. While statistical information on the number of buildings completed (with residential construction separated out in some cases) is available at the regional level, we have foregone its use in this policy brief. All figures in the section are in real terms and based on CEIC and Rosstat data unless otherwise stated.

Table 6. Regions with highest and lowest construction value growth in 2022

Region	Construction value growth, 2022	Growth in residential floorspace completed, 2022
Republic of Buryatia	78%	4%
Vladimir Region	57%	43%
Republic of Altay	53%	9%
Ulyanovsk Region	44%	–20%
Republic of Adygea	42%	52%
Saratov Region	38%	–14%
Krasnoyarsk Territory	37%	4%
Republic of Karelia	35%	–5%
Republic of Sakha	31%	1%
Nizhny Novgorod Region	29%	7%

Region	Construction value growth, 2022	Growth in residential floorspace completed, 2022
Republic of Ingushetia	–53%	21%
Astrakhan Region	–40%	9%
Republic of Udmurtia	–35%	40%
Arkhangelsk Region	–34%	5%
Republic of Komi	–33%	13%
Republic of Karachay-Cherkessia	–28%	31%
Vologda Region	–27%	0%
Republic of Tuva	–24%	29%
Tambov Region	–23%	–47%
Republic of Marii El	–22%	17%

Sources: Rosstat, CEIC, BOFIT.

Table 7. Regions with highest and lowest construction value growth, January-May 2023

Region	Construction value growth, Jan-May 2023	Growth in residential floorspace completed, Jan-May 2023
Republic of Altay	213%	6%
Volgograd Region	97%	16%
Republic of Chechnya	83%	-42%
Tver Region	74%	-0%
Republic of Adygea	66%	3%
Stavropol Territory	64%	-14%
Khabarovsk Territory	59%	54%
Saratov Region	58%	-8%
Republic of Chuvashia	55%	20%
Magadan Region	45%	-53%

Region	Construction value growth, Jan-May 2023	Growth in residential floorspace completed, Jan-May 2023
Pskov Region	-51%	-23%
Kamchatka Territory	-46%	42%
City of Sevastopol	-36%	-34%
Oryol Region	-33%	-0%
Murmansk Region	-33%	-79%
Penza Region	-29%	82%
Republic of Udmurtia	-23%	-3%
Bryansk Region	-21%	-6%
Republic of Marii El	-20%	-5%
Leningrad Region	-15%	-5%

Sources: Rosstat, CEIC, BOFIT.

3.2. Construction not greatly affected by reorientation of the economy

Much of Russia's existing infrastructure is aimed at facilitating trade with the West, particularly energy exports to Europe. Reorientation of Russia's trade has created new (or intensified existing) infrastructure needs especially in the Eastern and Southern parts of the country. The CBR (2023C) lists the North-South transport corridor, capacity of seaports in the Far East and South, and of the Northern Sea Route, as well as the BAM and the Trans-Siberian railways, as strategically important infrastructure development targets over the next few years. Other infrastructure needs include construction and improving the road and border checkpoint infrastructure along the borders with Asian countries as well as infrastructure to facilitate energy exports.

With one exception, the reorientation of the economy cannot be perceived as disparities in growth rates at the federal district level. The construction sector in Northwestern Russia was clearly impacted negatively by the post-invasion structural changes in the Russian economy. Any distinct positive effect on construction figures seems limited to a few specific regions. Infrastructure development takes time. Therefore, it is plausible that major trade-related infrastructure development appears in value of completed construction work statistics with a significant lag. Tóth-Czifra (2023) also argues that reorientation of infrastructure may have been slowed by hope of a quick return to business-as-usual in the early stages of the invasion.

One of Russia's most pressing infrastructure needs is increasing the capacity of the Trans-Siberian and BAM railways to eliminate logistical bottlenecks and facilitate more trade with Asia. For example, there are plans to increase the capacity of the Eastern Polygon of Russia's railways by

15 million tons in 2023.¹⁹ Zubarevich (2023) argues that infrastructure development related to Asian trade is visible in the data in some regions: construction has grown fast in certain regions of Eastern Russia linked to the modernization of the Eastern Polygon. Two regions on the Trans-Siberian and BAM railways stand out. Zabaikalsky Territory recorded robust y/y construction growth between October 2022 and March 2023 (with on-year growth averaging 60%). Khabarovsk Territory recorded robust on-year growth especially in January-April 2023 (83%) with a return to more moderate monthly figures in May.

However, the economy's reorientation can be discerned in the weak construction growth recorded for Northwestern (NW) Russia. 2022 saw real value of construction decline by 12% y/y, while in the first five months of 2023 it declined by 1%. NW Russia has been especially affected by the departure of foreign firms (including the construction and real estate sectors) as well as relatively poor industrial performance.

Interestingly, the Kaliningrad region, otherwise one of the regions most negatively impacted economically by the consequences of the invasion,²⁰ experienced strong construction growth. Despite a weak start to the year, Kaliningrad's construction sector ended up growing by 18% in 2022. In January-May 2023 construction activity grew by 30% y/y (some of which is due to a low basis reference of early 2022). However, the floorspace of completed residential buildings decreased by 25% y/y in January-May 2023 (after growing by 4% in 2022). Local news outlets report that the construction sector in Kaliningrad in recent years has been driven by non-residents buying homes to move or rent, but population inflows and non-resident demand for real estate have weakened.²¹ In other words, construction growth in Kaliningrad is likely driven by infrastructure. This may be explained by construction of logistical infrastructure. As an enclave of Russia bordered by Lithuania and Poland, Kaliningrad has been very reliant on transit of goods to and from mainland Russia through the European Union. Sanctions have greatly affected road transit, and railway transit through Lithuania was briefly suspended in 2022. This has left Kaliningrad increasingly reliant on seaports. It seems plausible that Kaliningrad's strong construction growth after early 2022 can be partly explained by development of infrastructure related to the increased need of transit by sea. Another particularly strong performer within NW Russia (again, despite feeble industrial performance) has been the Republic of Karelia. The real value of construction there grew by 35% y/y in 2022 and by 16% in January-May 2023. St. Petersburg has also fared relatively well with only a 2% y/y decline in construction value in 2022 and robust 9% growth in January-May 2023. All other regions of NW Russia have seen substantial on-year declines in 2022, in January-May 2023, or in both periods.

3.3. Robust war-related construction growth in regions bordering Ukraine

Strong on-year construction value growth was reported in early 2023 for most regions that either border Ukraine or are in the illegally annexed Crimea.²² While Crimea is internationally recognized as part of Ukraine, its Rosstat-reported construction statistics are referred to alongside Russian regions bordering other parts of Ukraine as they are indicative of war-related construction trends in Russia. Mindful of Crimea's position, these regions will be referred to collectively as "border regions." The value of construction in the regions combined grew by 46% y/y in Q1/23. While growth slowed in April and May of 2023, most of these regions have still seen on-year growth surpass the

¹⁹ <https://morvesti.ru/news/1678/100290/>

²⁰ For example, in January-May 2023 Kaliningrad's industrial production index recorded the largest on-year decline out of all Russian federal subjects.

²¹ <https://kgd.ru/news/society/item/103256-v-kaliningradskoj-oblasti-postroili-rekordnoe-kolichestvo-zhilya-v-2022-godu>

²² The regions referred to are Belgorod, Bryansk, *Crimea*, Kursk, Rostov, *Sevastopol*, and Voronezh.

national average in January-May. Combined, the regions' construction sector grew 21% y/y in January-May 2023 with 16% growth at the federal level (both in nominal terms). In 2022, nominal construction value growth in the regions was 18%, compared to 16% nationally. Strong construction value growth comes despite the fact that residential construction in these regions seems to have declined. Residential construction measured in volume of completed floorspace in these regions declined by 7% y/y (compared to 3% at the federal level) in January-May 2023. In 2022, a minor decline in completed residential floorspace was recorded in these regions despite national growth of 11%. These statistics are in line with the notion that uncertainty related to the war decreases civilian construction, even if war-related construction more than compensates for it. Additionally, there is some anecdotal evidence that construction workers,²³ presumably especially from border regions, have been recruited to the occupied territories reducing the locally available labor force.²⁴

Table 8. Change in construction value and completed residential floorspace in border regions

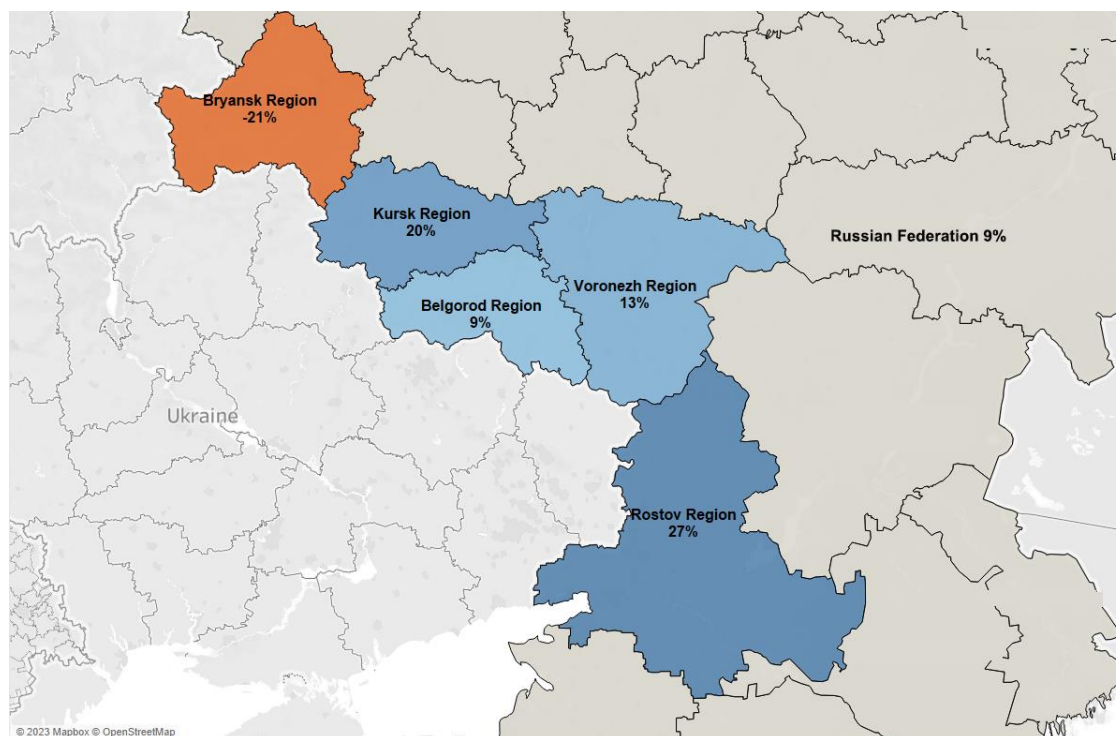
Region	On-year growth in construction value, January-May 2023	On-year growth in residential floorspace completed, Jan-May 2023	Construction value growth, 2022	Growth in completed residential floorspace, 2022
Belgorod Region	9%	7%	6%	7%
Bryansk Region	-21%	-6%	-15%	7%
Republic of Crimea	15%	59%	27%	25%
Kursk Region	20%	15%	10%	-2%
Rostov Region	27%	-23%	2%	1%
City of Sevastopol	-36%	-34%	12%	8%
Voronezh Region	13%	-11%	-1%	3%
Border regions combined	21%*	-7%	18%*	-0%

*Construction value growth for border regions combined is given in nominal terms.

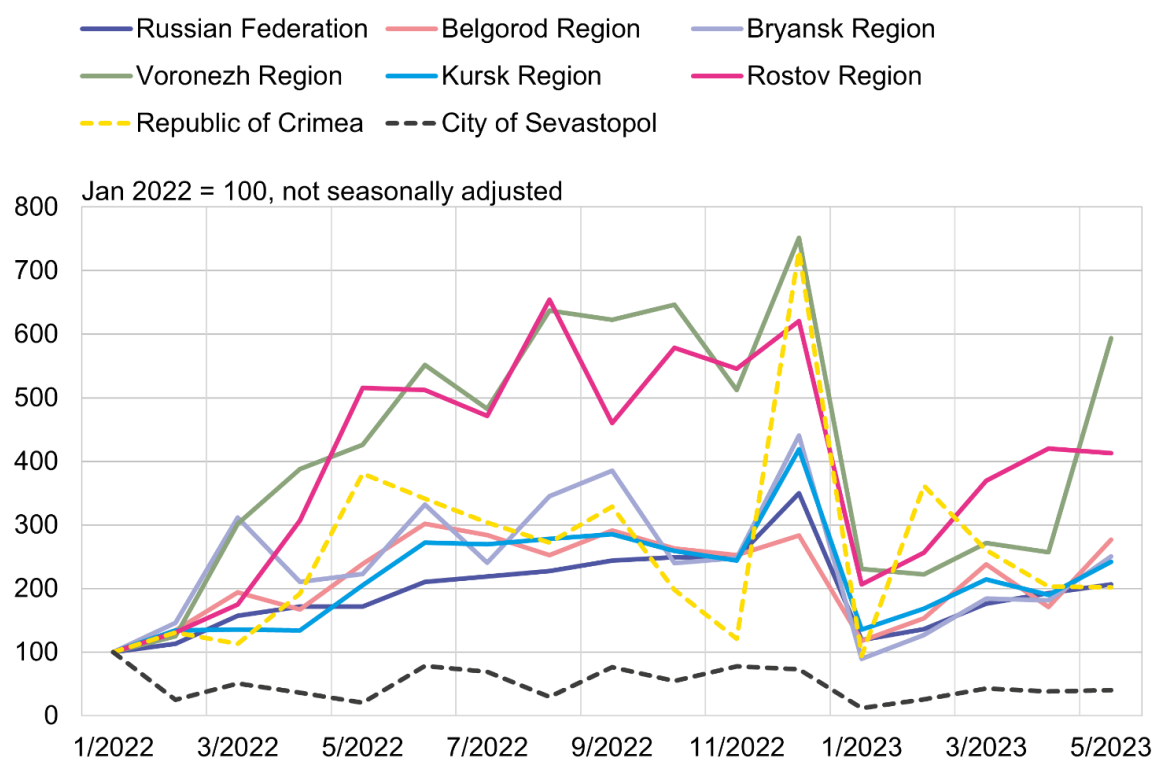
Sources: Rosstat, CEIC, BOFIT.

²³ See, for example, this article in the Moscow Times. <https://www.themoscowtimes.com/2022/06/23/russia-recruits-teachers-construction-workers-and-politicians-to-rebuild-occupied-ukraine-a78087>

²⁴ Despite this, nominal wage growth in the construction sector in border regions combined is slightly below the national average.

Figure 1. Construction value on-year growth in selected regions, January-May 2023

Sources: Rosstat, BOFIT.

Figure 2. Construction value index in selected regions, January 2022 = 100

Sources: Rosstat, BOFIT.

While strong construction growth in most border regions could partly be attributed to the low basis reference of the previous year, it is clearly also directly related to the war effort. Russia has built substantial fortifications along the frontline in the occupied areas of Ukraine's Kherson, Zaporizhzhia, Donetsk and Lugansk regions, in Northern parts of occupied Crimea, and along the Ukrainian border in Russia's Belgorod, Bryansk, and Kursk regions. Construction growth has been especially strong in regions bordering the active combat zone. There is limited evidence linking especially high construction growth to periods when fortifications were actively built. Additionally, the destruction the invasion has caused in territories Russia has since claimed to annex has created a need to rebuild the occupied territories. It seems quite plausible that some of the fortification and reconstruction work conducted in the occupied territories is reflected in construction value statistics across the border. The invasion may have also created additional infrastructure needs in border regions beyond fortifications, for example, construction of medical care facilities or infrastructure to facilitate military logistics. Another channel through which the war is likely to increase construction, especially in border regions, is repairing the damage from sabotage of railways, arson, drone attacks, shelling, etc.

The economic significance of these effects is difficult to assess, however. One limited indication is regional government budget spending on fortifications. For example, the regional government in Belgorod claims to have spent almost 10 billion rubles on constructing fortifications in 2022, an amount that corresponds to approximately 7% of the total construction value recorded in the region in 2022.²⁵ This is likely to be an underestimate as it seems implausible that constructing the fortifications is the sole (budgetary or otherwise) responsibility of a regional government. A news article on the fortification works conducted in the Kursk region mentions that the work was carried out jointly by the regional government and Russia's Ministry of Defence.²⁶

Rostov is the Russian region that lies directly across the border from much of the active combat zone. It has been the main driver of construction growth so far in 2023 for border regions. In January-May 2023 Rostov's construction sector grew by 27% y/y. Growth was peaked in January-March, with a 92% y/y growth rate recorded in Q1/2023. The robust on-year growth figures, however, are largely due to a low basis reference as construction significantly declined in Rostov in early 2022 (down by 42% y/y in Q1/2022). Rostov's construction growth seems to have accelerated in periods when major fortifications were built along the frontline in occupied areas of Ukraine proximate to Rostov.

Reuters has published a timeline on the fortification works conducted by Russia based on satellite images.²⁷ While there is evidence that fortification work is reflected in changes in construction growth, such observations should be taken with a grain of salt due to the difficulty of establishing a timeline and the wild monthly fluctuations in on-year growth rates.

According to the Reuters' timeline, the first significant fortifications appeared in October-November 2022 along the frontline, especially in Russian-occupied areas of Ukraine's Kherson, Zaporizhzhia, and Lugansk regions.²⁸ In many Russian regions bordering Ukraine, that period corresponds to a decline in on-year growth rate that may reflect recruitment of construction workers to the occupied territories. Rostov, the region closest to much of the frontline, saw on-year growth slightly pick up in that period.

In December 2022 and January 2023, major fortifications appeared especially in the Russian regions of Bryansk, Kursk, Belgorod, and Voronezh. In the Belgorod region, for example, the work

²⁵ <https://tass.ru/ekonomika/17151307>

²⁶ <https://rg.ru/2022/10/23/reg-cfo/v-kurskoj-oblasti-postroi-at-tri-linii-oborony.html>

²⁷ <https://www.reuters.com/graphics/UKRAINE-CRISIS/COUNTEROFFENSIVE/mopakddwbpa/>

²⁸ There indications that fortification work had already started in spring 2022. See, for example, this TASS article on fortification work in the Kursk region. <https://tass.ru/obschestvo/18052485>

of building fortifications reportedly began in late October 2022.²⁹ Additionally, fortifications were built in parts of the Zaporizhzhia and Kherson regions under Russian occupation. Bryansk, Kursk, and Voronezh recorded an uptick in on-year growth in December 2022 from November, while the opposite is true for Belgorod. In January 2023, on-year growth was extraordinarily strong in Voronezh (119%, but partly explained by a low base reference) and Kursk (19%, despite a high basis reference), and slightly faster than the previous year's in Belgorod (again, possibly due to a low basis reference). Bryansk's construction continued to decline at a pace similar to that of the previous year. Fortifications were also built in Northern Crimea, where on-year construction growth accelerated to almost 100% in December 2022, before declining by 14% in January 2023.

During February-March 2023, new fortifications appeared in Northern Crimea and in the frontline areas opposite the Rostov region. Construction growth reported in the *Republic of Crimea* was especially high in these two months. On-year construction growth reported in *Crimea* rose to 157% in February and 117% in March 2023.³⁰ It must be noted, however, that construction value statistics reported for *Crimea* had seen substantial monthly fluctuations even before the war. There were several months in 2022 with similarly strong on-year construction growth figures for which a clear war-related reason cannot be identified.³¹ High on-year construction growth continued in the Rostov region in February and March 2023 (81% y/y and 97%, respectively).

Two notable exceptions to robust growth in these regions were the city of *Sevastopol* in occupied *Crimea* and the Bryansk region. Both recorded notable on-year declines in January-May 2023. Bryansk is the northernmost region bordering Ukraine and has not directly bordered the active combat zone since Russia's failed attempt to conquer Kyiv early in the invasion. In late April 2023, Bryansk region announced it was spending an additional 500 million rubles on building fortifications.³² The sum is relatively significant when compared to the construction value figures recorded in the region in early 2023 (for comparison, it corresponds to more than 6% of total construction work completed in January-April 2023). Although the timing of the additional fortification work is unknown, on-year construction growth subsequently significantly picked up in May.³³ In *Sevastopol*, the substantial decline was mainly driven by January, which saw a decline of 89% y/y from an exceptionally strong reference base. *Sevastopol*'s construction figures have had substantial monthly fluctuations in recent years, which might suggest that neither the strong January 2022 figures nor the weak number from 2023 were driven by invasion-related developments. Unlike other regions included in this analysis, no major fortification work seems to have been conducted in *Sevastopol*.

²⁹ <https://lenta.ru/news/2023/02/27/defenceeee/>

³⁰ The corresponding figures for January and April were -14% and 0%, respectively.

³¹ Construction growth ranged between 69 % y/y and 129 % in May-August and December. Strong 34 % growth was also reported in September. Only December corresponds to Reuters' timeline, which shows major fortification work conducted in Crimea.

³² <https://www.rbc.ru/politics/24/04/2023/644654cb9a7947dc4e2e4cda>

³³ From -29% in January-April to 7% in May.

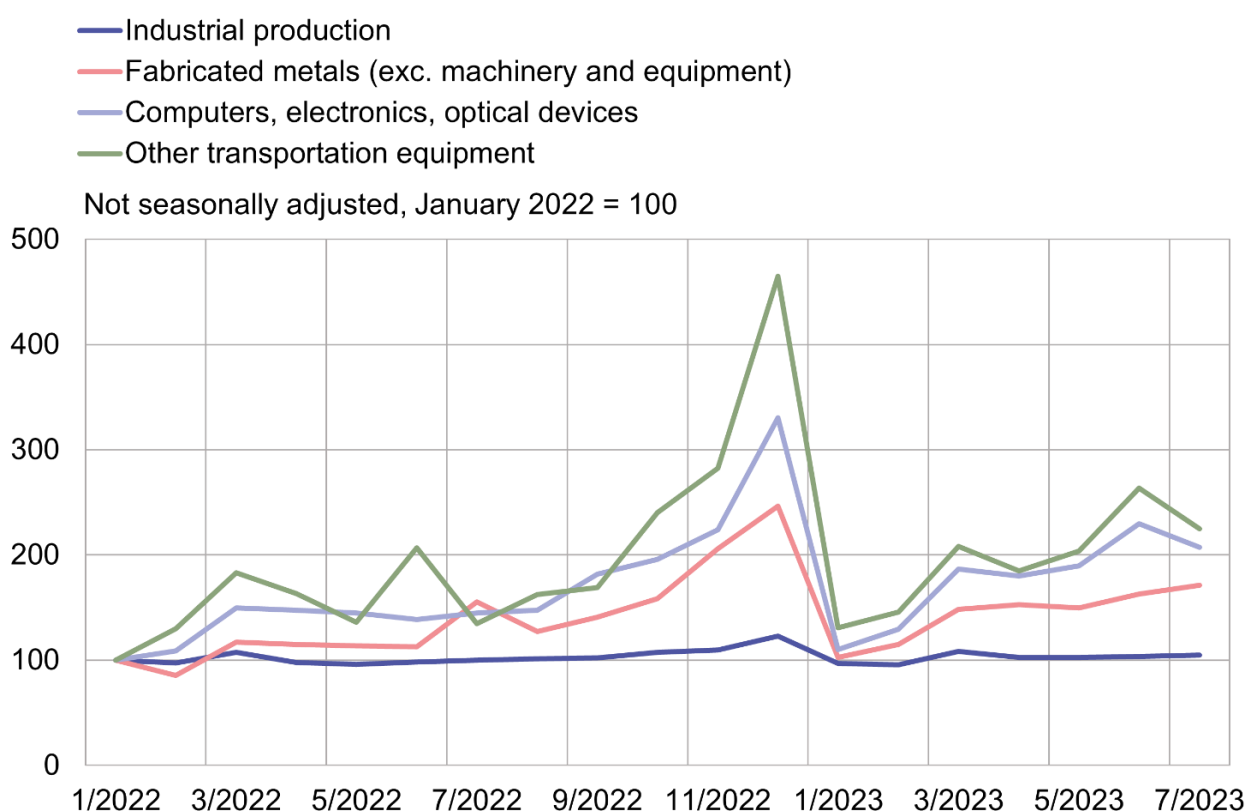
4. Industry

This section gives a brief summary of the most prominent trends in Russian industrial production with a regional focus. Two manufacturing sectors with strong connections to the defense industry – other transportation equipment and fabricated metals – are examined in more detail.

Russian industrial production was driven by strong manufacturing growth in H1/2023. The best-performing industrial fields were mostly involved with import-substitution or the defense industry.³⁴

The effects of sanctions and the departure of foreign firms is clearly visible in industrial production index figures in certain regions. The three worst-performing regions in 2022 in terms of the industrial production index all suffered most from the departure of foreign firms: ExxonMobil in the case of Sakhalin, foreign car manufacturers in the cases of Kaliningrad and Kaluga (Zubarevich, 2023). Among the five worst performers, Karelia's industrial decline largely reflected the closure of export markets for the Karelian iron ore and forest industries on which the region is heavily dependent.³⁵ According to the CBR (2023C), Siberian coal production was constrained by insufficient provision of capacity by the railways to transfer coal for export. Coal-producing regions of Siberia and the Russian Far East such as Kemerovo, Khakassia, Novosibirsk, and Khabarovsk have all experienced declining rates of industrial production (Zubarevich, 2023.)

Figure 3. Industrial production index in selected fields, Jan 2022=100



Sources: Rosstat, BOFIT.

³⁴ Examples of fields related to the military industry include optical devices, fabricated metals, and other transportation equipment.

³⁵ <https://karelia.rbc.ru/karelia/04/02/2023/63da3c349a7947e4418c0b2a> <https://tass.ru/ekonomika/17119405>

Western sanctions have, of course, targeted Russia's military-industrial production and led to claims that the lack of foreign components has hindered production.³⁶ Russian sources claim, in contrast, that military-industrial production was up in 2022, and some factories have switched to production in three shifts.³⁷ There are plenty of official announcements and news stories claiming heavy recruitment of workers into the defense sector.³⁸ Zubarevich (2023) notes that since the autumn of 2022, regions with a high share of military-industrial companies have seen above average manufacturing growth. Many of the best-performing industries in 2022 – and especially in H1/2023 – were closely related to supporting the war effort.

While not much detailed information on Russia's defense industry was available even prior to the invasion of Ukraine, some inferences can be drawn from regional-level manufacturing statistics. Many statistical subcategories of manufacturing include products used by the military, but two stand out at the level where regional data is available. In addition to, for example, airplanes, ships, and rolling stock, the "other transportation equipment" category includes military vehicles such as main battle tanks and armored personnel carriers. The category is especially useful since major military-vehicle-producing regions are fairly easy to identify. "Fabricated metals, excluding machinery & equipment" is a broad category that includes production of weapons (including heavy weapons such as artillery systems) and ammunition.

The Republic of Udmurtia is an example of how military procurement has driven industrial growth in certain regions. The region is traditionally associated with a strong military-industrial sector and is one of the regions Zubarevich (2023) lists as having an above-average share of military-industrial companies. Udmurtia's military-industrial production is reported to have been worth 52 billion rubles in the first half of 2022, an increase of almost 28% y/y.³⁹ The figure represents 35% of the region's reported total manufacturing production in that time period.⁴⁰ Udmurtia's manufacturing sector has grown by 21 % y/y in January-June 2023, which local news outlets attribute to growth of the military industry.⁴¹ Local news outlets also report a labor shortage in the sector caused by an increase in state defense orders.⁴² Manufacturing growth has largely been driven by a few sectors heavily associated with the military industry. Production in the categories of other transportation equipment, fabricated metals, and electrical equipment all grew much faster than manufacturing as a whole. Major military-industrial companies in the region include the Kalashnikov Concern, a major firearms manufacturer, the Izhevsk Radio Plant, the Izhevsk Electromechanical Plant⁴³, and the Votkinsk Machine Building Plant.

4.1. Other transportation equipment

The industrial production index for "other transportation equipment," which includes most military transport equipment, grew nationally by 22% y/y in H1/2023, making it one of the best-performing industrial fields in the first half of this year. The sector only contracted by 4% in 2022 despite sanctions and the desperation of the closely-related industry of manufacturing motor vehicles, trailers,

³⁶ See, for example, <https://www.whitehouse.gov/briefing-room/statements-releases/2022/05/08/fact-sheet-united-states-and-g7-partners-impose-severe-costs-for-putins-war-against-ukraine/>

³⁷ <https://tass.ru/armiya-i-opk/16696305>

³⁸ Some examples are presented in Sections 4.1. and 4.2.

³⁹ <https://ria.ru/20221026/opk-1826982152.html>

⁴⁰ Udmurtia's total manufacturing production in H1/2022 was 150 billion according to Rosstat.

⁴¹ <https://udm-info.ru/news/2023-04-28/ekonomiku-udmurtii-uderzhivaet-na-plavu-oboronnaya-promyshlennost-2915312>

⁴² <https://udm-info.ru/news/2023-06-01/bole-5-tysyach-sotrudnikov-ne-hvataet-predpriyatiiam-udmurtii-2943879>

⁴³ Manufactures mainly air defense systems such as the Tor-M2 surface-to-air missile system. <https://kupol.ru/o-predpriyatii/>

and semi-trailers as foreign automobile manufacturers abandoned the Russian market.⁴⁴ Strong growth can be reasonably assumed to be related to production of military vehicles in many regions and at the federal level.

Table 9. Regions with the highest production in the “other transportation equipment” category in 2022

Region	Other transportation equipment production, 2022, RUB billion	Share of national production in 2022
City of Moscow	192	8%
City of St Petersburg	178	8%
Sverdlovsk Region	168	7%
Moscow Region	124	5%
Republic of Bashkortostan	116	5%
Arkhangelsk Region	112	5%
Republic of Buryatia	98	4%
Rostov Region	94	4%
Primorsky Territory	83	4%
Tver Region	81	3%

Sources: Rosstat, CEIC, BOFIT.

Table 10. Regions with the highest and lowest growth in the other transportation equipment industrial production index in 2022

Region	Growth, 2022	Region	Growth, 2022
Ulyanovsk Region	148%	Volgograd Region	–82%
Rostov Region	143%	Republic of Karelia	–70%
Ryazan Region	110%	Leningrad Region	–58%
Republic of Udmurtia	89%	Republic of Kabardino-Balkaria	–55%
Republic of Khakassia	86%	Kostroma Region	–35%
Zabaikalsky Territory	65%	Yaroslavl Region	–34%
<i>Republic of Crimea</i>	64%	Republic of Dagestan	–32%
Tula Region	46%	Murmansk Region	–32%
Samara Region	41%	City of Moscow	–28%
Stavropol Territory	41%	<i>City of Sevastopol</i>	–28%

Sources: Rosstat, BOFIT.

Table 11. Regions with the highest and lowest growth in other transportation equipment industrial production index in H1/2023

Region	Growth, H1/2023	Region	Growth, H1/2023
Republic of Karelia	762%	Murmansk Region	–85%
Volgograd Region	210%	Republic of Buryatia	–57%
Krasnoyarsk Territory	197%	Astrakhan Region	–53%
<i>Republic of Crimea</i>	151%	Krasnodar Territory	–52%
Omsk Region	134%	Rostov Region	–43%
Republic of Udmurtia	101%	Amur Region	–35%
Republic of Kabardino-Balkaria	89%	Kaliningrad Region	–33%
City of Moscow	85%	<i>City of Sevastopol</i>	–32%

Sources: Rosstat, BOFIT.

⁴⁴ The industry declined by 41% in 2022.

Growth has been strong in many of the regions known to be military manufacturing hubs. The industry grew by 9% y/y in 2022, and 33% in H1/2023 in the Sverdlovsk region, which includes the city of Nizhny Tagil, home to the main battle tank manufacturer Uralvagonzavod. Repair of machinery and equipment (including “other transportation vehicles”) has also grown substantially (12% in 2022, and 62% y/y in H1/2023), with tank repair at the Uralvagonzavod plant a major factor. The Chelyabinsk region, home to the Chelyabinsk Tractor Plant, saw growth of 20% y/y in 2022, and 43% in H1/2023. Rostec claims its plant exceeded Cold-War-era records in tank engine production in Q1/2023.⁴⁵ The Kurgan region similarly recorded rapid growth in the sector in both 2022 (34% y/y) and H1/2023 (49%). The Kurgan Machine Building Plant (Kurganmashzavod) is the producer of Russia's BMP infantry fighting vehicles. The plant is one of many military industry firms reported to have been heavily recruiting new workers since the invasion.⁴⁶ The Republic of Udmurtia, another region heavily associated with the military industry, has also recorded huge growth since the beginning of the war. Manufacturing of other transportation equipment grew by 89% in 2022 and 101% in H1/2023. Other regions mentioned by Zubarevich (2023) as military-industrial hubs have all seen growth above the national average since the start of the invasion.

Many of the highest growth regions in H1/2023 seem largely explained by a low base, as they recorded large declines in 2022. The inverse applies for some of the regions that have performed relatively badly in H1/2023. The Rostov region was among the regions with the highest other transportation equipment production growth in 2022 but also recorded one of the largest declines in H1/2023. Rostvertol, based in the region, is a large military helicopter producer and a part of the Rostec group. According to Rostec CEO Sergey Chemezov, the company doubled its production of helicopters for the Russian military in 2022.⁴⁷ There is little indication that the helicopter industry has experienced much hardship in 2023. Tatarstan, another major producer, recorded strong growth in both 2022 and H1/2023.

The Khabarovsk territory, which is strongly associated with the aviation industry, saw declines in other transportation equipment production in 2022 and H1/23. The aviation industry is reported to have been especially affected by Western sanctions. However, Irkutsk, another major aviation industry hub, recorded strong growth in 2022 and just a small decline in H1/2023. The City of St. Petersburg, a hub of the Russian shipbuilding industry, meanwhile saw robust growth in both 2022 and H1/23 amid reports that the shipbuilding industry is performing well.⁴⁸ In contrast, Arkhangelsk, another shipbuilding region, has performed worse than the national average.

4.2. Fabricated metals

“Fabricated metals excluding machinery & equipment” is one of the manufacturing subcategories most closely associated with the military industry. It includes the production of both ammunition and weapons (including heavy weapons). At the national level, it has been one of the best-performing industrial fields since the invasion of Ukraine. The industrial production index for fabricated metals grew by 7% in 2022 and by 30% y/y in H1/2023. As the field is quite wide, it is difficult to assert that developments at the regional-level are related to military-industrial production. However, many producers of military-related fabricated metals are among the regions with high growth-rates observed since Russia's invasion of Ukraine.

⁴⁵ <https://lenta.ru/news/2023/05/25/engines/>

⁴⁶ <https://tass.ru/v-strane/17033729>

⁴⁷ <https://www.kommersant.ru/doc/6147823>

⁴⁸ See, for example, this article on the industry recruiting a large number of new workers.
<https://portnews.ru/news/351346/>

Table 12. Regions with the highest production in the “fabricated metal products excluding machinery & equipment” category in 2022

Region	Fabricated metals production, 2022, RUB, billion	Share of national production in 2022
City of Moscow	450	13%
Moscow Region	449	13%
Tula Region	273	8%
Sverdlovsk Region	203	6%
City of St Petersburg	177	5%
Chelyabinsk Region	153	4%
Nizhny Novgorod Region	121	4%
Rostov Region	117	3%
Republic of Udmurtia	109	3%
Republic of Tatarstan	103	3%

Sources: Rosstat, CEIC, BOFIT.

Table 13. Regions with highest and lowest growth in the fabricated metals industrial production index in 2022

Region	Growth, 2022	Region	Growth, 2022
Republic of Karachay-Cherkessia	1126%	Jewish Autonomous Region	–65%
Sakhalin Region	236%	Arkhangelsk Region	–42%
Magadan Region	121%	Republic of Adygea	–40%
Astrakhan Region	78%	Republic of Buryatia	–36%
Kirov Region	60%	Ulyanovsk Region	–35%
Republic of Ingushetia	59%	Irkutsk Region	–31%
Pskov Region	55%	Kamchatka Territory	–24%
Perm Territory	50%	Kursk Region	–23%
Penza Region	50%	Nizhny Novgorod Region	–22%
Volgograd Region	47%	Republic of Dagestan	–21%

Sources: Rosstat, BOFIT.

Table 14. Regions with highest and lowest growth in the fabricated metals industrial production index in H1/2023

Region	Growth, H1/2023	Region	Growth, H1/2023
Republic of Karachay-Cherkessia	364%	Republic of Sakha	–63%
Smolensk Region	132%	Sakhalin Region	–59%
Republic of Chuvashia	113%	Volgograd Region	–37%
Ulyanovsk Region	112%	Republic of Dagestan	–35%
Orenburg Region	96%	Primorsky Territory	–31%
Tambov Region	87%	Ivanov Region	–22%
Kirov Region	87%	Republic of Buryatia	–22%
Chelyabinsk Region	76%	Republic of Komi	–21%
Tver Region	75%	Republic of Chechnya	–17%
Bryansk Region	69%	Lipetsk Region	–15%

Sources: Rosstat, BOFIT.

While many of the highest and lowest growth regions seem to be driven by effects from high or low base effects, most known hubs of the military industry have recorded strong growth figures. The Tula region, for example, was the third largest fabricated metals manufacturer in Russia in 2022 and a major producer of firearms, ammunition, and artillery systems. The industry grew by 12% y/y in Tula in 2022, while in H1/2023 a 45% growth rate was recorded.

The Sverdlovsk region is another major fabricated metals producing region and is home to the Uraltransmash, a major manufacturer of artillery systems. After 2% y/y growth in 2022, Sverdlovsk's fabricated metals industry saw 32% growth in H1/2023.

Chelyabinsk is a major military-industrial hub as well with most major industrial firms somehow military-related and almost 150,000 workers employed in the sector.⁴⁹ After 6% y/y growth in 2022, Chelyabinsk's fabricated metals industry grew by 76% in the first half of 2023. In Udmurtia, the sector grew by 21% y/y and 54% in 2022 and H1/2023, respectively. The region is home to a famous firearms producer, the Kalashnikov Concern.

Motovilikha Plants in the Perm region produces artillery systems such as the multiple launch rocket launchers (MLRs) Tornado-G and Tornado-S. Production of these two MLRs was reported have significantly increased already in 2022.⁵⁰ Fabricated metals production in Perm increased by 50% y/y in 2022 and 17% in H1/2023.

5. Conclusions

We examined regional-level statistics related to Russia's construction, logistics, and industry sectors. Supplementing the statistical data with other sources, we formed hypotheses to explain some of the trends observed since the beginning of Russia's brutal invasion of Ukraine in February 2022. Key questions of interest included how the effects of the reorientation of Russia's economy and the direct effects of the war are reflected in the regional data.

Supply chains have lengthened, and freight transport costs have increased substantially even for fixed distances. Regional variation in the freight transport cost index growth is extremely high, but most likely due to variation in the weight given to pipeline transmission, the cost of which has grown substantially more than for other modes of transport.

Existing infrastructure, its capacity limitations, and the robustness of Russian oil export volumes have slowed down rerouting of trade away from ports in the Baltic Sea basin. Railway and seaport cargo volumes in Far Eastern Russia have grown, but are constrained by the capacity of the Trans-Siberian and the Baikal-Amur Mainline railways. Seaport cargo volumes have grown particularly fast in Southern Russia. Reorientation of the economy has created new (and exacerbated existing) infrastructure needs.

Especially strong construction growth in certain regions can be plausibly attributed directly to war-related construction and infrastructure development. Increased construction in certain regions of the Russian Far East can be attributed to development of the railway infrastructure. Fortification-building and other war-related construction has contributed to growth in regions bordering Ukraine and illegally annexed Crimea. Reorientation of the economy and the departure of foreign firms from the Russian market have contributed to the weak performance of Northwestern Russia's construction sector.

Wartime industrial growth at the federal level is driven by strong manufacturing growth concentrated in sectors closely related to the military industry such as "other transportation equipment" and "fabricated metals excluding machinery & equipment". Regional data also support the hypothesis of that growth has been driven by military-industrial production. Many regions heavily associated with the defense industry have seen strong industrial growth in these particular sectors. In some cases, growth can be plausibly attributed to specific factories.

⁴⁹ https://ura.news/news/1052604055?utm_source=yxnews&utm_medium=desktop

⁵⁰ <https://vm.ru/news/1000432-proizvodstvo-rszo-tornado-g-i-tornado-s-znachitelno-uvlechilos-v-2022-godu>

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