
Russia's Technology Imports from East Asia*

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Abstract

Russia's invasion in Ukraine has led to substantial restrictions on exports to Russia, which some East Asian economies have joined. We review the importance of East Asian economies as providers of technology imports for Russia and present a preliminary analysis on the development of Russian imports from East Asia after the invasion. We find that East Asian economies have been important suppliers of technology goods for Russia. After February 2022, exports of most East Asian countries to Russia have dropped substantially. Chinese exports to Russia have increased, especially in the category of vehicles.

1. Introduction

Russia's illegal annexation of Crimea in 2014 and subsequent invasion of Ukraine in February 2022 have led to substantial restrictions on exports to Russia. Many of the restrictions, imposed by the EU, the United States, the UK, and their allies, relate to technology exports. Exports to Russia are also limited by sanctions concerning Russia's financial and transport sectors. In addition, over a thousand international companies have ceased business operations in Russia. Some East Asian economies—Japan, Korea, Taiwan, and Singapore—participate to some extent in the Western sanctions regime. In particular, these countries have restricted specific technology exports to Russia. In contrast, China and ASEAN member countries, with the exception of Singapore, have not imposed economic sanctions on Russia.

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In this paper we examine Russian technology imports from East Asian countries.¹ We focus on technology goods as these are subject to restrictions by most developed countries. The technology sector is also one where Russia imports a substantial amount of both inputs and final goods. We first review the importance of East Asian economies as providers of technology imports for Russia. Then we present a preliminary analysis on the development of Russian imports from East Asia after Russia's invasion of Ukraine.

We find that East Asian economies have been important suppliers of technology goods for Russia in various product categories. China has been an important source of consumer electronics, Japan a leading supplier of passenger cars and car parts, Korea for shipping industry products, Taiwan in products using semiconductors, and ASEAN countries for electrical equipment. After Russia's invasion in Ukraine, exports of most East Asian countries to Russia have dropped substantially. In contrast, Chinese exports to Russia have grown. Growth is partially related to technology goods, particularly vehicles.

The paper is structured as follows. Section 2 presents a general overview of Russian imports from East Asia. Section 3 gives an overview of the economic restrictions imposed on Russia as a consequence of Russia's invasion in Ukraine. Section 4 presents the preliminary analysis on the developments of East Asian exports to Russia after the invasion. Section 5 concludes.

2. Russia's imports from East Asia

At the aggregate level, Russia is not highly dependent on imports. Relative to GDP, Russian imports have remained relatively stable at around 20 percent throughout the past two decades both in terms of US dollars and constant rubles. The share of imported inputs in Russia's total use of intermediate inputs was 12 percent in 2018. Russia's medium- and high-technology branches, such as computer and electronic equipment, motor vehicles and other transport equipment, and machine-building, are much more dependent on imports. In these branches, the share of imported inputs ranged from 26 percent to 35 percent in 2018 (Simola 2022a).

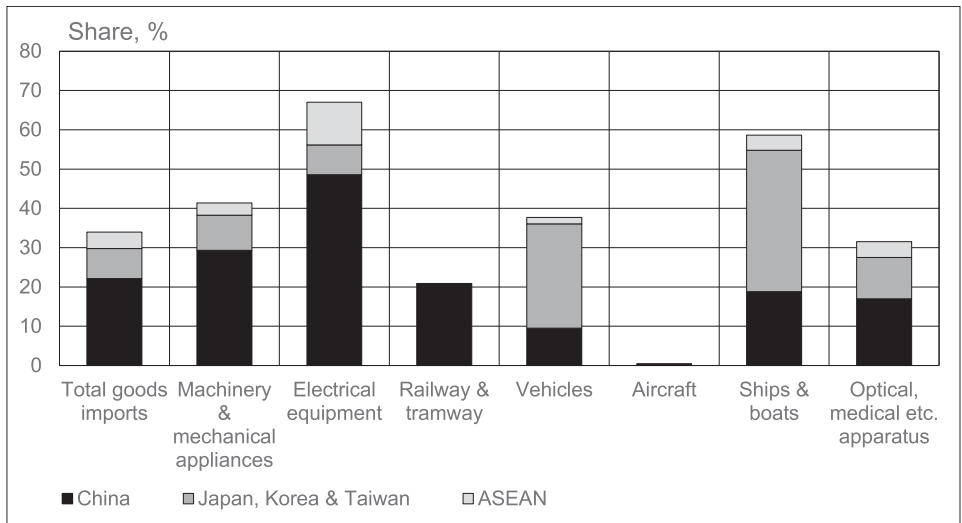
2.1 Aggregate level imports

Overall, the EU has been Russia's biggest source of imports (Korhonen and Simola 2022). However, in the past years, the share of East Asia increased substantially in imports led by China.² The share of East Asian economies in Russia's total goods imports was 34 percent

1 For brevity, "East Asia" refers here to China, Hong Kong, Taiwan, Japan, South Korea, and the ten ASEAN member countries.

2 Trade patterns between Russia and East Asian economies in the longer term are analyzed in more detail by Rasoulinezhad et al. (2020).

Figure 1. The share of East Asian economies in Russia's total imports and certain technology product categories in 2019, %



Source: UN Comtrade.

in 2019, with China accounting for the vast majority of Russia's imports from East Asia. Other largest import partners are Japan, South Korea, and Vietnam.

Technology products such as machinery, equipment, and related parts form a substantial part of the goods that Russia imports from East Asia. East Asian countries are also important suppliers of technology products for Russia. They accounted for about 40 percent of Russian imports of machinery and vehicles, nearly 60 percent of ships and boats, and a whopping 67 percent of imported electrical equipment in 2019 (Figure 1).

China is by far the largest import partner for Russia in most technology product categories, reflecting its huge size and role as a global manufacturing hub. South Korea is the largest import provider of ships and boats, while Japan leads in imports of vehicles and related parts. Among ASEAN countries there is variation across product groups. Vietnam is a substantial import source of electrical equipment (e.g., equipment related to mobile phones), Malaysia for certain medical appliances, Thailand for vehicles and machinery, and Indonesia for ships and boats.

2.2 Technology imports from East Asian economies

China is Russia's most important trading partner for electrical equipment and machinery. As seen in Table 1, almost all of Russia's imports are sourced from China in categories such

Table 1. Importance of East Asian economies for Russian imports in 2019

	Total imports, value (US\$ million) and share (%)	Selected largest import products by share, import value (US\$ million) and share in Russian imports (%)		
China	54,142 (21%)	LED lamps 242 (98%)	Laptops 1891 (95%)	Air conditioning machines 344 (92%)
Japan	8,961 (4%)	Wheeled bulldozers 15 (78%)	Outboard motors for marine propulsion 65 (75%)	Passenger vehicles (spark ignition engine > 3000 cc) 538 (42%)
Korea	8,002 (3%)	Machines for the manufacture of flat panel displays 17 (93%)	Tanker ships for transport or storage of liquids and gases 543 (81%)	Bodies for passenger vehicles 870 (42%)
Taiwan	2,204 (1%)	Solid-state storage devices (e.g., USB sticks) 83 (32%)	Electronic integrated circuits 123 (31%)	Sewing machines (household use) 11 (26%)
ASEAN	10,356 (4%)	Other instruments designed for telecommunications 13 (64%, Malaysia)	Processors and controllers (electronic integrated circuits) 389 (60%, Malaysia)	Radio navigational aid apparatus 140 (55%, Singapore)

Source: UN Comtrade.

as LED lamps, computers, and household electronics. In terms of value, laptops, computers, and telephones each accounted for over US\$ 1 billion in 2019. A significant amount of the products with a high ratio of imports are consumer goods, which differentiates China from the other East Asian economies, some of which tend to exhibit a higher ratio in capital goods.

Russia's imports from Japan are concentrated in certain product categories, with 45 percent of total imports from Japan consisting of vehicles and vehicle parts. The share of Japan compared to other import sources is also significant. In 2019 Japan was the source of 26 percent of Russia's total imports of motor vehicles for passenger transportation and accounted for over 20 percent of imports of certain vehicle parts, namely, vehicle bodies and motors. Additionally, Japan is an important import source for Russia in machinery and mechanical appliances, mainly bulldozers and angledozers, cranes, printing machinery, as well as motors and engines for marine vessels and cars.

Like Japan, a high share of technology imports from South Korea are concentrated in the categories of machinery and mechanical appliances and vehicle parts. South Korea is an especially large import source of tanker ships, including LNG carriers and oil tankers (Table 1). Import figures in these subcategories can vary wildly from year to year given the scale of orders. In 2019, 81 percent of the value of Russia's tanker ship imports came from South Korea. While South Korea accounts for a smaller of share of Russia's passenger vehicle imports than Japan, it is an important import source of vehicle parts. South Korea provides almost half of Russia's imports of bodies for passenger vehicles and a significant

share of seat belts, bumpers, steering wheels, gearboxes, suspension systems, and other vehicle parts.

Taiwan's specialization in semiconductor technology and chip manufacturing can also be seen in Russia's imports. The products with highest import values are computer parts and devices utilizing semiconductor technology, including solid-state storage devices and different types of electronic integrated circuits. Other important items include tools and machines for metalwork, certain motor vehicle parts, and lathes.

The composition of Russia's imports from ASEAN countries in technology products differs from that of Japan or South Korea. The product with the highest yearly import value is telephones. Russia imported over US\$ 1 billion worth of phones from Vietnam in 2019, accounting for 18 percent of Russia's total imports in telephones.

Electronic integrated circuits and a wide variety of small electrical machines and apparatus from ASEAN countries account for a substantial share of Russia's imports in certain subcategories (Table 1). Vietnam is especially important in imports of small electrical machines, that is, printing and copying machines and vacuum cleaners, while most electronic integrated circuits are sourced from Malaysia. Thailand is a key source of diesel-powered trucks for goods transport.

3. Economic sanctions imposed on Russia due to the war

In response to the war that Russia initiated in Ukraine, the EU, the United States, and many other countries have imposed extensive economic sanctions on Russia. The main purpose of the sanctions is to restrict Russia's financial and technological capabilities for warfare. In general, the sanctions are highly coordinated among the EU, the United States, and the UK, although there are some differences in details. Many other countries have joined the sanctions at least partially and have committed to preventing their circumvention. Besides sanctions, hundreds of international companies have decided to cease business relations with Russia (Simola 2022d).

The most important sanctions from the aggregate economy viewpoint restrict Russia's international financial and trade flows. Financial sector sanctions include restrictions on providing finance for Russian entities, excluding the largest Russian banks from the SWIFT international payments system, and freezing a large part of Russia's foreign currency reserves.

Trade restrictions apply to both imports from and exports to Russia. Restrictions have been extended gradually to include new products. The current sanction regime displays variation across countries concerning import restrictions both in timing and coverage. The main

restrictions on imports from Russia concern crude oil, oil products, coal, gold, certain steel products, and wood. Restrictions on exports to Russia are focused on (but not limited to) technology products to erode Russia's military capabilities and industrial base. Restrictions focus on product categories of machinery and mechanical appliances, electrical machinery, and optical instruments. Export restrictions are in general coordinated among imposing countries, but they are not completely identical (Simola 2022c). Russia's international trade flows are also hampered by restrictions on transport flows to and from Russia.

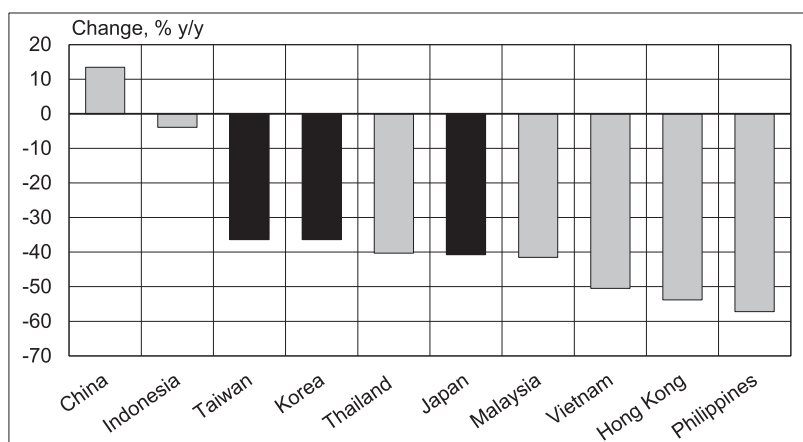
From East Asian economies, Japan, Korea, Taiwan, and Singapore have imposed economic sanctions on Russia. Japan's measures include restrictions on providing finance to Russian entities and on certain imports and exports from Russia. Japanese export restrictions apply, for example, to "cutting-edge goods," goods strengthening the Russian industrial base (e.g., trucks and bulldozers), and luxury goods. Korea has imposed certain financial restrictions on Russia and export controls on strategic exports (e.g., microelectronics and telecommunication items) to Russia and Belarus. Taiwan stated immediately after Russia's invasion that it will join the international sanctions imposed on Russia and comply with semiconductor export controls. Singapore has imposed restrictions on finances and exports of strategic goods to Russia (e.g., electronics, computers, and telecommunication). Other East Asian countries have not joined the international sanctions coalition (Bown 2022).

In addition to sanctions, over 1,000 international companies have ceased business operations in Russia due to the war. This has also severely complicated production possibilities of Russian companies, particularly in medium- and high-technology sectors. According to analysis by the Kiev School of Economics (2022), the companies that have left or are planning to leave Russian markets are mainly European and U.S. companies. More than half of companies from the United States, UK, and Nordic countries have already exited or have decided to leave the Russian market. The corresponding share among Japanese companies was about 30 percent, Korean companies 20 percent, and Chinese companies 10 percent.

The role of East Asian countries can be important in the current situation. They have been important technology providers for Russia and could potentially provide substitutes at least for some imports that Russia is now unable to obtain from other countries due to sanctions or self-sanctioning of foreign companies. There are many studies that illustrate how the costs of sanctions can be much higher with more countries joining the sanctions coalition (Benzell and Lagarda 2017; Langot et al. 2022; Mahlstein et al. 2022; Simola 2022b; Wanner et al. 2022).

4. East Asian technology exports to Russia after the invasion of Ukraine

Russian Customs has suspended publication of foreign trade statistics, so recent data on Russian imports are not available. Our analysis relies on export statistics of the East Asian

Figure 2. Change in the value of goods exports to Russia in 2022*

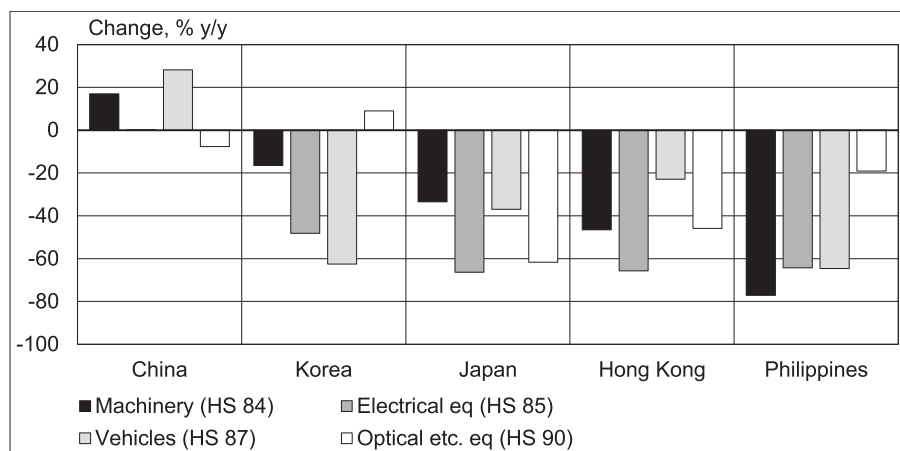
Source: Macrobond.

Note: *Jan–Sep for Indonesia and the Philippines; Jan–Oct for Hong Kong, Japan, Korea, Malaysia, and Thailand; Jan–Nov for China, Taiwan, and Vietnam. Sanctioning economies in black.

economies. The availability of export data for 2022 is also limited, particularly in a more detailed level. Therefore we first review the overall development of exports to Russia for a larger set of East Asian economies and then focus in more detail on technology exports from a smaller set of countries.

In general, goods exports of most East Asian economies to Russia have substantially contracted after Russia's invasion in Ukraine. The trend is similar compared to most other countries. This applies both to countries that have imposed restrictions on exports to Russia, but also to most countries that have not joined the sanctions against Russia (Borin et al. 2022; Simola 2022c). For most East Asian economies, the value of goods exports has declined by 40–60 percent year-on-year (y/y) in 2022 (Figure 2). This suggests that these economies have not provided Russia with substitutes for imports from other countries, at least in substantial amounts. The key exception is China. The value of Chinese goods exports to Russia rose by 14 percent y/y in January–November 2022.

Next we take a closer look at technology exports. We focus on the categories of machinery and mechanical appliances (HS 84), electrical machinery and appliances (HS 85), and optical etc. equipment (HS 90). The majority of the goods that are under export restrictions by the sanctioning countries fall under these categories. Nevertheless, the export restrictions only apply to a small fraction of product lines included in these aggregate categories, so most of the goods in these categories are not under any sanctions. We include also vehicles

Figure 3. Change in the value of exports of technology product categories to Russia in 2022*

Source: Macrobond, UN Comtrade.

Note: *Jan–Nov for China; Jan–Oct for Korea; Jan–Aug for the other economies.

(HS 87), even though the majority of products in this category are not sanctioned, but most foreign car manufacturers have nevertheless left Russian markets.

Aircraft (HS 88) and ships (HS 89) are excluded from this analysis. Their exports are heavily restricted by the sanctioning countries, but these exports are very volatile even in normal times. Moreover, the data suggest that in the most recent years these categories have accounted for a much smaller share in the exports of East Asian countries than the other technology product categories.

The overall trends of East Asian technology exports to Russia are similar to the aggregate export trends. In general, exports of technology products have substantially declined, but there is much variation between country–product category pairs (Figure 3). The main exception again is China. Chinese exports of vehicles have grown 28 percent y/y and exports of machinery and mechanical appliances 17 percent y/y in January–November 2022. In particular, the share of vehicles has increased in Chinese exports to Russia (Simola 2022d). According to media reports, Chinese car manufacturers are indeed the only foreign ones still present in the Russian markets.

5. Concluding remarks

Our analysis shows that East Asian economies have been important suppliers of various technology goods for Russia. After Russia's invasion of Ukraine, some East Asian

economies joined the economic sanctions imposed on Russia by the coalition led by the United States and EU. Many studies show that the costs of sanctions can be much higher with a larger coalition imposing them.

The sanctions included many restrictions on exports of technology products to Russia to erode the production capacity of Russia's military industry and limit Russia's possibilities for warfare. In addition, many international companies have decided to suspend their operations in Russia. This has also caused problems for medium- and high-technology industries in Russia.

East Asian economies could potentially provide Russia with substitutes for imports from other countries. Our analysis shows, however, that exports of most East Asian economies to Russia have contracted substantially after Russia's invasion of Ukraine both at the aggregate level and, more specifically, for technology products. China is a key exception, as Chinese exports to Russia have increased. This applies particularly to products in the category of vehicles. The majority of goods in this category are not under any sanctions, but most foreign car manufacturers have suspended their operations in Russia. Chinese manufacturers are apparently filling this gap.

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