



Russia's Supply of Dual-Use Goods Amid Sanctions

Charlotte Emlinger & Kevin Lefebvre*

Russia's invasion of Ukraine three years ago sparked an ongoing conflict, making access to advanced technology essential. Western sanctions aim to restrict Russia's access to dual-use goods that are essential to its war effort. Despite these sanctions, Russia has found new suppliers, mainly in China, to replace some of its imports of such goods. However, this substitution has resulted in higher costs and potentially lower-quality imports.

Russia's invasion of Ukraine three years ago marked the beginning of a protracted conflict. This prolonged war raises critical questions about both sides' ability to sustain their military efforts. As warfare becomes more technical, widespread drone use, or "dronization", has made access to advanced technology essential.

Western countries have imposed multiple sanctions packages aimed, in part, at restricting Russia's access to cutting-edge technologies by limiting the export of dual-use goods-items with civilian and military applications. Therefore, it is essential to assess the effectiveness of these targeted sanctions. To what extent have they blocked, or at least complicated, Russia's procurement of these critical goods?

■ The European Union: a Key Supplier of Dual-Use Goods

Dual-use goods are not weapons but items or technologies that can be used for both civilian and military purposes. The

list of such products stems from international export control regimes, including the Australia Group, the Wassenaar Arrangement, the Nuclear Suppliers Group, and the Missile Technology Control Regime.

Due to their highly regulated nature, these products are specifically targeted by trade sanctions. Annex VII (pp. 325-397) of EU Regulation No. 833/2014 details the dual-use products and technologies subject to sanctions imposed by the European Union on Russia.

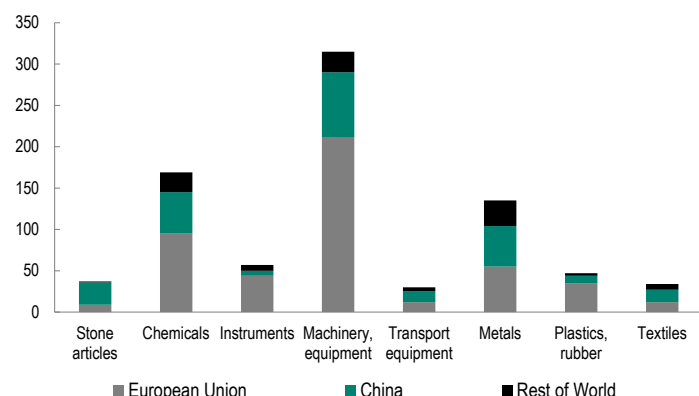
Before the conflict escalated in 2021, Russia imported 821 dual-use products from countries that imposed sanctions, 403 of which came mainly from the EU. These products included consumer goods such as drones; intermediate products, such as microprocessors; and advanced equipment, such as thermal cameras and radar systems.

Russia's imports of these goods were primarily concentrated in machinery, chemicals and metals. Before the conflict, the EU was the top supplier of at least one-third of dual-use products in each of these sectors (Figure 1). In 2021, the EU and China were Russia's two main suppliers of dual-use goods in each sector.

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Figure 1 – The EU was Russia's top supplier of dual-use goods before the war began

Number of dual-use products imported by Russia in 2021, by sector and top exporter



Source: Authors' calculations based on Global Trade Tracker database.

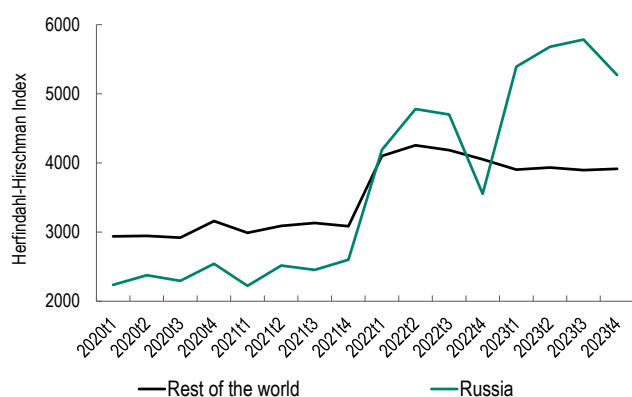
China Offsets the Drop in European Exports

Russia's demand for dual-use goods surged after it initiated the war. Between 2021 and 2023, imports of such products rose sharply, from \$37.8 billion to \$52.9 billion, a 40% increase.

However, sanctions have prevented Russia from continuing to source goods from the EU, which was previously a key supplier. Dual-use goods are specifically targeted by export restrictions, and financial sanctions have made trade with the EU more complex overall. Consequently, Russia's imports of dual-use goods from the EU decreased by 35% between 2021 and 2023. Russia had to adapt its import structure in response, becoming more dependent on new suppliers (Figure 2).

Figure 2 – Russia's dual-use imports are increasingly concentrate

Concentration index of dual-use goods imports



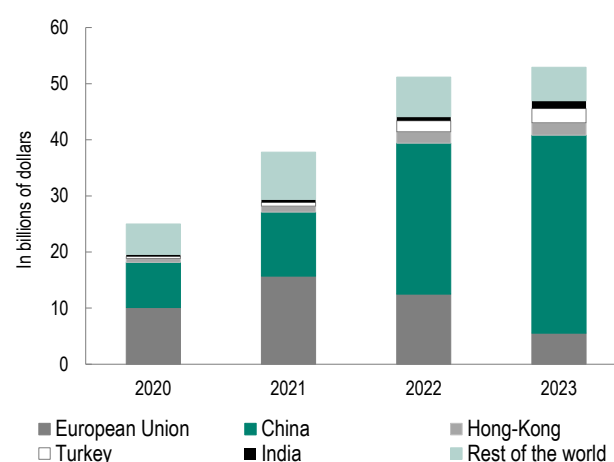
Reading notes: A higher Herfindahl-Hirschman Index indicates greater import concentration. Weighted average based on import value.

Source: Authors' calculations based on Global Trade Tracker database.

Before the war began, the EU accounted for 42% of Russia's imports of dual-use goods. Since then, these imports have been replaced by those from other countries, such as China and Turkey (Figure 3). Russia's imports from China more than doubled, rising from 30.2% in 2021 to 66% in 2023. Russia now relies mainly on China for its dual-use imports. Though smaller, the shares from countries such as Turkey and Hong Kong also increased significantly, rising from 1.78% and 2.8%, respectively, in 2021 to 4.8% and 4.2% in 2023.

Figure 3 – Imports from the European Union have been largely replaced by imports from China

Russian imports of dual-use products, by supplier

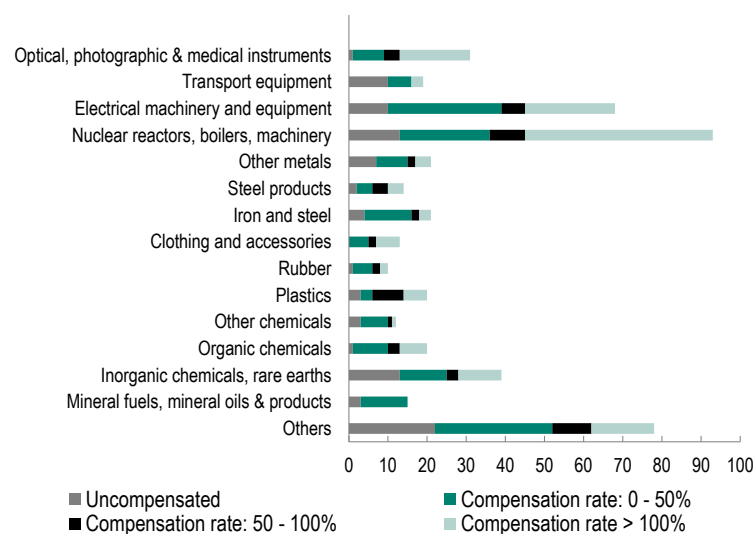


Source: Authors' calculations based on Global Trade Tracker database.

This shift demonstrates Russia's ability to adapt by using new trade routes to circumvent restrictions. However, the increase in import value could also be due to higher prices. To distinguish the effects of price from the effects of volume, a compensation rate is calculated for each dual-use product. This rate compares the decrease in imports from sanctioning countries with the increase in imports from non-sanctioning countries between 2021 and 2023. For instance, Russia primarily imported marine navigation radios from sanctioning countries in 2021; however, a 936% surge in imports from non-sanctioning countries largely offset the halt in Western exports.

Figure 4 shows that, of the 600 products that were mostly imported from sanctioning countries in 2021, 474 experienced a decline in trade. Of those, 154 were fully compensated by non-sanctioning countries, with 64 being offset entirely by Chinese exports. Strategic sectors, such as nuclear reactors, machinery, electrical equipment, and optical instruments, had especially high compensation rates; more than one-third of Russian supplies were fully compensated in these three

Figure 4 – The decline in imports of dual-use products from countries imposing sanctions has been compensated for in the case of many goods
Compensation rate by sector in 2023



Source: Authors' calculations based on Global Trade Tracker database.

Notes: The selected sectors are those in which at least 10 dual-use products were imported from countries that would sanction Russia in 2021, and that saw exports from these countries fall by at least 20% between 2021 and 2023. The graph shows the number of products (HS6 level) in each sector according to their compensation rate. A compensation rate of 100% means that the decline in trade volume from sanctioning countries was equal to the increase in trade volume from other countries.

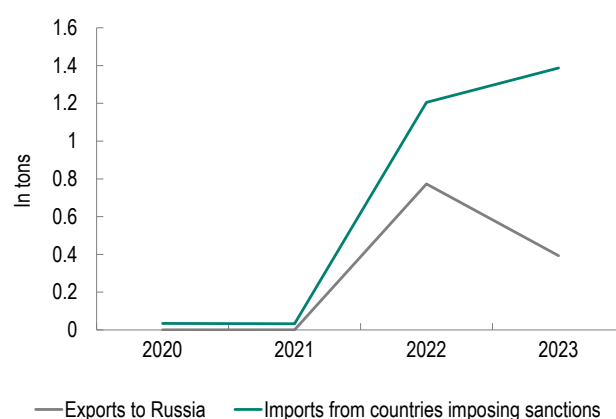
sectors. Surprisingly, despite Western countries' attention to the 50 products used by the Russian army on the battlefield in Ukraine, only 31 have seen a decline in export volumes from sanctioning countries. Eighteen of these products have been fully offset by other countries.

■ Connector Countries: a Way to Circumvent Sanctions

Export bans imposed by the EU and other suppliers have led to the development of trade flows that circumvent sanctions. Countries such as Turkey, Armenia and Azerbaijan have permitted the transit of dual-use goods from sanctioning countries to Russia. A prime example is radio navigation equipment (see Figure 5). Before the war started, Turkish exports of this product to Russia were nearly absent, but they rose sharply in 2023, coinciding with increased Turkish imports from sanctioning countries. This phenomenon is not limited to a few anecdotal cases but remains difficult to assess. If we consider a product to be re-exported when the increase in exports to Russia represents at least half of the increase in imports from countries imposing sanctions, nearly a quarter of Turkish exports to Russia consist of re-exported products (Figure 6). This share is even higher for Armenia (90%), Uzbekistan (74%) and Azerbaijan (66%), though their trade volumes are smaller.

Figure 5 – Armenian trade in radio navigation devices with Russia: an example of sanctions circumvention

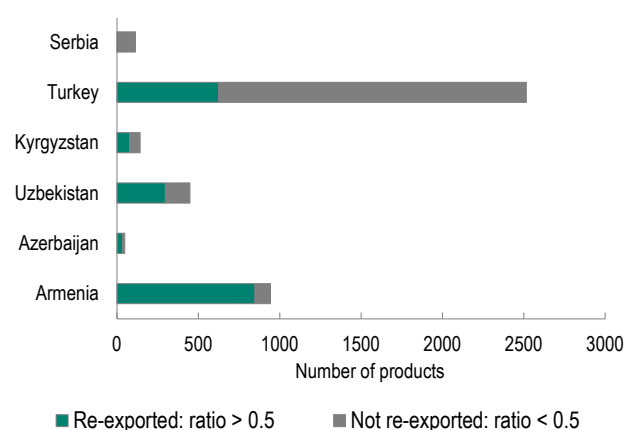
Armenian re-exports of radionavigation aid equipment (HS 852691)



Source: Authors' calculations based on Global Trade Tracker database.

Figure 6 – A significant proportion of exports to Russia from neighboring countries consists of re-exports of goods from countries that impose sanctions

Exports to Russia from neighboring countries in 2023



Source: Authors' calculations based on Global Trade Tracker database.

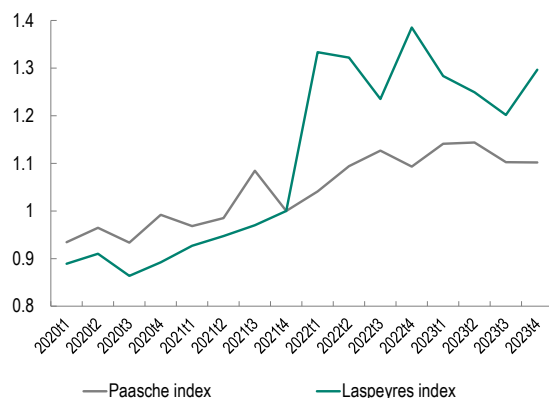
Note: A product is considered re-exported from a given country if the increase in its exports to Russia between 2021 and 2023 represents at least half of the increase in its imports from countries imposing sanctions.

■ Russia Pays More for Dual-Use Goods Since the War Began

Just because sanctions can be bypassed does not mean they are ineffective. Replacing EU suppliers with those from non-sanctioning countries has likely imposed significant costs on Russia. The Paasche price index shows that import prices for dual-use goods increased after the war began in Q1 of 2022, whereas they had been stable since 2020 (Figure 7). The higher Laspeyres index suggests that price increases would have been even steeper if Russia had kept its pre-war import structure.

Figure 7 – The increase in the cost of Russian imports of dual-use products since the war began has not been linked to a change in suppliers

Russian dual-use goods import price indices

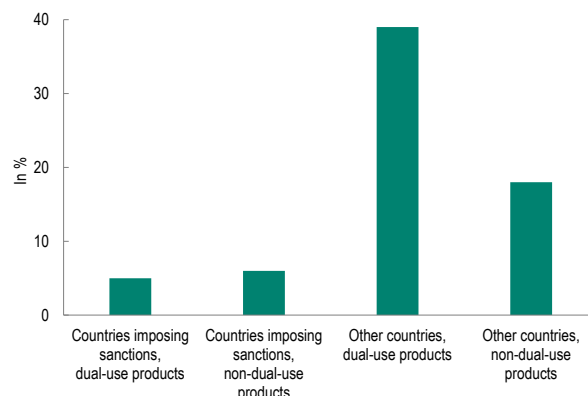


Source: Authors' calculations based on Global Trade Tracker database.

Reading notes: The current import price of dual products in Russia increased by 4.1% between the fourth quarter of 2021 and the first quarter of 2022 (Paasche index). Had Russia maintained the same geographical structure of its imports, the increase would have been 33.3% (Laspeyres index).

Figure 8 – A more marked increase in prices for dual-use products from countries that do not impose sanctions

Increase in the average price of Russian imports relative to the prices of imports from the rest of the world



Source: Authors' calculations based on Global Trade Tracker database.

Reading notes: The price of Russian imports of dual-use products from "other countries" increased by 39% more before and after the war than imports from the rest of the world. Meanwhile, the price of Russian imports of dual-use goods from countries imposing sanctions increased by only 5% between the pre- and post-war periods.

Figure 8 compares the evolution of the price of Russian imports of each dual product before and after the invasion with those of other importing countries for the same products over the same periods. The figure shows that the price increase was particularly significant for dual-use products from countries that did not participate in the sanctions programs (39% higher than the price of exports from these countries to the rest of the world for the same products). However, re-exported products did not experience a greater increase, suggesting that circumventing sanctions through connecting countries was not the cause of the increase in the price of Russian imports of dual-use products. Exporters have taken advantage of the decline in competition to increase their margins on these products.

In the face of sanctions, Russia has turned to new suppliers to secure its dual-use imports, which are essential for continuing the war. However, this adjustment has come at a cost. For Russian importers, these new suppliers were only a second-best option. They exported little to Russia before the war began and offer goods that are cheaper and likely of lower quality than those from sanctioning countries. On the other hand, reduced competition has allowed these suppliers to increase their margins, resulting in higher prices for dual-use goods in Russia. Thus, Western sanctions have achieved one of their goals: making Russia's procurement harder, more expensive, and of lower quality.

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