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Russia's commodity trade and trade costs 2019-2024



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Abstract

This study aims to measure trade partners' reporting of all trade with Russia, thus creating mirror trade data to estimate Russia's total per-country trade, validate the trustworthiness of the Bank of Russia balance-of-payments commodity trade data, and estimate changes to Russia's trade costs. We do this by compiling monthly trade data for 170 countries, representing more than 99.5 % of Russia's trade. We collect credible third-party data for 92 % of the total trade. Our data reveal that China and the Global South absorb more of Russia's exports. China alone has gained substantial export market shares in supplying Russia's imports, while the Global South and ex-Soviet neighbours struggle to gain market shares. Western countries have preserved more of their market share in Russia's imports than official data indicate. Ex-Soviet states have gained roles as intermediaries and facilitators for circumvention exports of Western goods to Russia, without winning any substantial market share for their own export products. Finally, we apply the total CIF/FOB margin as an indicator of Russia's trade costs, first of all Russia's costs of imports and trade partners' total costs of buying Russia's exports. Russia's import costs add to Russia's inflation, while trade costs of Russia's exports hurt Russia's export competitiveness. The analysis captures trade costs such as shipping, insurance, customs bribery and trade route risk premia, while trade cost analysis cannot capture all of the substantial cross-the-supply-chain price increases on (sanctioned) goods in Russia's imports. Our study shows that sanctions correlate with an almost trebling of Russian import trade costs from 2021 to 2024, contrary to global trends and far in excess of the trade cost increases by other countries. Russia's exports are totally dominated by oil and gas, and trade costs increased already in 2021 before sanctions but accelerated from 2023. Export trade costs are probably heavily influenced by export composition including the sharp fall in pipeline gas sales in 2021. Fully understanding Russia's trade costs requires access to more granular Russian trade reporting beyond present customs data. We need better and more accessible data to detect Russia's economic situation.[1]

1. Background and summary

In **October 2024**, Corisk launched its 8th report on the effects of sanctions of Russia, making country-by-country commodity trade data the Russian Federation available for the first time.[2] Further, that report analysed and estimated the cost of trade incurred on Russia by sanctions. **This report**, published 6 months later, updates this work by including trade for the whole year of 2024, thus bringing analysis to bear on six full years including almost three years of enhanced sanctions.

We update Russia's annual trade cost applying the same CIF/FOB margin methodology inspired by OECD and CEPII, on macro trade data to indicate Russia's comparable trade costs during sanctions, for exports and imports.[3] We achieve this by measuring trade partners' monthly imports including insurance and freight costs (CIF), and exports free-on-board (FOB).[4] Trade costs typically include shipment services, freight insurance, port handling, truck or rail logistics payments, briberies at borders, sanction risk premia, and trader profits. Our complete trade dataset thus sheds light on the trustworthiness of monthly commodity trade data from the Bank of Russia.[5]

Our report includes only **trade in commodities** (physical goods), enabling comparative analysis of 170 nations' monthly exports and import with Russia over a total of six full years (2019-2024). The report brings a total estimation of Russia's external trade in commodities by combining and accumulating trade data from Russia's trade partners, in the same way as done by the economic thinktank Bruegel. However, we extend their *Bruegel Russia Foreign Trade Tracker* analysis of 38 countries, to build a comprehensive dataset for Russia's trade with 170 countries. By examining and closely verifying national trade statistics, we present and analyse more than 99.5 % of Russia's trade. By carefully collecting trade data from ex-Soviet republics and estimating trade within the Eurasian Economic Union (EAEU), we can present a de-facto complete trade dataset that is lacking from other sources.

Russia's own, total **export earnings** (FOB) peaked at $ 155 billion in Q1 2022, when Russia attacked the Ukraine again. Since then, exports present strong decline, also during the well-known "winter spikes" where Russian trade traditionally peaks at mid-winter. Export earnings fell gradually from $ 592 billion in 2022, and further to $ 435 billion in 2023, and finally $ 433 billion in 2024 – despite increasing benchmark prices on Ural Crude oil. Measured at the prices (CIF) that other countries paid for their imports from Russia, total Russian exports were $ 645 billion in 2022, declining to $ 486 bn in 2023, and only $ 467 bn in Q4 2024. That is the lowest export level since the Covid-19 outbreak. From 2022 to 2024, Russia's export markets shifted as flows to Western countries fell from 20 billion to 5 billion dollars per month, while Russian monthly sales to non-Western markets jumped from 15 to 33 billion dollars. Indirect Russian circumvention exports of goods to the West via third countries are marginal at only 200-500 million dollars per month, including various wooden products.[6]

Russia's **import values** measured by the foreign exporters' price FOB, peaked at $ 75 billion in Q4 2022, and totalled $ 251 billion in 2022. Due to the massive fallout of trade during the early warfare in Q1 2022, annual imports that year were low despite strong increase towards the winter peak. Annual values climbed from 251 billion in 2022 to an improved $ 278 billion in 2023, masking a continued quarterly decline from peak. In 2024, annual CIF imports stood at $ 268 billion. Russia's import markets have shifted away from Western countries. Even if we add almost $ 3 billion in monthly Western circumvention exports to Russia via third-countries, the picture is only partly modified: total flows of Western goods to Russia have declined by 40 % from 11 to 6 billion dollars per month. China has won market share in Russia, while most other countries lost market share.

Countries in the Global South gained some export market share in 2023 but lost those gains in 2024, with most gains achieved by Turkey rather than countries in Latin America or Africa. Sub-Saharan Africa has reduced exports. Furthermore, most growth in selected third-countries' exports to Russia derives from trade in circumvented Western goods. Russia even buys less goods produced in nearby ex-Soviet states, and more from long-distance exporters in China, India, Turkey, and the UAE.

Our October 2024 study concluded that the **Bank of Russia** publishes trustworthy data for FOB exports and CIF imports. But during the second half of 2024, our CIF data increasingly diverge with Bank of Russia FOB data, but in opposite directions for exports and imports: Export trade costs apparently fall while import trade costs apparently rise. We discuss these tendencies separately:

For Russian exports, the CIF/FOB differential is decreasing, indicating substantially reduced **export trade costs** through 2024. This may of course stem from errors in the Corisk data or CBR data. Corisk CIF estimates may have missing data and under-estimate foreign imports from Russia, especially for Russian sales to certain EUAU neighbours or the states such as North Korea or Iran, that are not captured in CIF trade accounting from those countries. As we cannot identify under-reporting as a source of error, we have applied maximum consistent data series over the time period, giving increased credibility to observed *changes* in trade costs. For the EAEU, we estimate trade in ways consistent with previous methodologies that have yielded consistent results, and the Russian-Emirati trade volumes are too small to make significant difference. The possibility of the Bank of Russia over-estimating Russia's FOB export revenues remains, but suspicion is weakened by the recording of record-low January 2025 exports.

A more likely explanation of declining export costs is declining margins as foreign buyers obtain price discounts at the expense of (Russian) shippers. Declining global oil prices from April 2024 onwards, may have opened alternative sources for countries like China and India, increasing their negotiating powers and scopes of rebates on Russian oil. But for India, at least, recent reports do not support that hypothesis.[7] Indeed, our analysis indicates rising export trade costs in 2023, but significantly reduced export costs in 2024. This leaves open the possibility of cost-reducing impacts of the shadow fleet. Testing these hypotheses against services export revenues from oil fright shipping is tempting (we would anticipate a decline), but since the *Sovcomflot* has been partly sold and the shadow fleet is largely registered in African countries, the revenues would mostly not be visible in Russian balance-of-payment data. Some would be accounted as capital incomes from ownership in foreign shipping companies, but most may not be flowing in and accounted by Russian banks at all.

The situation for Russian **import trade costs** is adverse. Costs have almost trebled from below 4 percent to reach almost 11 per cent of CIF imports, a level close to the global maximum of certain developing countries. This import cost undoubtedly wears heavily on the Russian economy. In fact, the trade costs have probably increased even more than that, because it ignores re-export price increases along the supply chain: CIF/FOB margins are only estimated in the last chain between the ultimate exporter who sells to Russia. For example, Russia may import a commodity produced in Germany, brought from Germany to Hungary, from there to Serbia, and then to Turkey for re-export to Russia - with trader costs and price increases at several stages along that route. Here, the CIF/FOB margin based trade cost will only include costs and corresponding price increases at the last stage between Turkey and Russia, ignoring other trade costs along ever longer routes.

In the **fourth quarter of 2024**, we account a dramatic increase in monthly import trade costs, with an almost trebling of costs within a few months. Just as with export costs, this increasing import cost may derive from mismatch in Russian versus trade partner reporting, especially for imports from North Korea, Iran, or within the EAEU. To start with the option of Russian over-reporting, it may indicate over-reporting of imports, perhaps signalling an inflated narrative of large supplies for the war effort, alongside over-reporting of exports to support the same narrative. But, just like the case was for exports, the Bank of Russia account record-low CIF imports in January 2025, contradicting the inflated narrative hypothesis. The possibility of under-reporting from Iran or other obscure reporters is real and likely, but from a vast record of historic trade we have observed that state-to-state sales of armament or ammunition are neither recorded by the exporter, nor by Russia as an importer. We believe that a sudden deviation of 2-3 billion dollars in imports per month is unlikely to derive to any large degree from non-military trade with Iran or other rough states.

We find the most compelling evidence from another, and more intuitive direction. In September 2024, we record the last month with Western circumvention exports to Russia via Belarus, after that shadow trade having declined dramatically during the third quarter. This derives from concerted action by Finland, Poland, the Baltic states to close border stations and strictly control exports in remaining trade routes, alongside the full harmonisation of Belarus sanctions with Russia sanctions by the EU – entering into force in September. With a legacy time-lag in Russian imports of Western shadow export goods via Belarus, we record the decline in Russian imports of Western goods via Belarus from both trade and customs data. This indicates cost effects of closing the cheaper Belarus route, diverting goods towards the longer Bosporus and China routes at higher trade costs. Closing the Belarus route may leave traders and smugglers along the Balkan-Bosporus route with stronger negotiating powers vis-à-vis Russian importers, increasing their scopes for trading margins.

Checking the hypothesis against European southward **traffic data**, runs into the limitation that such data denote traffic in tons, not in value. Tonnage data for the fourth quarter and all of 2024, tend to contradict the hypothesis with only 4.8 % increase in border-passing cargo road traffic through Serbia in 2024; and a substantial decline in outward road cargo road traffic from Bulgaria to Turkey and Georgia, both in the fourth quarter and in total during 2024.[8] The same applies for Bulgarian inward road cargo traffic loaded in Germany, Austria and the Baltic states, only Polish cargo has a marginal increase.[9] Turkish total and transit sea cargo tonnage shipped to Russia stagnate in 2024 including in the last quarter.[10] And , road traffic from Georgia to Russia stagnates in 2024.

However, sanctioned Western goods should be expected to have high value-by-weight, and we check the hypothesis against **trade value**, rather than weight. It reveals significant reduction in Western exports to Belarus and Belarussian exports to Russia, supported by Russian customs data. However, exports to Russia stagnate from the typical circumvention countries of Turkey, the UAE, and India. Export growth is close to zero from East Asia, Malaysia and Central Asia. However, exports to Russia from mainland China made significant jumps in June and again in August and September, bringing H2 totals significantly above previous 6-months periods during the sanction years. There is also clear increase from such remote sources as Vietnam, Thailand, Indonesia, and Bangladesh, as there is also from the total number of countries making up the “Global South” with long shipment distances.

Applying trade distance data from the *CEPII GeoDist* database, we multiplied monthly country-by-country FOB exports to Russia by **trade distance** in kilometres. Measuring such **value-distance** trade

revealed clear increases during late summer 2024, and a new substantial hike in September. Thus, value-distance FOB exports to Russia jumped by 10 % in Q3 mainly due to the spike in September, and keeping that elevated level through Q4. To better determine distance effects on trade costs relative to total imports, we determined the *average* km transport of Russia's total imports. Because we do not have granular per-country CIF import data from the Bank of Russia, we cannot compare partner granular FOB data against Russian total CIF data, we must compare value-distance totals to the total FOB trade data collected from trading partners. In Q3, the average trade distance increased just marginally by 1.6 % compared to Q2, while by Q4 it had increased by only 5 %. Even in Q2, the average trade by 3.3 %, without producing any visible spike in import trade costs. Thereby, some increased shipment costs are indicated, but not even near explaining a dramatic increase in import costs.

However, CEPII's trade distances are measured between capitals, and may be illusory if Russian importers of Asian goods are more likely to be located closer to ports and industrial centres along Russian coasts and key harbours. While we cannot measure the relative location of Russian importers (or end-users) of foreign goods per region of Russia, let alone in ports like Vladivostok or Novorossiysk relative to inland industrial centres, the weighted trading distances are sometimes massively skewed. For example, the trading distance between Russia and Japan is 7,486 km, almost exactly equal with Canada at 7,495 km. However, the distance to Vladivostok is only 1,758 km from Tokyo against 7,893 km from Vancouver, and the alternative Canadian route from Quebec to Saint Petersburg is still 7,443 km long. Thereby, instead of having comparable distances to Russian importers, the effective trade distance to relevant ports may well by 4.3 times higher for Canada, than for Japan. Similarly, Korea's modelled trade distance of 6.614 km to Russia masks a sailing distance between Busan and Vladivostok of only 943 km.

Therefore, we sorted multiplied monthly country-by-country FOB exports to Russia by the shortest relevant **shipping distance** in kilometres from a major industrial port in the partner country, to either Saint Petersburg, Novorossiysk, or Vladivostok. Distances were sourced from *Sea-Distances.org* and converted from nautical miles to kilometres. For land-locked countries we added relevant road distances to their known preferred foreign ports and export outlets. For China, with a trade distance of 5,795 km (CEPII) we set an average transport distance of 2,500 nautical miles (4,630 kilometres), clearly above Taiwan (2,617 km) as we observe from customs data that considerable Chinese exports enter Russia over land via Central Asia – which is only rarely the case for other East Asian countries' goods. Under these preconditions, maritime value-distance FOB exports jumped by 8.4 % in Q3 compared to Q2, while value-distance in Q4 stagnated at the same level as during Q3. Similarly, the *average* maritime distance of trade actually declined by 0.1 % in Q3 compared to Q2, but increased by almost 3.3 in Q4. Again, in the second quarter there had also been a marked increase by almost 3.6 % without this adding proportionally to import costs. As for CEPII trade distances, applying shortest relevant maritime distances fails to significantly explain the sudden and strong increase in import costs during the fourth quarter.

While we found clear re-routing from Belarus to the Balkan-Bosporus-Caucasus routes in 2023, this trend is much weaker in 2024 including in the last quarters. Actually, Turkish exports to Russia marginally declined in 2024 and clearly declined in the last quarter – and the same is the case for border-crossing road transport from Bulgaria. Total trade data indicate a possible narrative: The

closing of the Belarus Gap reduced European exports to Russia, trade via the Balkan-Bosporus route was retained but declined in the fourth quarter, supplies from ex-Soviet neighbours declined, while Russia partly reduced its total FOB-value imports and partly imported more from more distant sources. Still, the average value-distance in kilometres did not increase by more than 3-5 % in the second half of 2024, and trade distances had increased roughly equally in the second quarter without anything near the same impact on Russian import trade costs.

This study consists of seven **chapters**. Chapter 2 sums up some independent studies exploring Russia's foreign trade, including the Central Bank of Russia. In Chapter 3, we present Russia's exports from 2019 to 2024, including their absolute value, geographic composition, and development of the trade cost. Chapter 4 similarly presents Russia's imports against three other sources, with breakdown of geographic suppliers and an estimation of the import trade cost through the period. This chapter also contains estimates of total Western indirect exports to Russia. We present an account of methodology and data sources in Chapter 5, including applied accounting and estimation principles. We present our selection of data sources and process of data validation, including assessments of local under- and over-reporting and our management of the risks of double accounting. The chapter finally presents the sources applied and data series selected for each country, and a discussion of trade costs in Russia's foreign trade. In the end, Chapter 6 provides raw trade data for Russia's trade with the several the 170 studied countries, global and country-group totals, and currency rates used.

2. Russian exports 2019-2024

Russia's trade after February 2022 must be viewed with an eye to bottleneck and release effects surrounding the Covid-19 outbreaks, with particular and prolonged regulations in China.[11] Further, Russia suspended publication of trade data from February 2022, and Belarus from July 2022. These methodological challenges do not impact on our estimation of data from third countries, but it makes calibration and inter-temporal interpretation more difficult. To add to the picture, Russia's trade suffered a severe blow during March-April 2022, as the outbreak of war may have brought regulatory uncertainty to traders and halted logistics, especially in Europe.

Since July 2022, Corisk maintains a continuously aggregated *Corisk Excessive Trade Model* and trade database, estimating Western direct and indirect trade with Russia. It includes granular data for 33 countries and macro data for 41 countries: EU-27, Norway, Switzerland, Liechtenstein, Iceland, Faeroe Islands, Greenland, Australia, New Zealand, Canada, the United States, the United Kingdom, Japan, South Korea, Taiwan, and China. The database also includes Russia's trade with another 129 countries. Thereby, our total estimates consist of Russia's commodity trade with 170 economies of the world, including all the major economies and trading partners of Russia .

The database allows us to account **Russia's monthly exports** to 170 countries from January 2019, covering more than 99.5 % of total exports. We cover 91,87 % of the exports with importer CIF data, while the other 8.13 % of the trade is covered with Russian trade and customs data containing a mixture of CIF and FOB accounted records. The result in Figure 1 is an estimate of Russia's exports CIF at the importers' hands (blue), which is consistently higher than the total Russian FOB export value deriving from banks' transactions via the Bank of Russia (red). The distance between the two lines indicates the gross cost of trade added to importer CIF prices. For overview, we also include the *Bruegel* institute's estimate of Russia's CIF exports (black, dotted).

Figure 1: Four estimates of Russia's global exports, 2019-2024

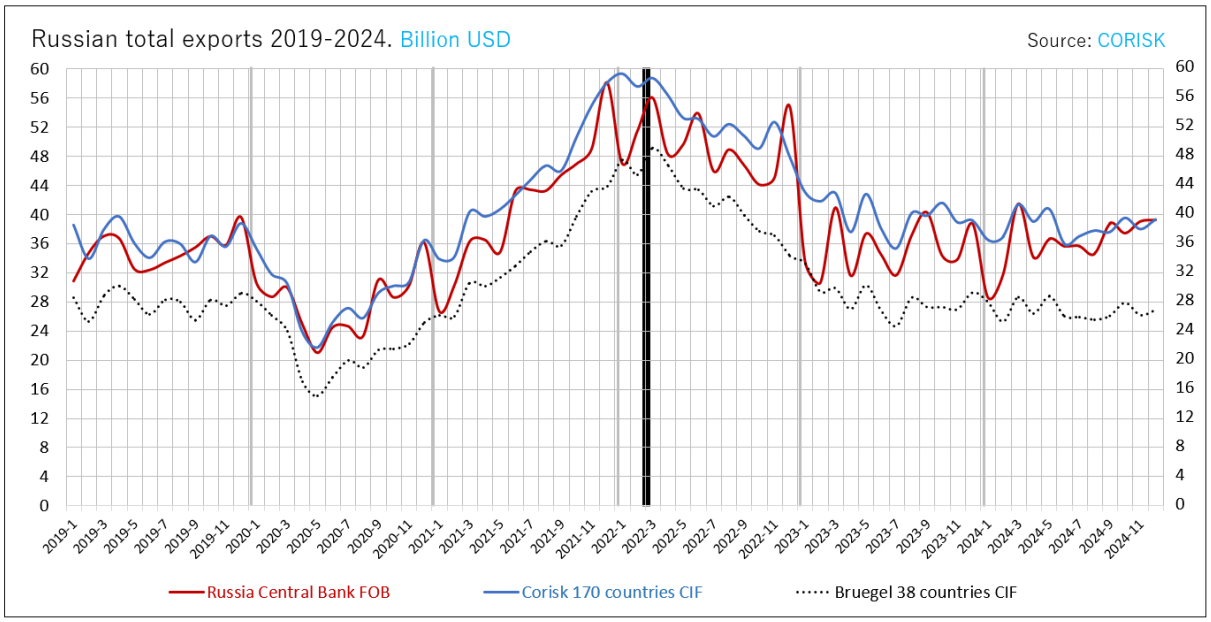


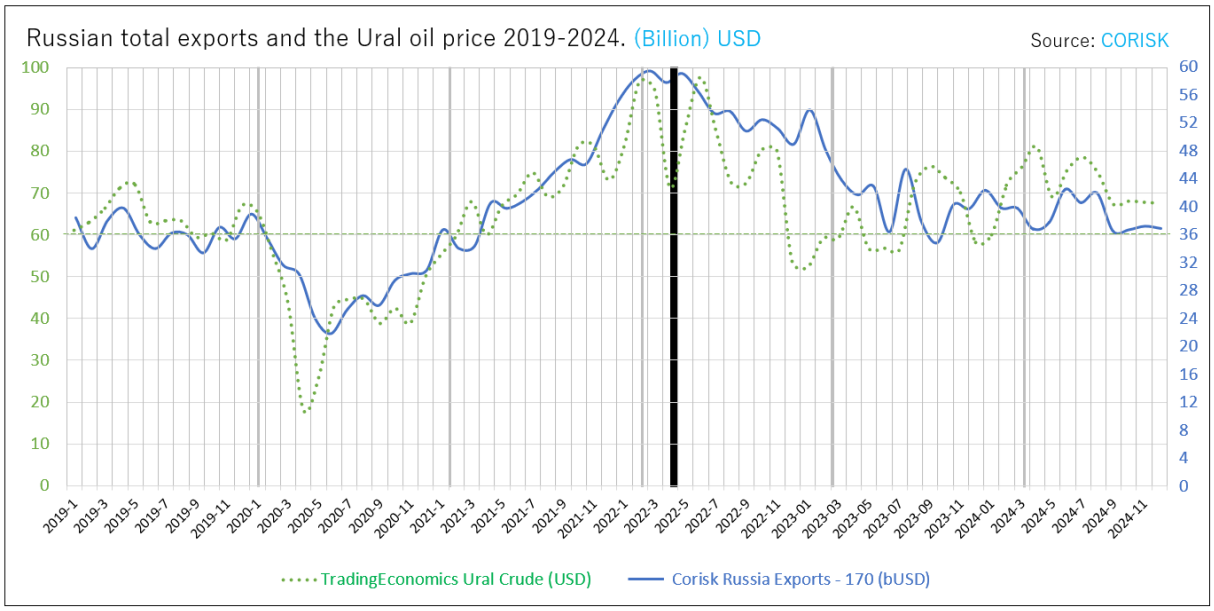
Figure 1 reveals the strong growth in Russian export revenues from 2020 to 2022, and subsequent decline in revenues from 2022 to 2024 – closely following developments in oil and gas markets. Russia's export revenues by our estimates have declined from around USD 55 billion per month in early 2022, to only USD 39 billion per month in early 2024, a decline by 29 percent. Total exports FOB climbed from USD 494.2 billion in 2021, up to 592.1 billion in 2022, but fell to 424.5 billion in 2023. Exports CIF were USD 529.9 billion in 2021 and 634.3 billion in 2022, but fell to 474.4 billion in 2023.

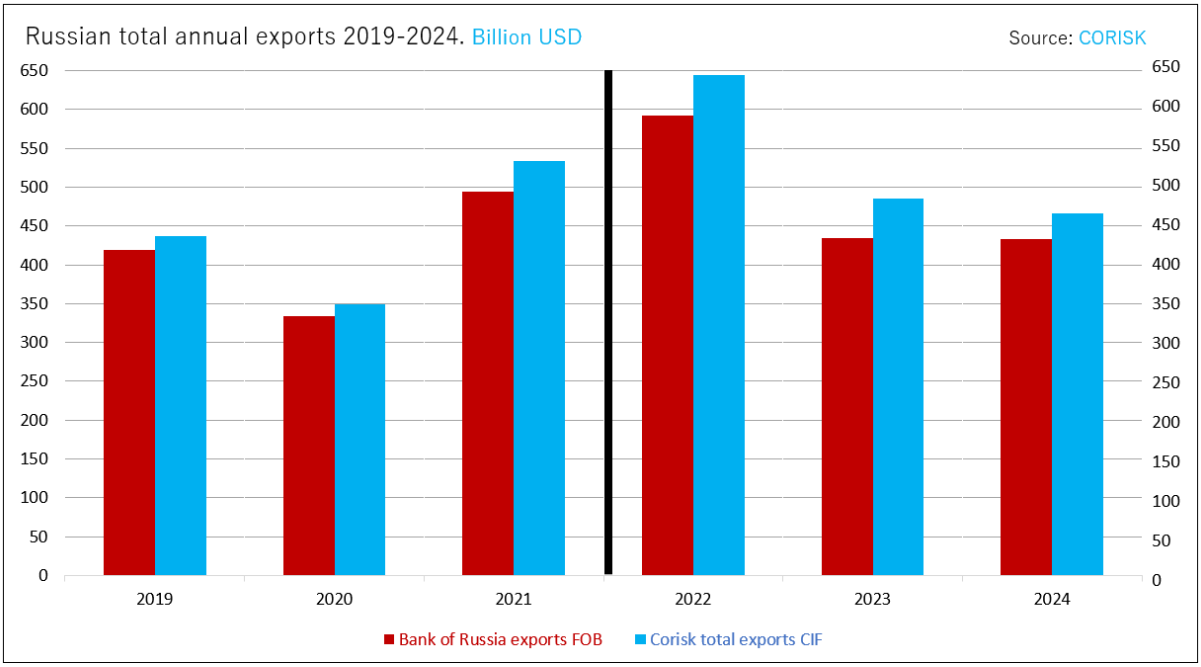
Figure 1 also reveals a consistent correlation between Russian official FOB export data, and our global CIF data, where the difference between them (CIF - FOB) appears consistent and indicates the cost of trade in global imports of Russian export products. Assuming that Russian export goods are sold at world market prices, this cost of trade represents a Russian loss of net sales revenue.

Based on our results, we tend to believe that the Bank of Russia BOP data for commodity trade are correct, however not granularly reported per-country. If we compare the total Russian exports in 2023 to the average annual exports 2019-2021, total exports FOB as measured by the central bank increased by 2.1 %. However, the world's global imports CIF from Russia increased by 8.4 % in the same period. This underscores how Russia's export revenues were historically low in 2023, and the Russian loss of revenue value as more revenues befell shippers, insurers and traders - of which probably only a fraction has accrued to Russian shipping or insurance companies.

Figure 1b illustrates the strong interdependency between Russian exports (blue, right scale) and the price of Ural grade crude oil from *Trading Economics* (green, left scale).[12] The later sanction price cap of USD 60 is marked with a dotted green line. The interdependency between the oil price and Russia's export revenues makes them volatile and hard to predict.[13] While about 90 % of Russia's oil exports may exceed the price cap, the country has been forced to yield price rebates that have fluctuated greatly towards the Brent Blend benchmark.[14] Our previous research indicates that it also directly limits Russia's scope for imports due to the country's limited forex reserves.[15]

Figure 1b: Russia's global exports and the market price of Russian crude oil, 2019-2024



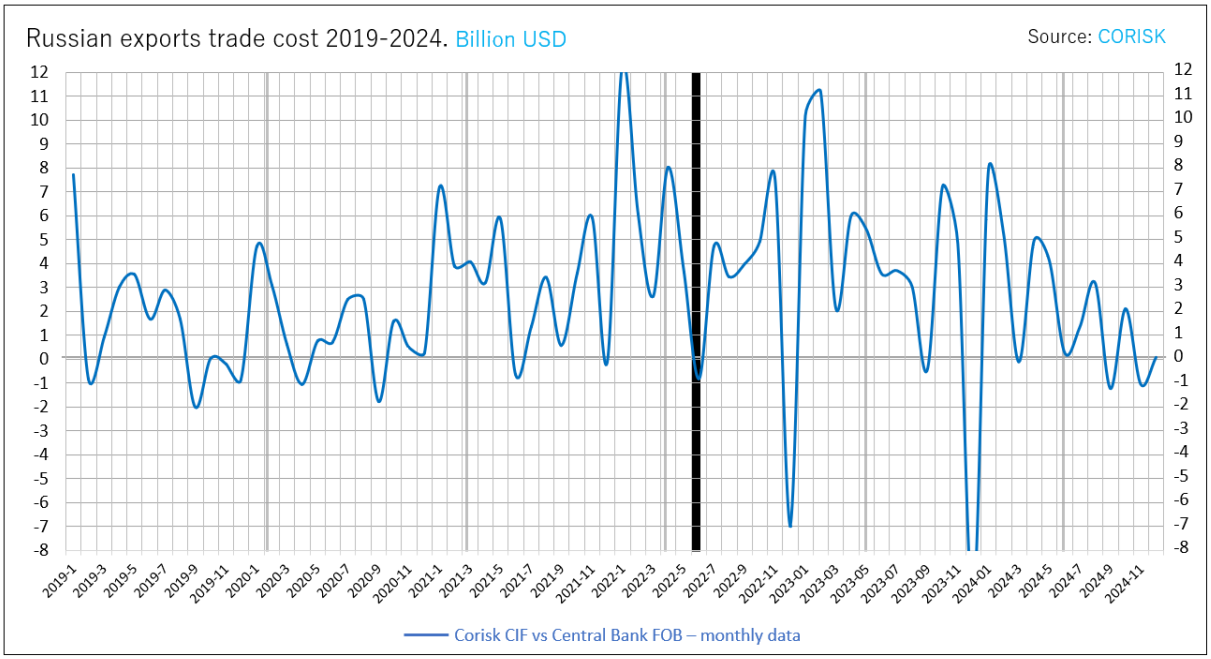


3.1. Cost of trade in Russian exports

Cost of trade is computed for imports, not exports. Though the same methodology can be used for exports as in this chapter, this has limited usability as we actually end up estimating the bilateral cost of trade of 170 different countries in their purchases from Russia. Still, we carry out the exercise in this chapter to explore some characteristics and impacts on Russia's exports to global markets. To see Russia's costs of trade as estimated according to standard methodology, confer **Chapter 4.1**.

Below, we record the monthly CIF/FOB margin for Russia's exports over the period in Figure 2, and apart from the high export trade costs in January-February 2022, we see a gradual increase in the nominal trade cost in Russian exports, despite the total decline in exports from late 2022 onwards (Figure 1). Russia's exports are dominated by oil and gas products. From the start of 2023, Russian pipeline gas exports almost disappeared, and since then largely depended on maritime shipping.[16] Global oil tanker freight rates were low in 2021 but started to climb from early 2022, as fears mounted that sanctions would soon hit global supplies.[17] Global oil tanker freight rates reached record high levels in the second half of 2022, amid hoarding ahead of the upcoming Western import bans, but freight rates fell again and remained relatively low during 2023. This was a year when the "shadow fleet" of older tankers expanded in the market for Russian crude and refined oil shipping.[18]

Figure 2: Monthly difference between Russian FOB export value and global CIF import value (CIF – FOB)



Despite Russian attempts to secure lower-cost oil exports through the "shadow fleet", and amid rather low global tanker freight rates, the monthly cost of trade in Russia's oil-dominant exports took off from 2023. The monthly difference (indicating the cost of export) was USD 2 billion out of a FOB export worth on average USD 34 billion in early 2019. This CIF/FOB margin grew only modestly to USD 4 billion in early 2022 out of a USD 52 billion FOB export. But by early 2024 when Russian exports FOB fell to USD 35 billion, the margin widened to more than USD 6.4 billion.

The erratic pattern is largely due to diverging time of recording between partner CIF import data versus the Russian FOB export data. Temporal lags in between exports and imports at month end may cause the volatility. In Figure 3, we remove some of the volatility by recording the same export CIF/FOB margin on a *quarterly* basis, summing the three-months exports and imports data while assuming simultaneous exports and imports without making temporal adjustments in the time series. Because the actual current value of the export fluctuates, we present in Figure 3b the same trade cost measured in *percent* of the final trade partner CIF import value – indicating better how the relative trade cost develops over time before and after Russia's second attack on Ukraine.

As already underlined, this analysis is a pragmatic approximation to the original methodology and what we measure here, is in fact the trade costs of all the 170 trade partners when they import from Russia. But needles to say, it mirrors the dynamics surrounding Russia's exports and its trends. Observe that in Figure 3 and 3b, data are now quarterly with approximately 3 times higher values than in Figure 2. Since monthly exports stabilized at USD 32-40 billion in the last year, quarterly trade is USD 96-120 billion, with USD 1 billion of trade costs representing around 1 percent of CIF imports.

Figure 3: Quarterly difference between Russian FOB export value and global CIF import value (CIF – FOB)

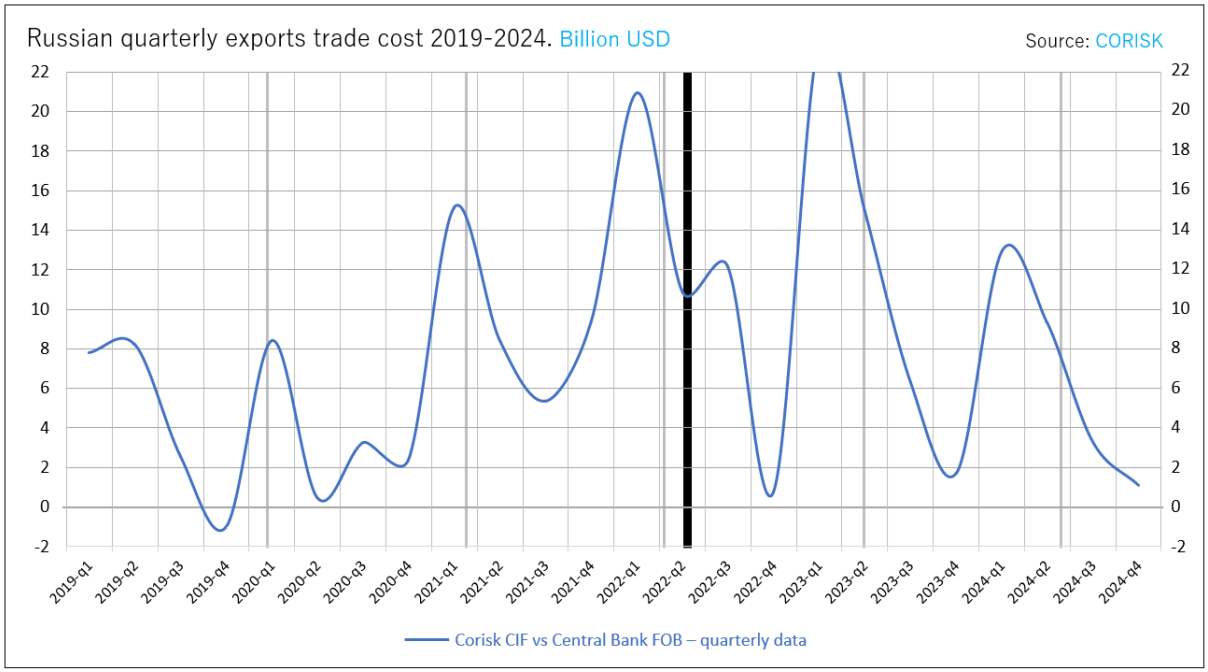
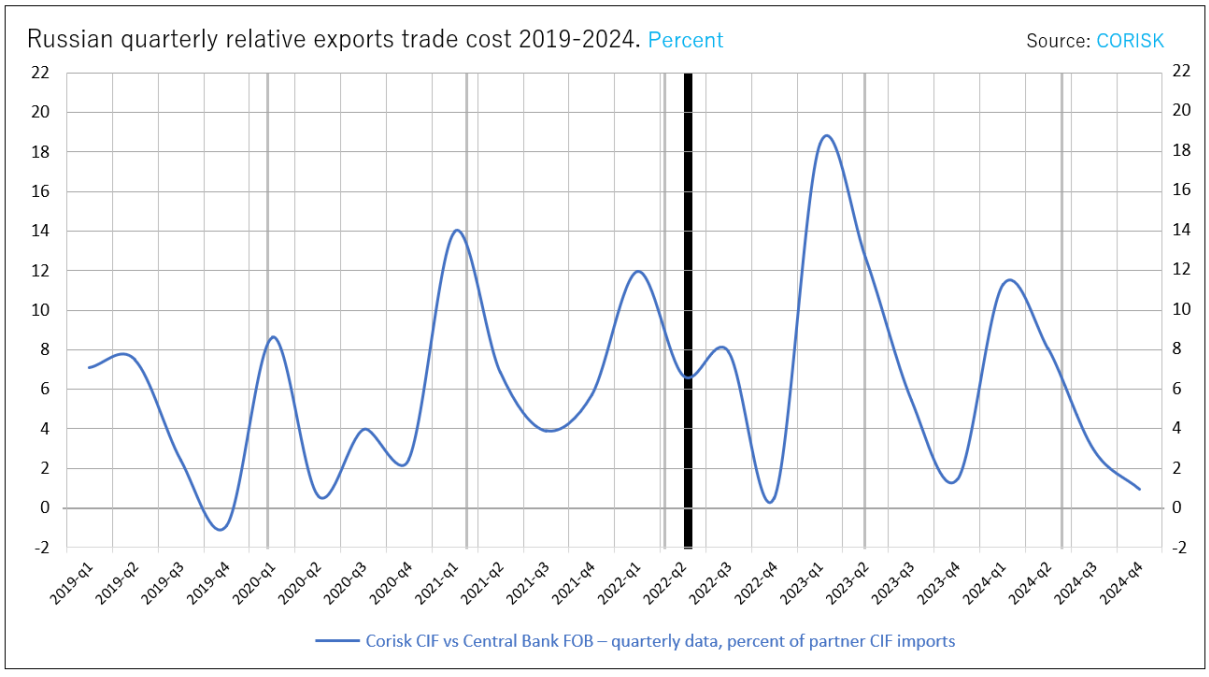


Figure 3b: Quarterly difference between Russian FOB export value and global CIF import value, as a percentage of trade partners CIF import value



Figures 3 and 3b indicate the increase in trade costs in 2023 and 2024, occurring despite low tanker freight rates. Russian trade costs diverge from the global pattern: while global oil tanker rates surged in mid-late 2022, trade costs declined in Russia's exports, perhaps reflecting the continued ability to export oil and gas to nearby Europe amid European hoarding of oil products. From early 2023, when the European market disappeared, Russian trade costs grew strongly despite rather low global tanker rates, and stabilised in 2024 as the "shadow fleet" expanded.[19] While in first quarter 2024 the

CIF/FOB margin of USD 15 billion implies a 5 billion monthly trade cost (13 % of exports), second quarter data imply a 4 billion monthly trading cost (10 %). The data indicate a four-fold increase in trading costs in Russian exports, from 1 billion dollars per month in 2019 and up to 4 billion in 2024.

Annual CIF/FOB margins are presented in Figure 3c, where trade costs climbed from 10-15 billion dollars, up to 50 billion in 2023. To enable comparison with other countries we present in Figure 3d the relative trade cost of Russia's exports as a share of trade partner CIF import values. This yields a better understanding of the relative effects of the 2021 Covid-19 bottlenecks and later sanctions.

Figure 3c: Annual difference between Russian FOB export value and global CIF import value (CIF – FOB)

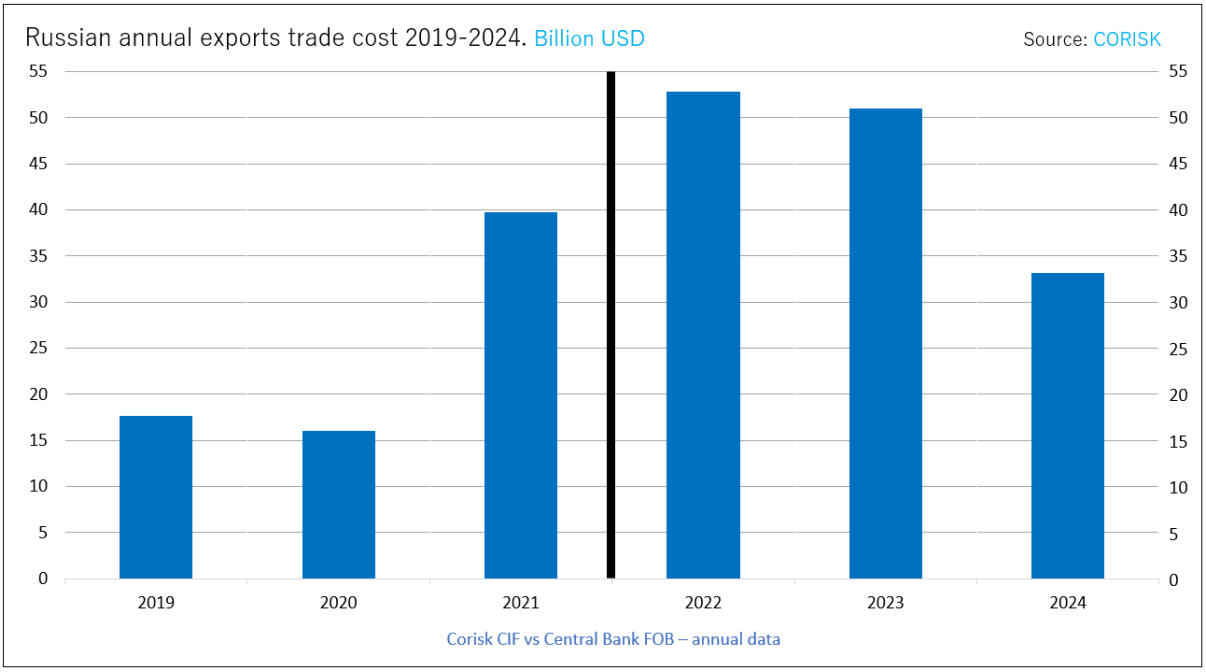
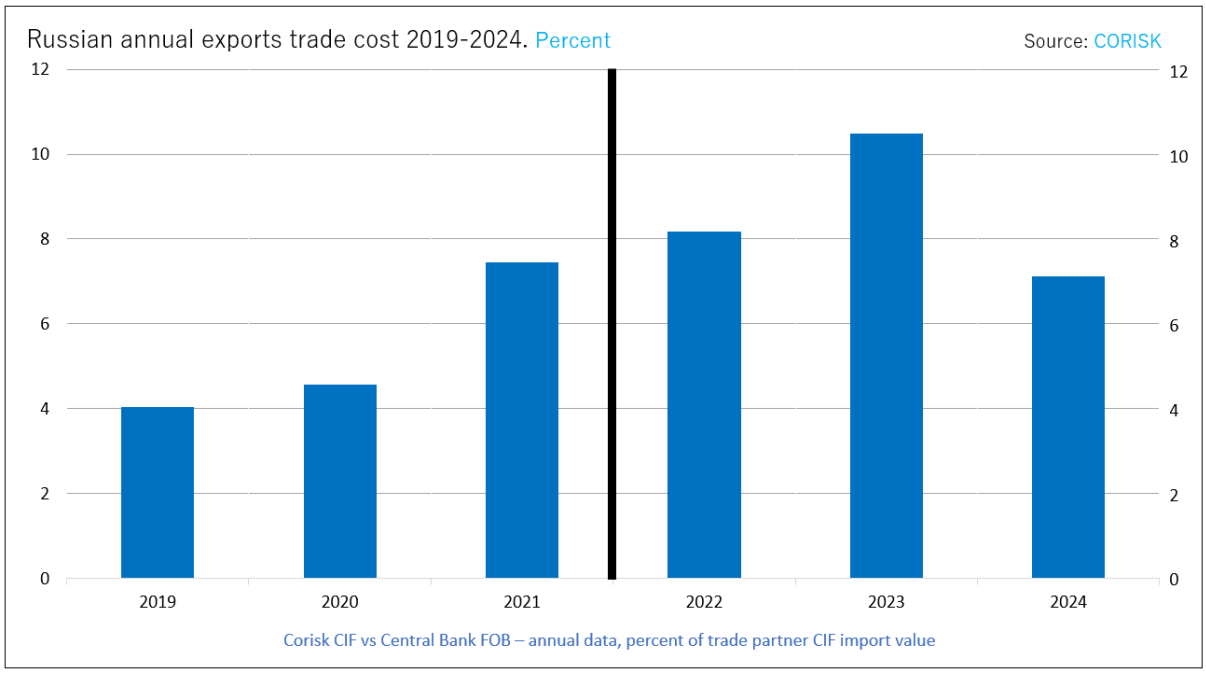


Figure 3d: Annual difference between Russian FOB export value and global CIF import value, as a percentage of trade partners' CIF import value



One intriguing feature of the trade cost in Russia's exports, is the **high trade costs in 2021**. We do not attempt to fully explain this "too early" effect where trade costs start hiking before the second attack on Ukraine and connected sanctions. But some possible explanations may be worth exploring:

a. Russia's exports were artificially low in **2020** due to Covid-19 impact on commodity trade. There was a global rise in costs of trade in 2020, but global costs of importing from Russia actually declined, on average. The share of total Russian exports to nearby ex-Soviet and European markets actually fell, while the share of exports going to China and BRICS+ increased. But the contraction of total exports may still have made pipeline gas exports relatively more important, with its low costs of transportation. If this is correct, the "normal" non-crisis Russian export trade costs may actually be higher than we assume, closer to 4-6 percent rather than the observed 2019-2020 level which was well below 4 percent.

b. Trade partner recording of imports from Russia may have been deficient during the height of the Covid-19 pandemic. In Figure 3b, we see that the export trade cost is negative both in Q2 and Q4 2020, and slightly positive in Q3. That makes for 9 months from April 2020 to December 2020 with cumulatively negative trade costs, which makes little sense. This could indicate recording deviations during the pandemic, maybe for exports to ex-Soviet republics.

c. When exports trade costs increased in **2021**, this remains a puzzle. But again, and strictly, it measures the import trade costs of the 170 partners, not of Russia. And, importantly, Russian exports was the object of much fewer sanctions, and almost no outright trade bans, contrary to Russia's imports. This means that Russian exports and their trade costs may have been considerably less impacted by sanctions, than imports. Oil exports increased a lot in 2021, but so did pipeline gas with its assumed low export costs. There may be discrepancies in recording as Russia delivered more gas to ex-Soviet neighbours under political, long-term agreements with rebates, lock-in prices, or semi-barter conditions.[20] Pipeline fraud may also have caused recording asymmetries. Reporting from the Bank of Russia in 2021 matched well

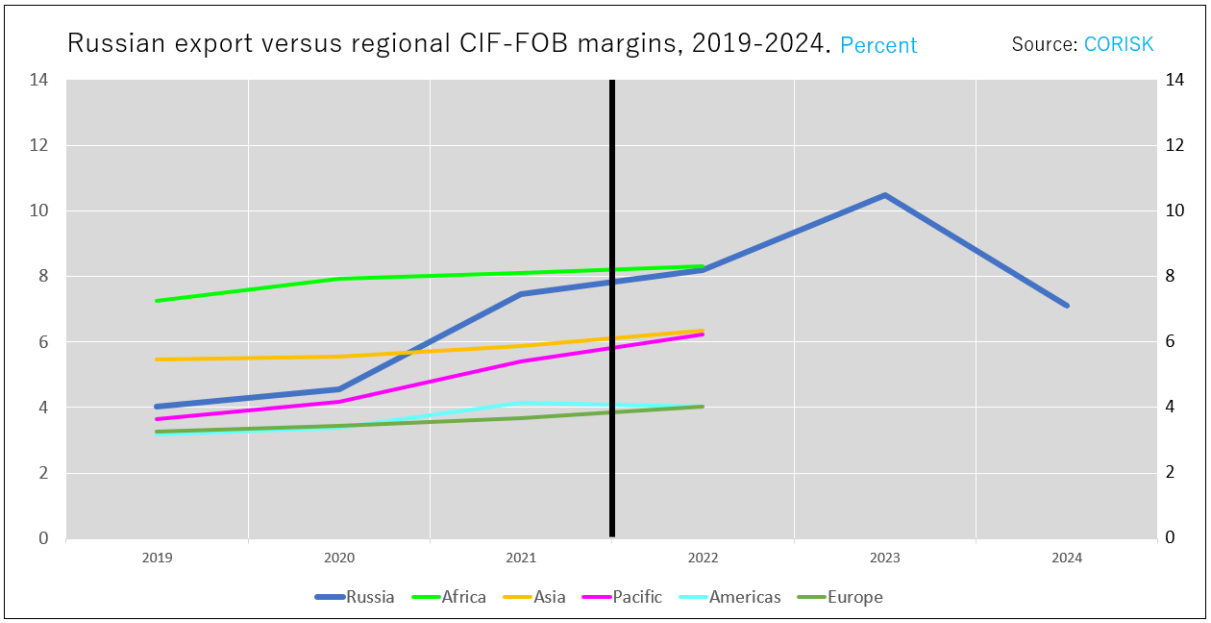
with the customs-based trade recording to UN ComTrade (Figure 1, red versus dotted orange lines 2019-2021). But asymmetries against trade partner recording is, of course, possible.

d. The strong growth in export trade costs in **2023** corresponds with a strong decline in Russia's pipeline gas exports. Russia closed *NorthStream 1* in September 2022, and pipeline exports stabilized at low levels from March 2023.[21] From 2023 onwards, Russian exports started to rely more on "normal" modes of transport, first of all sea-borne oil and LNG, which globally have higher trade costs. These factors may explain the surge in trade costs in 2023.

Globally, OECD found that the average CIF-weighted cost was 4.3 % immediately before Covid-19, but all regions experienced higher costs after 2020 and the global average increased to 4.9 %.[22] Generally, more trade cost was added to the longer trade routes and there were great variations between countries and between commodity groups. Remote countries like Australia and Chile experienced dramatic increases in trade costs after Covid-19, while the USA being more "centrally" located experienced an only modest increase. Contrarily, Russia before and during Covid-19 mainly conducted trade with Europe, an intra-continental nearby partner with low transport costs. For the period up to 2004 CEPII measured the CIF/FOB margin at 9-14 % for crude oil and natural gas products (range 3-21 %), and metal ores at 5-14 % (range 0-28 %), depending on distance.[23] Given the Russian exports shift from Europe to Asia, trade costs going from 4 % to 10+ % seems plausible.

In Figure 3e, we compare the trade cost of Russian exports over time against average trade costs of some regional imports from global partners in the OECD study. It illustrates clearly how Russia's export trade costs jumped in 2021 after Covid-19, more than in other regions. Russian trade costs again climbed in 2023 as oil and gas exports to nearby Europe almost disappeared, which must have increased the country's tanker freight costs despite the global decline in both tanker and cargo freight rates. There is a further cost increase of Russian export costs in the first half of 2024.

Figure 3e: Annual CIF/FOB margins of Russian exports against average regional costs on imports (OECD), percentage of CIF import value



The figure above suffers three limitations. First, the OECD data only includes 2022, though we have no reasons to believe that other regions experienced a similar jump in trade costs as Russia did in 2023 and 2024, when global shipping costs fell markedly. Second, the OECD data measure the trade cost of all countries' exports to selected regions, whereas our data measure the trade cost of Russia's exports to all regions. This means that the regional values for export trade costs would be slightly different than in Figure 3e, but they would make up the same global average. For an apple-to-apple comparison avoiding these dissimilarities, see Figure 7e and Figure 7f.

The third limitation of our analysis is that it does not include the effects of transport ownership and costs on Russian oil revenues. It is well known that the Western oil price cap has instigated price rebates on Russian oil among Asian buyers, but KSE economists have found that the growth of the "shadow fleet" of tankers has reduced these rebates, stimulating Russian relative revenues.[24] The shadow fleet (if controlled by Russia) will tend to increase Russian profits on export at the same selling price, and it will bring transport services revenues not captured by this study. Still, the growth of the shadow fleet runs parallel with a considerable loss of export revenue from 2023 onwards, and a substantial increase in the export cost of trade. Trade costs may erode the competitiveness of Russian exports with importers either seeking rebates or reducing imports from Russia. We see such tendencies of stagnation in Chinese imports, both in Corisk data and in CREA data on the fuel trade.

More research is needed to establish how much of this rapidly increasing CIF/FOB margin (trade cost) represents miscalculations, increasing shipment costs for importers, currency risk premium, or other sanction risk premium costs imposed by freighters, middlemen, insurers, or importers themselves. Larger distances of trade also play a part, given the fallout of gas markets in nearby Europe and the need for Russia to seek oil and commodity export markets further away from 2023 onwards.

3.2. The geography of Russian exports

We will now investigate the **foreign import markets** where Russia sells its goods, by summarizing monthly importer market trade data and lumping countries into geopolitical groups. A geopolitical breakdown of Corisk data from Figure 1 are presented in Figure 4. We present ex-Soviet and CIS states that have intimate trade relations with Russia, in red colour. BRICS+ states that support Russia politically (China, India, Brazil, South Africa, Ethiopia, Egypt, UAE, Iran) are given in yellow colours, of which China is singled out in orange. Western states that sanction Russia and condemn its warfare are given in blue for Europe and in light blue for the Non-European West (see chapter 5.3). Finally, all other states including most countries in the Global South are counted as brown. The imports from Russia in Figure 4 include both imports for final use and imports for further re-export, including some ex-Soviet and other facilitating countries that are reselling sanctioned Russian goods to the West.

In Figure 4b, we present the same data, but focusing on the Western reduction in imports from Russia more clearly by switching the country groups so that Western imports are at the bottom.

We see clearly from Figure 4 and Figure 4b how Russia has abandoned most of its direct exports to Western countries, which have reduced imports from Russia to a minimum. The Western market was reduced gradually for more than ten years[25] but was strongly eroded in 2022, with a dramatic decline after the February 2023 oil product ban. This decline was first of all offset by an acceleration of the ongoing increase in exports to BRICS+ countries, partly to China but with an even stronger relative growth in exports to India and other partners. The ex-Soviet market (red) saw only modest growth in

import from Russia. The rest of the world (brown) which includes Turkey, Indonesia, Malaysia, Saudi Arabia, Mexico, and other medium-sized and small economies, has clearly increased purchases of Russian goods. These were 7.1 billion dollars per month in the year preceding the attack (March 2021 - February 2022), and 8.1 billion per month during the last year (July 2023 - June 2024).

Figure 4: Total CIF imports from Russia by geopolitical groups, 2019-2024

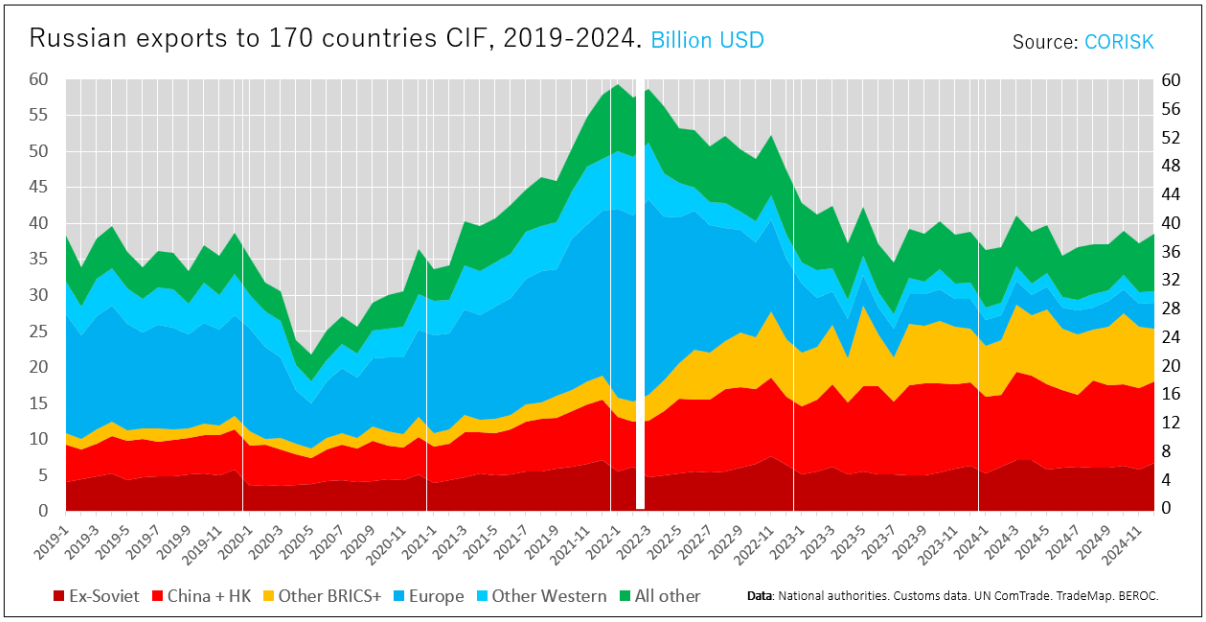
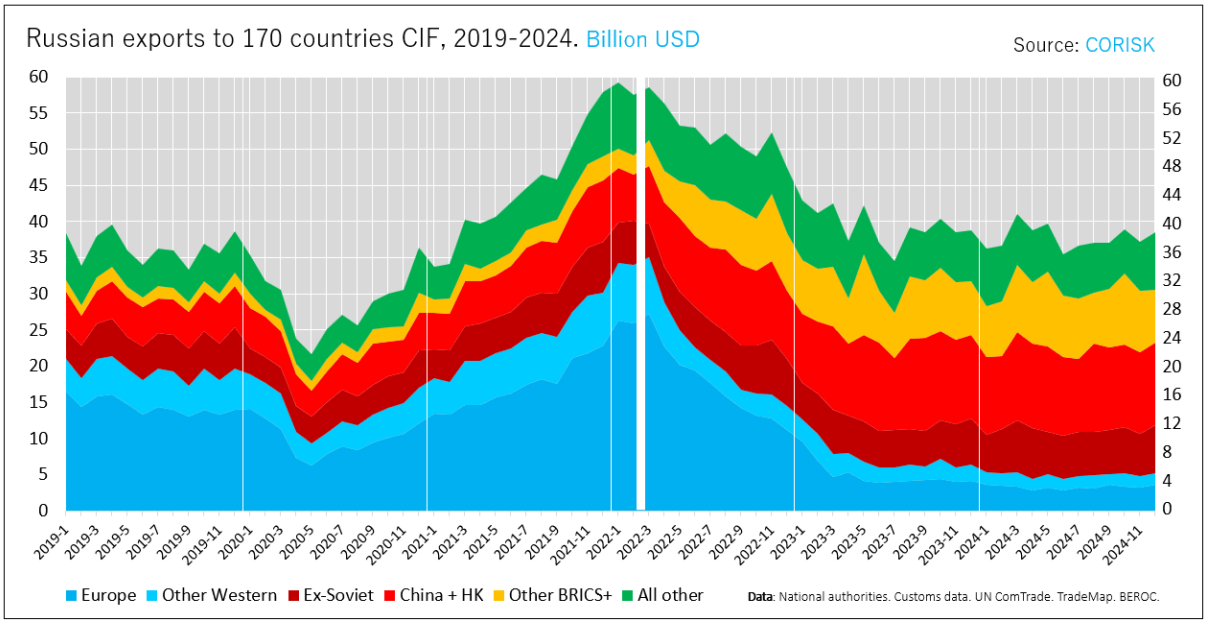


Figure 4b: Total CIF imports from Russia by geopolitical groups, 2019-2024



Certainly, the exports from Russia into the ex-Soviet sphere and to certain other countries such as Turkey and the UAE, include Russian goods later re-exported to Western countries as a sanction evasion strategy. But these Russian circumvention exports and indirect exports to the West are very

small, about 200-500 million dollars per month, only a tenth of the flows of Western export goods to Russia circumvented via the intermediary countries (1,800 - 2,500 million dollars per month). This is in line with a hypothesis that it is easier to limit imports, than exports.[26] Import control is more developed, and export goods can reach Russia via many more logistic chains and alleys.

Countries with the largest relative increase in imports from Russia when we compare the monthly average in 2023 to the monthly averages 2019-2021, are Jamaica (+ 5,654 %), the Faeroe Islands (+ 1,820 %), **India** (+ 762 %), **Hong Kong** (+ 613 %), Libya (+ 618 %), Ghana (+ 421 %), Zimbabwe (+ 440 %), Djibouti (+ 381 %), Tunisia (+369 %), Afghanistan (+ 325 %), Oman (+ 314 %), Myanmar (+ 312 %), **Switzerland** (+ 287 %), Tanzania (+ 212 %), **Hungary** (+ 225 %), Cote d'Ivoire (+ 200 %), Yemen (+ 188 %), Kenya (+ 167 %), **United Arab Emirates** (+ 165 %), Kyrgyzstan (+ 154 %), **Brazil** (+ 150 %), Uganda (+ 150 %), Malaysia (+ 146 %), Armenia (+ 130 %), Algeria (+ 111 %), **Indonesia** (+ 108 %), Pakistan (+ 101 %), Malawi (+ 101 %), **China** (+ 96 %), **Turkey** (+ 96 %), Sri Lanka (+ 96 %), Togo (+ 87 %), Mozambique (+ 87 %), Eritrea (+ 80 %), Kenya (+ 73 %), Georgia (+ 76 %), Burkina Faso (+ 78 %), Congo Republic (+ 73 %), Macedonia (+71 %), Zambia (+ 63 %), Bangladesh (+ 63 %), Rwanda (+ 56 %), Senegal (+ 55 %), **Egypt** (+ 52 %), Laos (+ 55 %), Uzbekistan (+ 46 %), **Mexico** (+ 46 %), Austria (42 %), Honduras (+ 39 %), **South Africa** (+ 31 %), Azerbaijan (+ 25 %), Nicaragua (+ 24 %), **Kazakhstan** (+ 24 %), Israel (+ 17 %), Nigeria (+ 16 %), **Singapore** (+ 15 %), **Belarus** (+ 13 %), **Taiwan** (+ 13 %), **Saudi Arabia** (+ 13 %), Nigeria (+ 10 %), Morocco (7 %), and Sudan (+ 10 %).

Taken as a whole, import from Russia grew by 158 % to the **BRICS+** aera including China, and imports of Russian goods to **Africa** grew by 76 % (Sub-Saharan Africa + 43 %), while the Russian exports increased by only 12 % to the much nearer **ex-Soviet** aera (including Ukraine). Bear in mind that the Russian export growth to the ex-Soviet area also include a certain value of Russian circumvention goods destined for Western countries, but these do not substantially alter the picture.

Contrary, imports from Russia declined between 2019-21 and 2023 in countries like **Ukraine** (- 100 %), Greenland (- 100 %), Liechtenstein (- 100 %), Botswana (- 100 %), Suriname (- 99 %), **United Kingdom** (- 99 %), New Zealand (- 99 %), Sweden (- 99 %), Australia (- 97 %), Mauritania (- 97 %), Canada (- 96 %), Mali (- 96 %), Kuwait (- 95 %), Lithuania (- 92 %), Iceland (- 91 %), Estonia (- 90 %), **Germany** (- 88 %), Guyana (- 88 %), Cuba (- 88 %), Poland (- 84 %), Norway (- 83 %), Ethiopia (- 83 %), Qatar (- 83 %), Finland (- 82 %), Cameroon (- 80 %), **USA** (- 80 %), Argentina (- 80 %), Denmark (- 79 %), Bahrain (- 76 %), Philippines (- 72 %), **European Union** (- 67 %), El Salvador (- 66 %), **Thailand** (- 63 %), Chile (- 56 %), Albania (- 54 %), **France** (- 58 %), Lebanon (- 57 %), Netherlands (- 57 %), Latvia (- 55 %), Nepal (- 53 %), Turkmenistan (- 53 %), Brunei (- 52 %), Bolivia (- 52 %), Ecuador (- 51 %), Paraguay (- 49 %), Moldova (- 49 %), Dominican Republic (- 47 %), **Japan** (- 43 %), Somalia (- 44 %), Angola (- 43 %), Uruguay (- 43 %), Belgium (- 41 %), Montenegro (- 40 %), **South Korea** (- 37 %), Tajikistan (- 35 %), Benin (- 23 %), Peru (- 21 %), Bosnia-Hercegovina (- 17 %), Panama (- 17 %), **Vietnam** (- 9 %), Jordan (- 8 %), Guatemala (- 8 %), Costa Rica (- 7.5 %), Congo DR (- 7 %), Guinea (- 7 %), Namibia (- 5.9 %), Mongolia (- 3.4 %), Colombia (- 2.4 %), and Morocco (- 2 %).

Taken as a whole, imports from Russia declined by 61 % in the whole **Western** area including Europe, North America, Japan, Korea, and Taiwan. Among Western and semi-Western powers increasing imports from Russia in 2023 against baseline, are Hungary (+ 225 %), Switzerland (+ 287 %), Austria (+

42 %), Singapore (+ 15 %), and Taiwan (+ 13 %). Among traditional allies of Russia who have substantially reduced their imports, we find Cuba (uncertain data), Angola, and Ethiopia.

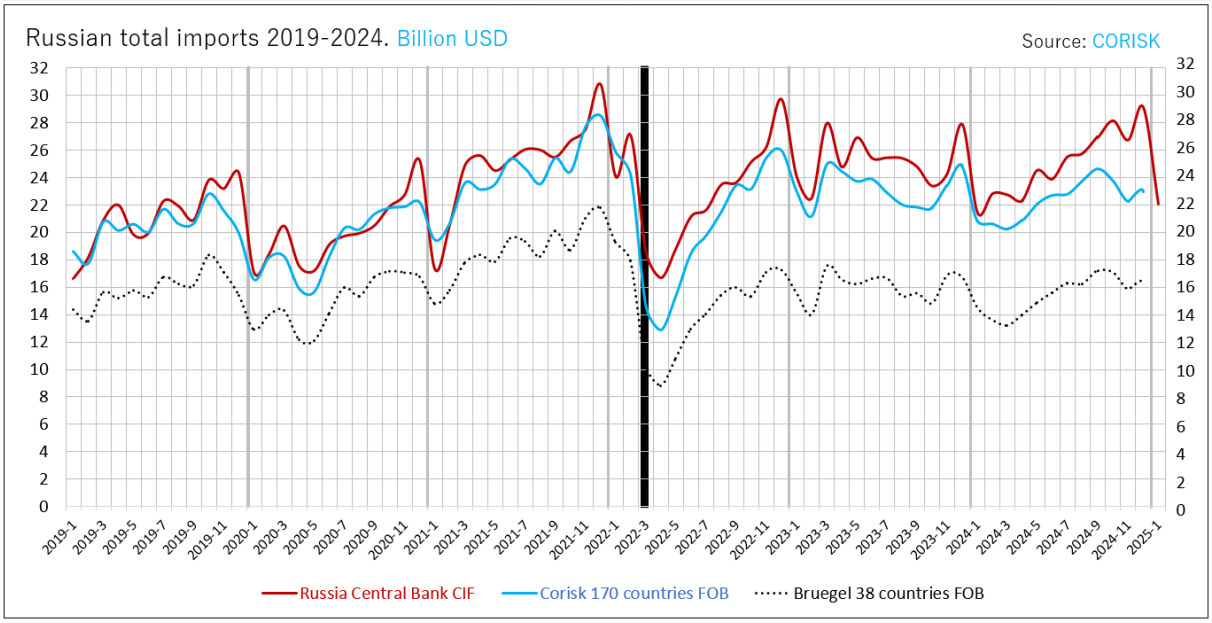
4. Russian imports 2019-2024

The national trade data continuously aggregated in the Corisk *Excessive Trade Model* allow us to account the monthly direct exports to Russia from 170 exporting countries, since January 2019. For the estimate we cover 92.56 % of the exports to Russia from exporter country trade data measured as FOB exports, and the reminder7.44 % fully or partly with Russian customs data that contain a mixture of FOB and CIF based data. This provides a FOB-based estimate of Russia's global imports. Total CIF imports according to Bank of Russia were USD 276.5 billion in 2022 and 302.9 billion in 2023. Total global FOB exports to Russia were USD 249.6 billion in 2022 and 275.5 billion in 2023.

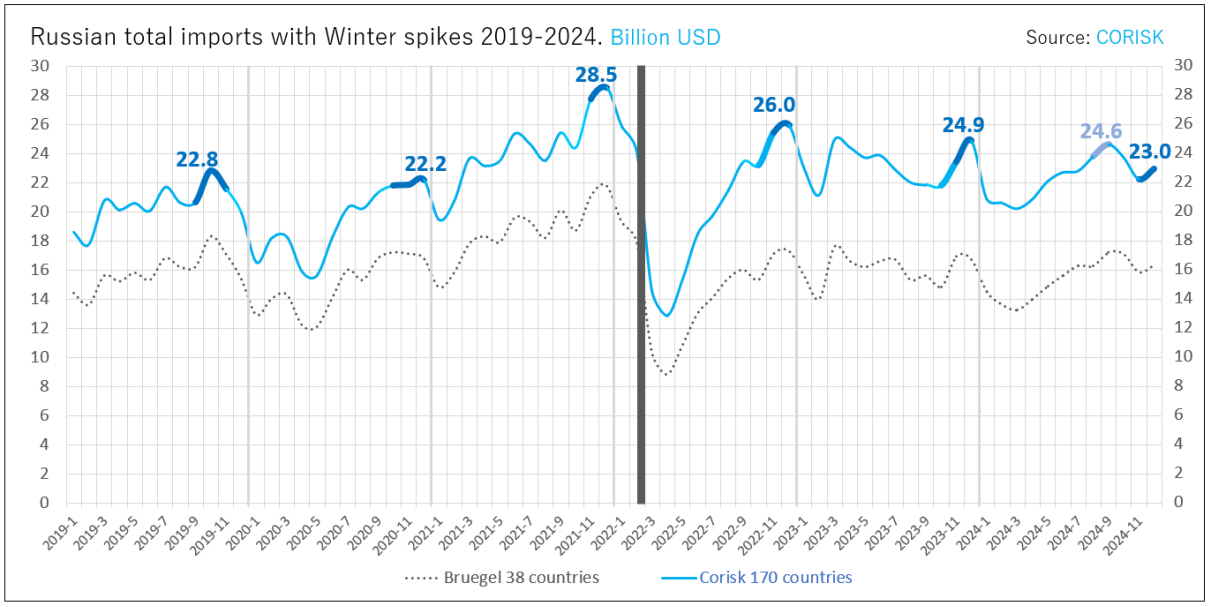
In Figure 5, we reveal the total global FOB exports to Russia as measured by Corisk (blue), alongside total Russian imports CIF as recorded from bank transactions by the Central Bank of Russia (red). We see how Russian official import data compiled from customs and reported to UN ComTrade (orange, dotted), match or are only slightly lower than the more complete balance-of-payment data of the central bank. Again, Bruegel data are included for comparison (black, dotted). We see clearly how Bruegel increasingly under-report exports after 2022, because they measure too few circumvention enablers and thereby miss out the increase of circumvention trade in Western goods.

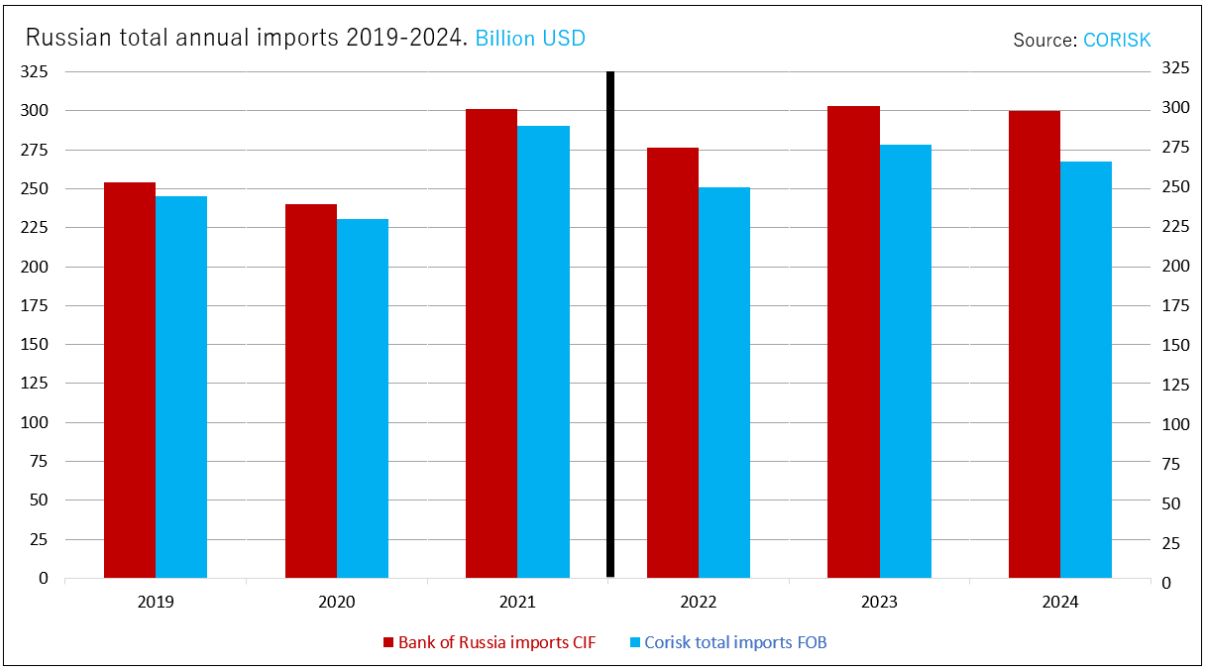
This time, it is the Russian CIF import data that are higher than the Corisk FOB data, reversing the relationship from Figure 1. The distance between the Russian CIF imports data (red) and the Corisk FOB exports data (blue) represents the CIF/FOB margin, i.e. the total cost of trade in Russia's imports. We see clearly how these trading costs increase substantially after February 2022.

Figure 5: Four estimates of Russia's global imports, 2019-2024



If we compare total Russian imports in 2023 to average annual imports 2019-2021, imports CIF as measured by the central bank increased by 7.3 %, while the world's exports FOB to Russia increased by only 4.0 %. The residual implies a relative increase in the cost of trade in Russian imports, equal to a loss of value. We see this as the increasing distance between red and blue lines in Figure 5, above.

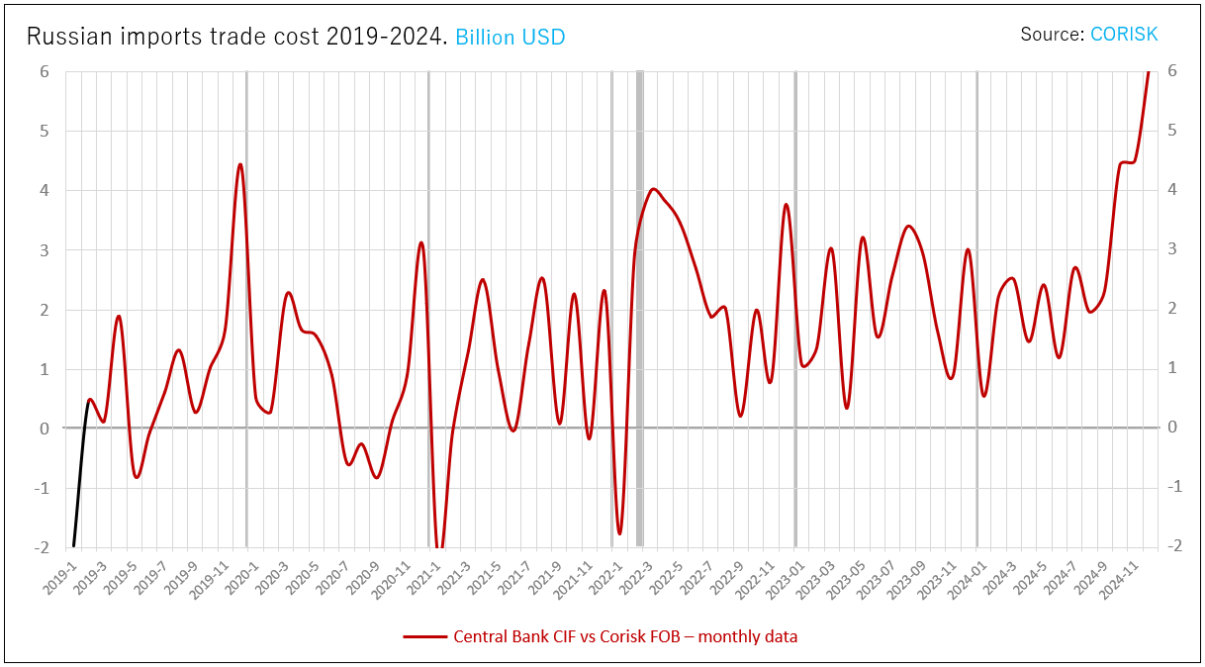

Russian total imports with Winter spikes 2019-2024. Billion USD
Source: CORISK
22.8
22.2
28.5
26.0
24.9
24.6
23.0
Bruegel 38 countries
Corisk 170 countries


Russian total annual imports 2019-2024. Billion USD
Source: CORISK
2019
2020
2021
2022
2023
2024
Bank of Russia imports CIF
Corisk total imports FOB

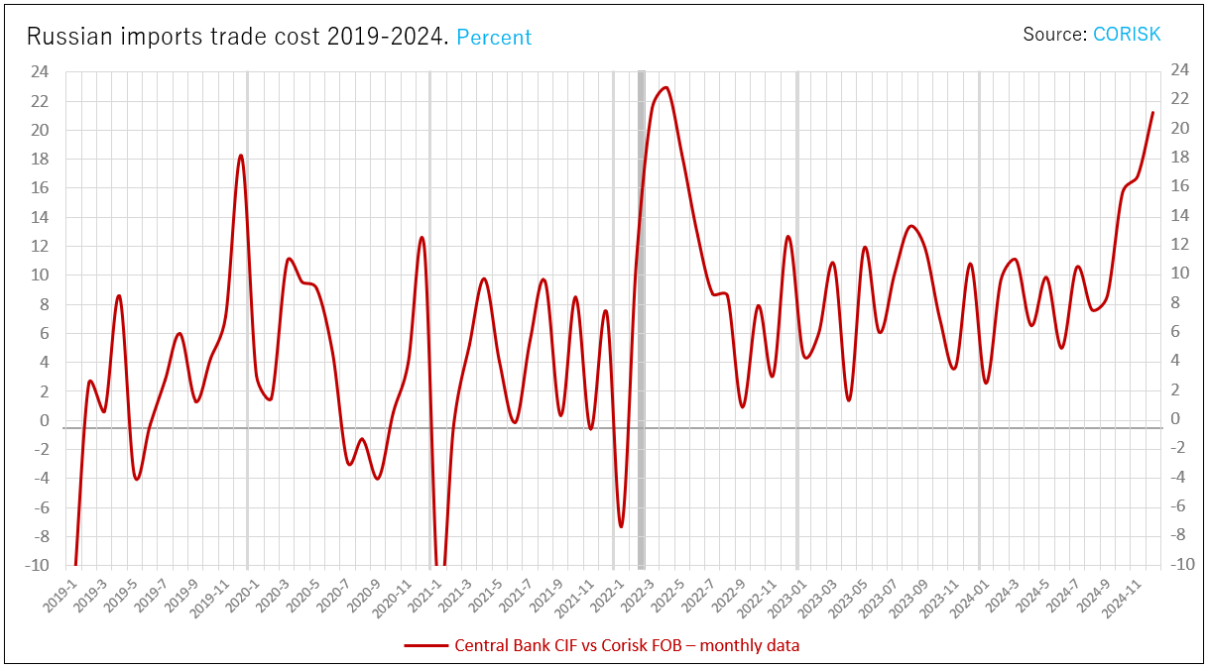
4.1. Cost of trade in Russian imports

Whereas the cost of trade on Russian exports (Chapter 3.1) correlated less with the timing of sanctions and maybe more with the composition of exports, we should expect the cost of trade on Russia's imports to behave differently because sanctions are more absolute, with more outright trade bans, and no dominating commodities. To complement studies advanced by the OECD and CEPII [27] we record the CIF/FOB margin over the 2019-2024 period in Figure 6. The margin seems to gradually increase, despite the import's decline from late 2022 onwards. Russia imports all kinds of finished and semi-finished goods, vehicles, machinery and various technology. Sanctions target a wide range of these products including aircraft and aircraft parts, digital components, etc. Russia therefore needs to source these goods via third-country intermediaries, adding various risk premium costs. In March and June 2022, Russia enacted various legislations to legalize parallel imports, but middlemen find themselves under constant risk of secondary sanctions from Western powers. This, alongside longer logistic lines, currency risk and other elements, may explain the rising trade costs.

Figure 6: Monthly difference between Russian CIF import value and global FOB export value

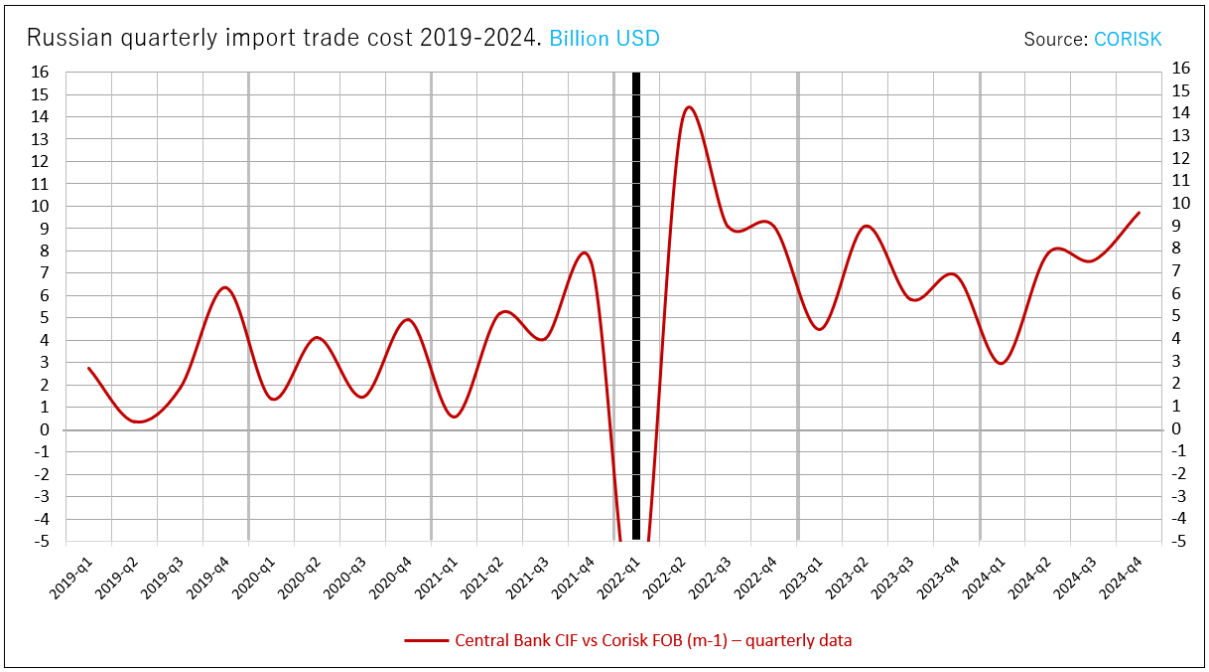


Despite the apparent continuous increase in trade costs along the linear correlation line, there is in fact a clearer disruption between pre-2022 trading costs on the one hand, and post-2022 costs on the other hand. We shall remove some of the erratic patterns by measuring quarterly CIF/FOB margins, from monthly data compounded into three-month periods. This time, we believe there are stronger temporal delays in trade and recording, due to more indirect and time-consuming logistic lines, fractured and sanctioned supply chains, and probably an earlier customs recording on sellers' hands compared to importers' final clearance after long indirect routes or transit imports. Therefore, we shall make a temporal adjustment by comparing exports against Russian imports skewed one month forwards. Thus, for a second quarter, we compare March-May FOB export data from Corisk against April-June CIF import data from Bank of Russia, and similar for other quarters.



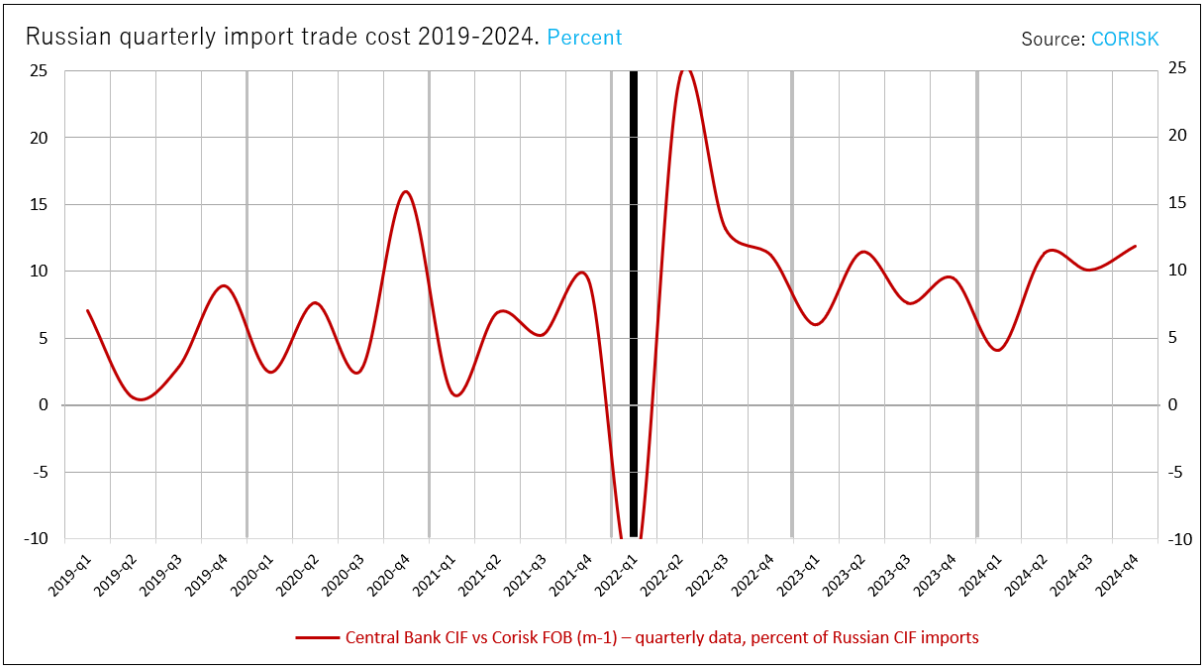
In Figure 7 below, we see how this greatly improves trend coherence and readability:

Figure 7: Quarterly difference between Russian CIF import value and global FOB export value



Similarly, in Figure 7b we present the trade cost as a percentage of the Russian import value of the goods that were exported the month before by all the 170 studied trade partners of Russia:

Figure 7b: Quarterly difference between Russian CIF import value and global FOB export value, as a percentage of the total Russian CIF import value



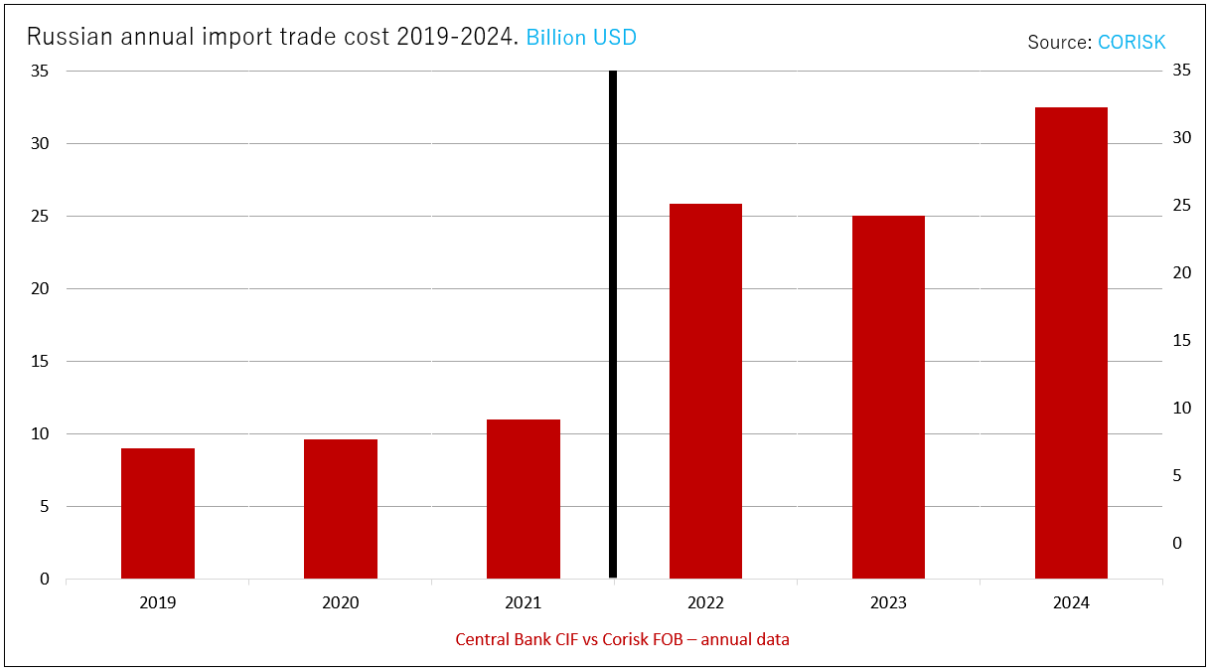
In Figure 7 and Figure 7b, we see only a modest increase in trade costs prior to the February 2022 attack on Ukraine, from roughly USD 1 billion per month (5.5 %) in early 2019 to above USD 1.5 billion in late 2021 (5.8 %). This runs parallel with a rather dramatic increase in sea-borne cargo rates, with a rise in the Baltic Dry Index from 1,500 to around 5,000 during the period. Other logistics costs also increased in the wake of the Covid-19 bottleneck-related constraints on trade. Still, import trade costs fluctuated and were not much higher during the whole of 2021, than in 2019 or 2020. From early 2022 onwards, non-oil freight rates as expressed by various bulk and container freight indices, started to decline continuously until the Baltic Dry Index reached around 1,000 points by early 2023.

Contrary to this global decline in freight prices, trade costs in Russia's imports made a substantial upwards shift after the second attack on Ukraine in February 2022. The monthly trade cost quickly established around 3 billion dollars per month (6-15 %) and stabilized there. While global shipping costs declined, Russian trade costs witnessed a considerable upward shift to a new and stable level. Before the second attack on Ukraine in 2022, Russia imported largely European goods with low transport costs, keeping trade costs at 4 % and well below the global average of 5-7 %.[28] After the effects of sanctions became more felt, Russian import trade costs hiked to levels far above all comparable nations, and equal to the average global trade costs that prevailed around 1940.[29]

The annual costs of trade defined as the CIF/FOB margin, is illustrated in Figure 7c. We have now not made any temporal adjustment in the FOB data, because the periods of study are full years where temporal mismatch between Russian imports and foreign exports would only appear on the margins in January and December, leaving this source of error more marginal. We see from Figure 7c how

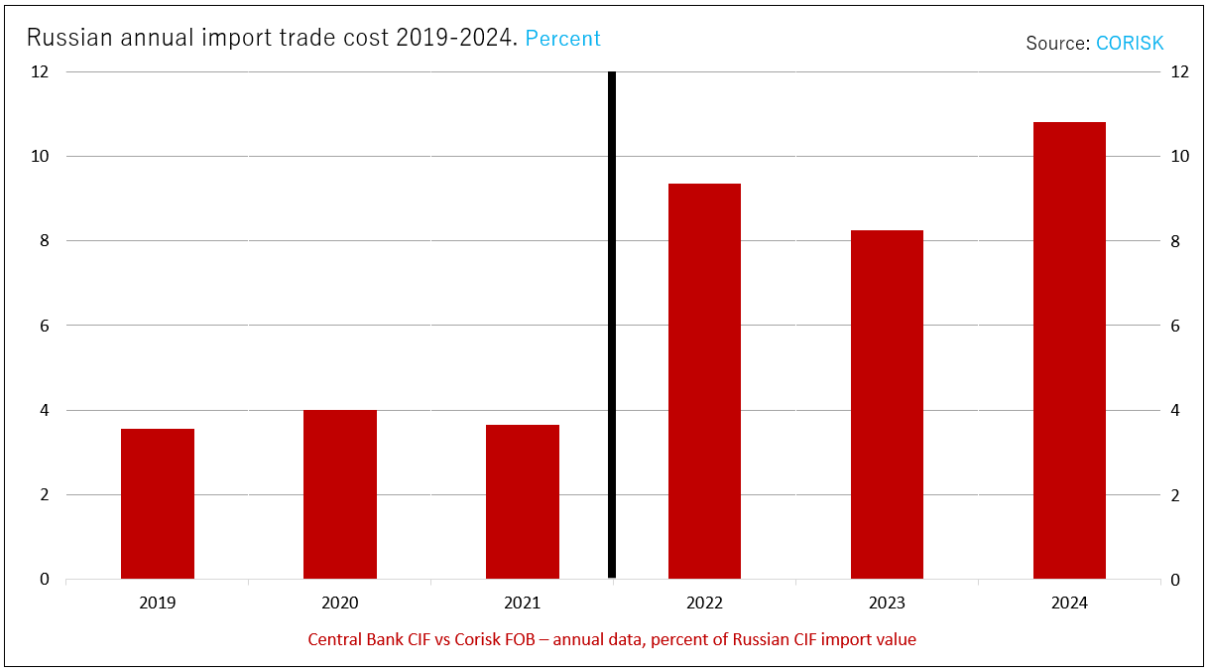
Russia pays significantly higher cost to import after the second attack on Ukraine, than before. Trade costs were USD 10 billion during Covid-19 in 2020 and 2021, but reached USD 27 billion in 2023.

Figure 7c: Annual difference between Russian CIF import value and global FOB export value



Again, to enable comparison with other countries and regional averages, we present in Figure 7d the relative trade cost of Russia's imports as a *percentage* of Russian CIF import values. This yields a better understanding of the relative effects of the 2021 Covid-19 bottlenecks and later sanctions. For Russian imports, trade costs remain around 4 % during post-Covid-19, but sees a dramatic rise to 10 % of CIF imports in 2022 - as many sanctions came into effect on typical Russian import goods from Western countries. Trade costs almost trebled and remained high between 9% and 10 % since that.

Figure 7d: Annual difference between Russian CIF import value and global FOB export value, as a percentage of the total Russian CIF import value



In Figure 7e and Figure 7f, we compare the trade cost of Russian imports over time against average trade cost of some regional and national imports in the OECD study. It illustrates how import costs grew somewhat from 2021 after Covid-19, while Russia's costs alone hiked in 2022 as key import goods became sanctioned, inconsistent with the global decline in cargo freight rates. The high Russian trade costs persisted in 2023 and further increased in the first half of 2024.

Figure 7e: Annual CIF/FOB margins of Russian imports against average regional trade costs on imports (OECD), percentage of CIF import value

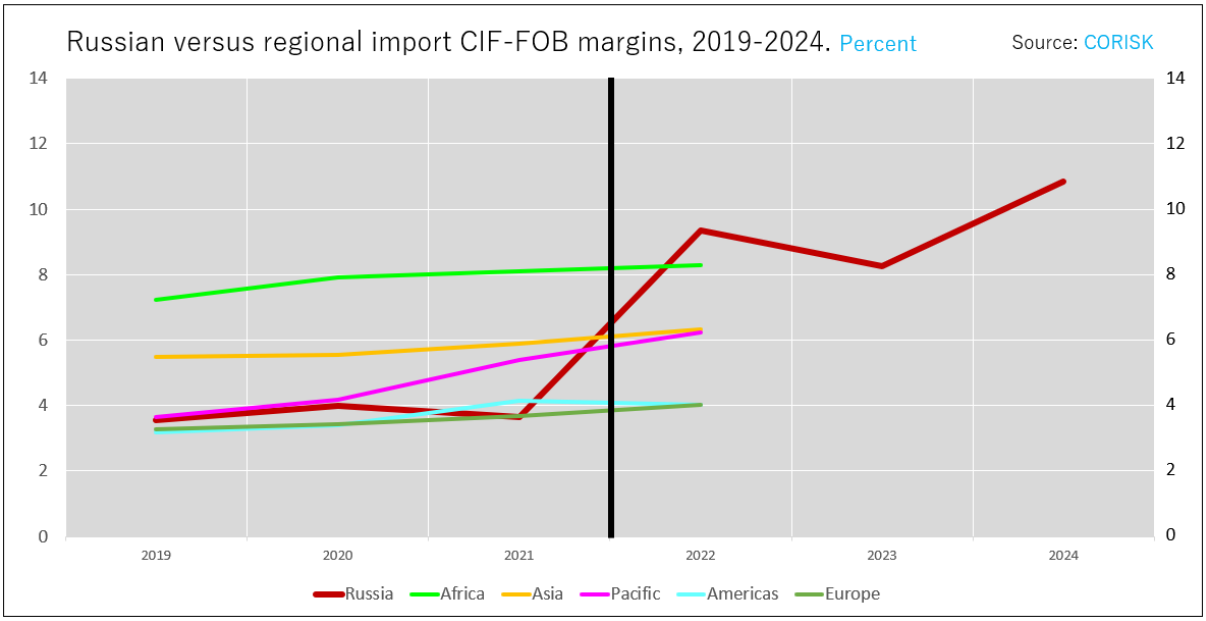
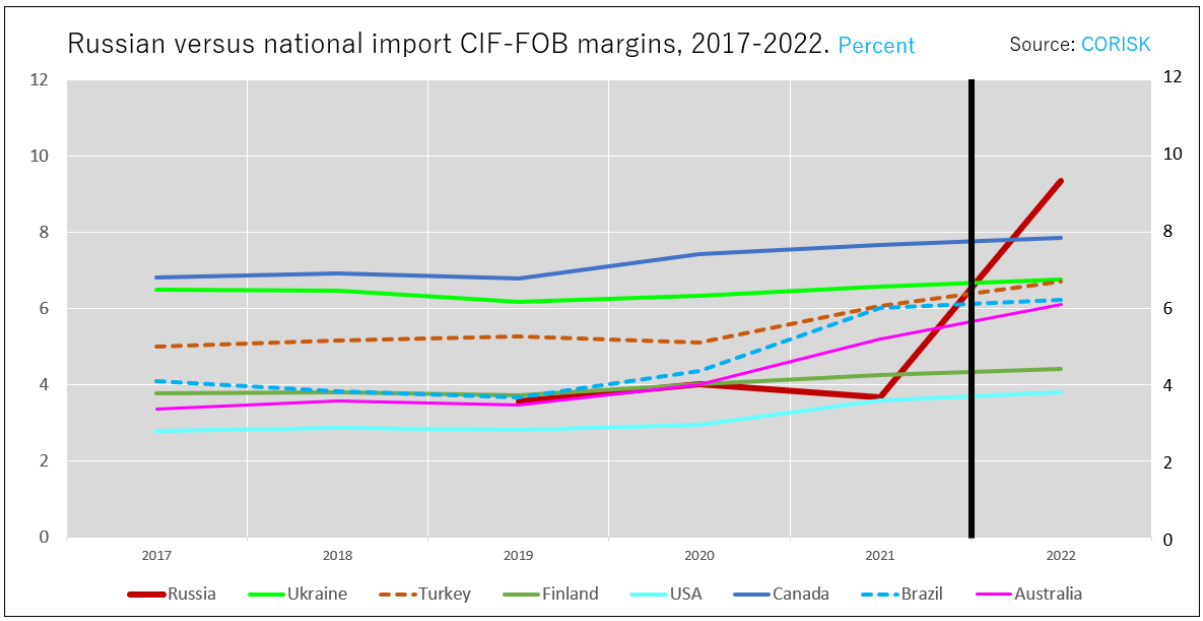


Figure 7f: Annual CIF/FOB margins of Russian imports against other countries' trade costs on imports (OECD), percentage of CIF import value



The analysis above will miss key parts of the effect of cross-value-chain inflation on Russian imports. In principle, measuring the difference between CIF import and FOB export values should capture the effect of price increases and extra profits enjoyed by the seller. However, that will only be captured for the value after formal bi-lateral exports, i.e., from the last exporting nation. Consider that Germany exports a CNC machine to Turkey worth 1 million dollars, and Turkey re-exports it to Russia for 2 million dollars. In case of re-exports and consignment accounting, the price difference will get ignored by CIF/FOB margin analysis, which will only capture costs between Turkey and Russia and miss the immense cost increase on the machine's way from Germany to Turkey including the USD 1 million in profits to the Turkish re-seller. Economists at Kyiv School of Economics found such profits to be substantial for many key sanctioned goods - on digital components the price inflation along the trade and circumvention route may well be 150-250 % before the technology reaches Russia.[30] Such effects will only be marginally reflected in trade cost analyses unless the goods were traded in transit, or unless the analysis rests on origin accounting or single-commodity price comparison.

More research is needed to analyse the full topology of trade costs in Russia's imports. For now, we believe there are merit to some elements including circumvention and indirect export costs, the EU entry ban for Russian trucks and ships, longer logistic lines and supply chains, sanction risk premium costs by intermediaries, needs to bribe and circumvent border controls, and higher currency risks.

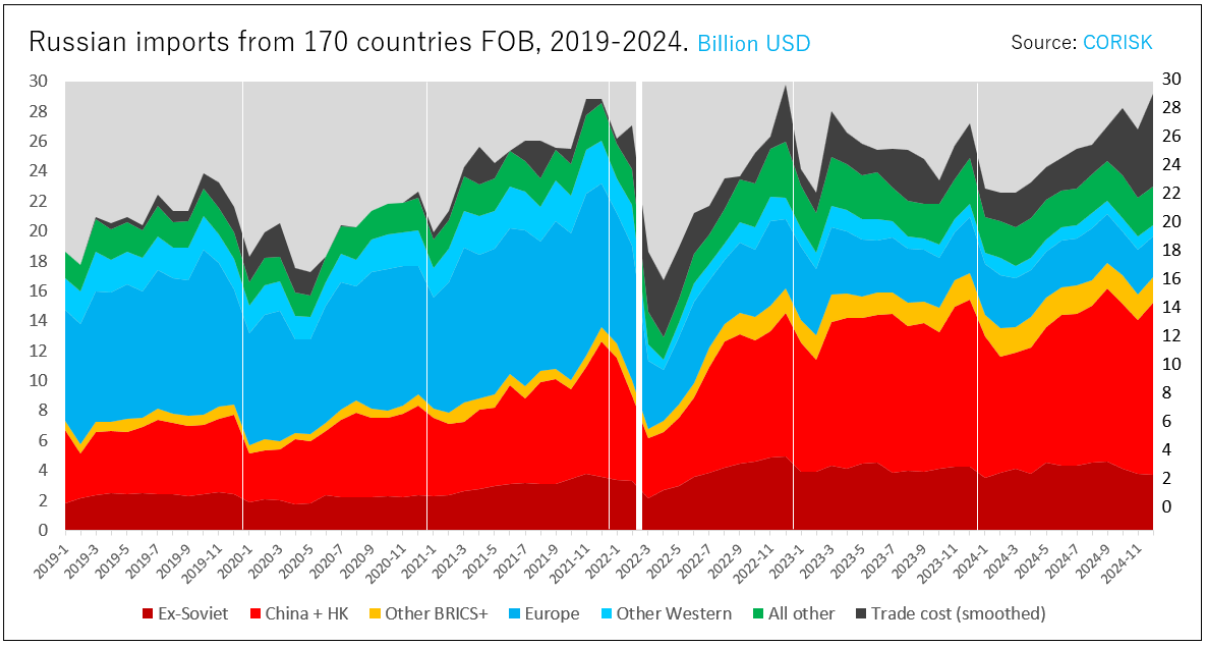
4.2. The geography of Russian imports

Turning to the **foreign export markets** where Russia sources its imported goods, we will summarize monthly exporter market trade data and again lump exporter countries into geopolitical groups. A geopolitical breakdown of Corisk data from Figure 5 are presented in Figure 8. Again, we distinguish ex-Soviet states in red colour, China in orange colour, and the other seven BRICS+ states (India,

Brazil, South Africa, Ethiopia, Egypt, UAE, Iran) in yellow. European exporters are marked as bright blue and other Western states as darker blue, while all other states including most countries in the Global South are coloured as brown. The exports to Russia in Figure 8 include the exports from the last country of commodity refinement or re-export, this boosting the exports of ex-Soviet and other states if they act as intermediaries for sanctioned Western goods. Finally, we add the trade cost as the residual CIF/FOB margin between Russian CIF and partner FOB reporting (grey). This means that the top of the grey area marks the Russian Central Bank's recording of total CIF imports. For reference, we also illustrate the average CIF import of the baseline 2019-2021 period (dotted line).

We see from Figure 8 how Russian imports have shifted away from Europe and relies more on China, ex-Soviet republics, Turkey (in the brown group) and the United Arab Emirates (in the yellow group). The reduction in imports from Western countries is partly a longer trend, connected with established (and later expanded) Russian post-2014 counter-measures against certain Western goods and food producers.[31] Further, we see that total CIF imports as recorded by Russia was record high after late 2022, while the actual FOB value of imports dropped in 2024 below the 2019-2021 baseline average.

Figure 8: Total FOB exports to Russia by geopolitical groups, and total Russian trade cost, 2019-2024



If we compare exports to Russia in 2023 against the baseline average 2019-2021, countries with noteworthy trade and large increases in their exports include Kyrgyzstan (+ 828 %), Tunisia (+ 711 %), **United Arab Emirates** (+ 383 %), Armenia (+ 353 %), Jamaica (+ 288 %), Qatar (+ 165 %), **Turkey** (+ 234 %), **China** (+ 99 %), Thailand (+ 85 %), **Belarus** (+ 72 %), **Kazakhstan** (+ 67 %), Egypt (+ 62 %), Uzbekistan (+ 57 %), Ghana (+ 47 %), **India** (+ 37 %), Serbia (+ 32 %), and **Vietnam** (+ 9 %).

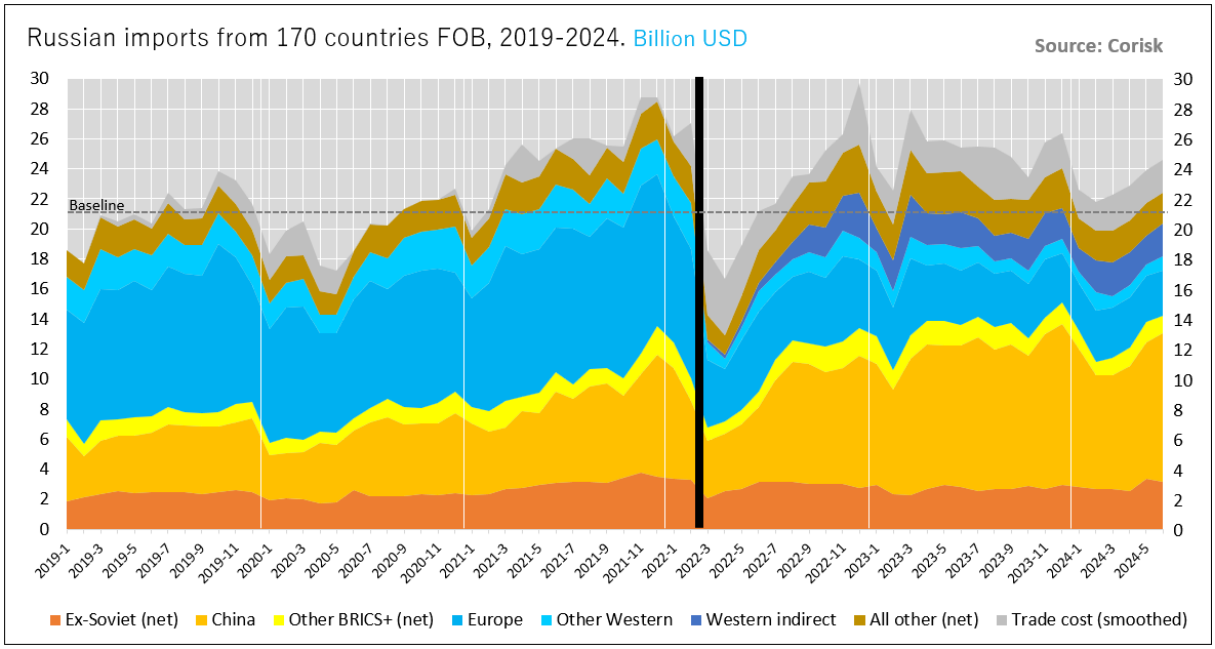
Taken as a whole, export to Russia grew by 88 % from the BRICS+ aera including China, but by 68 % by the BRICS-7 excluding China. Exports grew by 65 % from the nearby ex-Soviet aera including Ukraine. However, several of the additional exported goods from these countries are Western, earning the countries revenues as traders but not as producers.

The largest declines in exports to Russia were seen in Ukraine (- 100 %), Australia (- 99 %), Cambodia (- 94 %), Canada (- 92 %), **Mexico** (- 92 %), **USA** (- 90 %), **Singapore** (- 83 %), Finland (- 81 %), **United Kingdom** (- 70 %), **Germany** (- 67 %), **France** (- 67 %), Spain (- 61 %), Poland (- 55 %), Argentina (- 54 %), **Japan** (- 48 %), **Italy** (- 44 %), Pakistan (- 43 %), Philippines (- 41 %), Morocco (- 38 %), Sri Lanka (- 37 %), Taiwan (- 31 %), Bangladesh (- 30 %), Saudi Arabia (- 27 %), **South Korea** (- 25 %), Malaysia (- 25 %), Kenya (- 23 %), **Brazil** (- 22 %), Moldova (- 19 %), **Indonesia** (- 18 %), **Switzerland** (- 17 %), Israel (- 14 %), Peru (- 13 %), Ecuador (- 11 %), **Hong Kong** (- 3 %), Nigeria (- 2 %), and Tanzania (- 1 %).
For the **Western** area including Europe, North America, Japan, Korea, and Taiwan, direct exports to Russia declined by 55 %. But as we see from the overview above, many large economies of the Global South substantially reduced their exports to Russia, including Brazil, Indonesia, and Malaysia.

4.3. Russian imports including circumvention

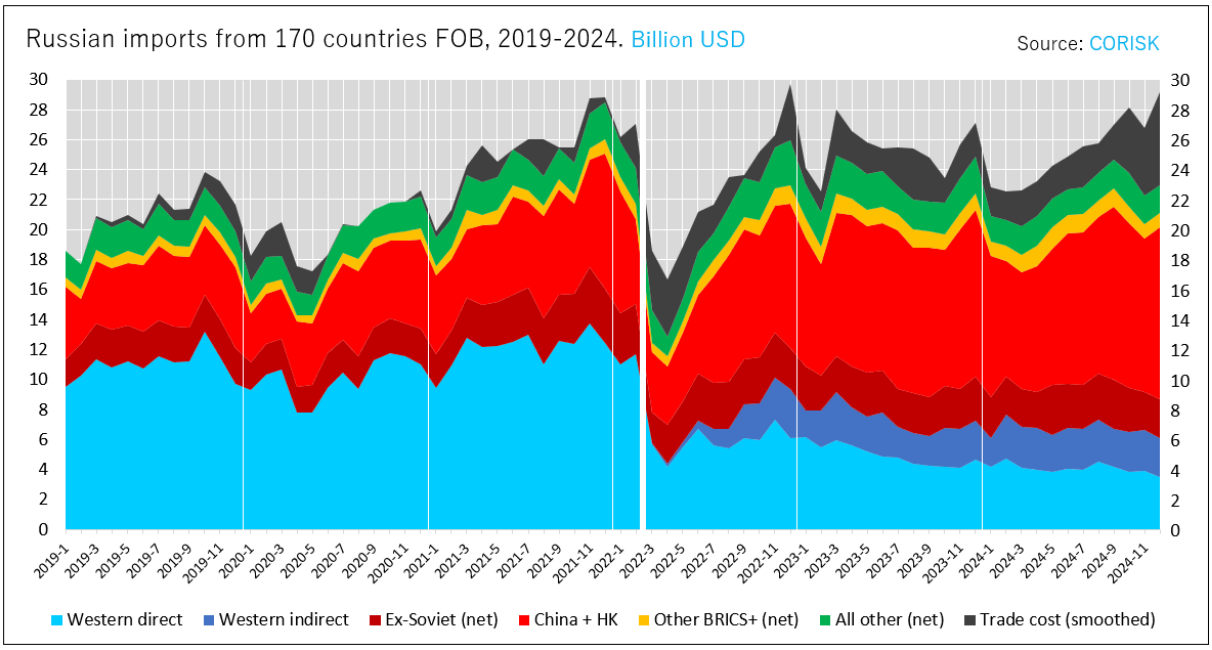
The recorded exports to Russia from typical intermediary countries include sanctioned Western goods that are re-exported to Russia as a sanction evasion and circumvention strategy. These flows of Western circumvention exports amount to typically USD 1,800 - 2,500 million per month, and in Figure 8b we add these circumvented Western goods to the total Western exports with blue colours, against a corresponding deduction in the exports of circumvention facilitation intermediaries grouped as ex-Soviet (red), the UAE (yellow), and Turkey (brown). Thus, from Figure 8, we increase the blue areas and decrease the red, yellow and brown areas in accordance with the monthly magnitude of Western indirect / circumvention exports to Russia via each of those third countries. However, we are not able to isolate Western circumvention goods flowing to Russia via China and Hong Kong, which are probably a considerable portion of these countries' exports to Russia.

Figure 8b: Total FOB exports to Russia by geopolitical groups, and total Russian trade cost, with estimated indirect (circumvention) exports allocated to Western exporters, 2019-2024



Again, we will similarly present the same global exports data, but focusing on Western total exports by presenting the Western country groups at the bottom of Figure 8c.

Figure 8c: Total FOB exports to Russia by geopolitical groups, and total Russian trade cost, with estimated indirect (circumvention) exports allocated to Western exporters, 2019-2024



In Figure 8b and Figure 8c, Western circumvention goods are identified and deducted from the gross total exports of the ex-Soviet area, the United Arab Emirates within the BRICS+ group, and from the gross exports of Turkey in the "All other" groups. This leaves three key observations:

First, Western countries have reduced their total direct and indirect exports to Russia much less, than when counting only the direct exports (Figure 8). After an initial strong decline after the second attack in February 2022, Western total exports to Russia increased rapidly until reaching almost pre-attack levels in December 2022, but thereafter sales gradually fell. On average, Western countries exported goods worth 133 billion dollars to Russia annually in 2019-2021. Western total direct and indirect exports in 2023 were 85.2 billion dollars, a reduction by 36 % from baseline. These Western exports included direct sales of 59.5 billion dollars and indirect sales of 25.7 billion dollars, with indirect exports (generally to be assumed sanctioned) thus making up 30 % of the total. In the first half of 2024, the total Western exports to Russia were 46.7 billion dollars, distributed between direct sales worth 24.5 billion, and indirect sales of 22.2 billion dollars. This brings the indirect share of total Western exports up to 47.5 percent. For comparison, total Western exports was 69.3 billion dollars in the first half of 2021, i.e., a reduction between 2021 and 2024 by only 33 %.

We do not know exactly how much of the indirect Western trade via third countries, that includes goods that are sanctioned. But for this report, this does not really matter because we aim only to account the full trade of Russia irrespectively if the good are sanctioned, or not. In a analysis of the inflow of sanctioned goods to Russia, however, such a distinction would have been important and we would have to analyse the flows of Western goods between third countries and Russia in more detail.

Second, we see that China (including Hong Kong and Macao) is still increasing their share of exports to the Russian market. While their sales were 61 billion dollars on average during baseline 2019-2021, exports rose to 116.4 billion in 2023. We are not able to estimate the total Western circumvention trade via China, and this indirect trade in Western goods must be assumed to make up a noteworthy share of the increased Chinese exports. Still, we are convinced that the Chinese share in Russia's imports has grown considerably.

Third, we observe that "all other" countries have kept constant or lost export market share in Russia, when confining values to domestic and other non-Western goods. Alas, while ex-Soviet (red), BRICS+ (yellow) and Global South countries (brown) have certainly increased overall market shares in Russia including the re-export of Western circumvention goods (Figure 7), those countries have marginally retained or even lost net exports of goods produced domestically. In other words, countries like Turkey, the UAE and ex-Soviet states have utilised the sanctions window of opportunity to sell more Western goods to Russia, but not by stepping up domestically production for exports.

Comparing 2023 to the average of the baseline years 2019-2021, the annual combined net exports of ex-Soviet states excluding re-export of Western circumvention goods (red), have plummeted from 30 billion dollars in 2019-2021, down to only 29.4 billion dollars in 2023, though excluding Ukraine the area has a meagre 12 % export growth. Measuring net exports in 2023 over baseline, excluding Western circumvention goods, Belarus obtained a 54 % increase while Kazakhstan saw a 31 % decline in exports to Russia. In the first half of 2024 net exports excluding Ukraine were 17.15 billion dollars, or 18 % above the 14.5 billion exports in the first half of 2021. Altogether, therefore, the ex-Soviet area, with the exception of Belarus, has not utilised the momentum of sanctions to enhance their own export industries, but rather flourished in the role as facilitators of Western circumvention sales.

The seven non-China BRICS+ countries (yellow) India, Brazil, South Africa, Ethiopia, Egypt, UAE, and Iran, witnessed total annual exports of 8.4 billion dollars on average 2019-2021, against 12.2 billion dollars in net exports in 2023, a growth of maximum 45 percent.[32] This masks a growth in net, non-circumvention exports of 190 % for the Emirates and 37 % for India, against a decline of 15 % for Brazil. Net exports were 6.2 billion dollars in the first half of 2024, equal to the 2019-2021 period.

The large Global South group of "All other" (brown) including Turkey exported goods worth 23.3 billion dollars annually in the period 2019-2021, while their net exports to Russia in 2023 climbed to 30.4 billion dollars - a growth by 30.6 percent. But this was largely enjoyed by Turkey (net + 119 %), while exports declined from Malaysia (- 36 %), Indonesia (-18 %), and Sub-Saharan Africa (-7 %). And in the first half of 2024 this net export was only 12.4 billion dollars, slightly below pre-attack levels and also a clear decline from 2023. This attests that Turkey and a handful other countries managed to gain some market share for their own products in 2023, but as a whole the Global South lost much of that gain in the first half of 2024.

Altogether, given the high-tech nature of Russian imports, market shares have shifted from Western countries to China, and little else. Further, the relative shift of market share away from the West is less pronounced when we include the value of circumvention exports in the equation. The shift to China masks a noteworthy volume of Western sanctioned goods in the Chinese exports. Importantly, the countries of the BRICS+, the ex-Soviet area and the Global South have not managed to gain much market share beyond their opportunities-seeking as intermediaries for sanctioned Western products.

5. Methodology and data selection

This report estimates Russia's trade in commodities with various global trading partners, including trade in both domestically produced goods, and foreign origin goods via re-export, transshipment, partial refinement, etc. All data in the report are in US Dollars, but several have been converted from raw data in other currencies by monthly-average currency rates from XE.com.[33] We strive to apply the non-Russian trade partners' national data as far as possible, except when trade partners clearly under-estimate their trade with Russia, as against verifiable Russian sources.

Our estimates include trading partners' total trade with Russia by country of consignment. All export data follow the (exporting) country of consignment principle, while China accounts import by country of origin where "the country of the last substantial working or processing" of the commodity is being recognized as the origin country.[34] We believe that for Russia this reflects consigned exports to China with little or no risk of double counting, because these exports are dominated by raw materials that are moved directly from Russia to China, with very little re-export of non-Russian goods.

Trade normally means that the commodity in question crosses the border and changes ownership. Statistics organisations are encouraged to account exports by the value obtained at the point of transfer to shipment from the exporting country (Free on board, FOB), and imports by the value at arrival in the importing country (Cost, insurance, freight, CIF).[35] This means that import data will include the cost of shipment and related services and be higher than the corresponding export data, with the residual making up the trade cost (CIF). For Russia's imports, when available, we apply partner export data and record Russia's imports FOB. For Russia's exports, we apply partner import data and thereby record Russia's exports CIF. This allows us to identify the deviation against Russian data where this deviation indicates the degree of Russian mis-reporting and/or the trade cost.

A substantial deviation between accounted exports and imports in the same bilateral trade, derives from the level of control and comprehensiveness of recording by the responsible authorities:

A. Imports are usually more ardently inspected and recorded than exports, because incoming goods are physically screened for illegal substances at customs, and because they form the basis for import excise duty revenues. Export control is universally less developed, and unrecorded exports are usually easier to conduct, for example ship-to-ship at sea.[36]

B. Recording is more comprehensive in more developed countries, and in countries with less corruption or financial crime. We observe that registration and clearance of exports seems to be more common in countries with better export control enforcement, greater corporate transparency, and more predictable tax regimes. For these and other reasons exports to Russia from countries in Africa and Central America are often substantially under-recorded.

Trade statistics are normally recorded either from customs and the trading companies in the form of official trade data, or from banks in the form of Balance of Payments (BOP) data. Customs data derive directly from the customs authorities' database, while official trade data will usually be calibrated against surveys and accounting data from trading companies. BOP data from central banks tend to be more comprehensive as they are able to retrieve information on the transactions behind all trade, irrespectively of the trade's clearing through customs. The better coverage of national bank

data over customs data is evident for Russia, Belarus, Kyrgyzstan, and Mongolia, among others. Whenever possible, we adjust final trade values closely against BOP data from central banks. Some countries only release data quarterly, including Belarus, Kazakhstan, and the UAE. We then distribute trade evenly over the three months unless we have single-month data from other sources.

In accordance with the above, the quality of data recorded by authorities varies a lot. We take effort to verify, assess and adjust data across the three main sources: official trade statistics, Balance of Payments statistics, and direct customs data. For countries with strong customs organisations and enforcement, we apply official data directly, as for most Western countries, China and other East Asian countries, Turkey, and the UAE. These countries record trade quite comprehensively, including their FOB exports. As an example, and despite the substantial shipping distance, Australia records a higher export FOB to Russia, than what Russia records as imported CIF from Australia. This shows how Australia's trade recording is clearly more comprehensive, than Russia's.

Most ex-Soviet republics seem to have generally strong statistics services, but publication lags or fails in Russia, Belarus, Tajikistan and Turkmenistan. Countries that are members of the Eurasian Economic Union (EAEU) release transaction-based data up until mid-2022. Ex-Soviet states account total values including the re-export of Western circumvention goods, while in Western data these circumvention goods appear as trade with the ex-Soviet intermediary country. Some intermediary countries release deviating or deficient data across publication platforms. To assess their full gross exports including re-exports of Western circumvention goods, we produce parallel estimation data where we compute the value of circumvention trade, and then add to that any recorded trade in domestic and non-Western goods from official trade data or customs data. This enables us to validate data using three independent sources, to arrive at better trade estimates.

For all students of trade, official trade data will de-facto never capture all trade. There is always illicit and unrecorded trade, even between the most democratic and advanced countries with the best statistical capacities. For example, the habit of ship-to-ship re-loading of fish and oil products is pervasive. Thus, the aim of any study will be to include as much of the actual ongoing trade as possible, and try to apply coherent sources over time instead of switching between sources over the estimation period. Our methodology rests on a three-stage collection and validation process. Finally, the study probably under-estimates trade with Cuba, Iran, North Korea, and Venezuela and a few other countries who report little or no trade but in reality may have a substantial trade with Russia. However, these countries' trade with Russia is under-reported near zero not only at the partner end by Venezuela, Iran and North Korea, but also by Russia itself because they are similarly absent in Russian customs data (which are consistent with Russian BOP data, ref Figure 1). When the trade is removed from reporting at both sides, it does not impact much on the trade cost analysis.

5.1. Validation of the data

Our tree-stage collection and validation process behind this study is performed in the following way:

First, trade data by consignment country are retrieved from **UN ComTrade** and **TradeMap**, if possible both from the reporting exporter and the importer, to identify deviations and under-reporting. Besides, we have cross-checked for further available data at **OECD**. As a general rule we choose exporter FOB data for trade-partner exports and importer CIF data for trade-partner imports, but if those are clearly under-reporting we use instead the Russian data and adjust for trade cost. Russia

has reported trade data per country until 2022. If Russia as an importer records clearly more of the imports than the exporting country does, we estimate the trade partner's 2019-2021 average *rate of under-reporting* as compared to Russian reporting, and apply that rate of under-reporting on the monthly exports data reported by the exporter from 2022 onwards, deducting 2-10 % trade cost according to shipping distance and logistics conditions. In this process we also confer Russian customs data for imports to validate and identify real outputs in line with customs data reporting. Similarly for Russian exports, if Russia reports clearly more and the foreign importer under-reports, we apply Russian data and the trade partner data adjusted for the rate of under-reporting from 2022, adding on both 2-10 % trade cost according to shipping distance and logistics conditions.

Second, we look for official trade data from national statistics institutions and central banks, to compare them to data reported to UN ComTrade and TradeMap. These data are usually consistent, but some countries deviate or lack reporting to UN ComTrade over several periods while they have trade data available nationally – such as Austria. Other countries report more detailed to the UN than what they otherwise publish, like Italy. For EU member states, we confer trade data from Eurostat to validate outputs and to validate the totals for EU members. We consult each country's higher reporting to identify gaps or inconsistencies. If we must shift from one time series to another, we take account of the monthly time gaps between exports and imports by recording quarterly totals and spreading these on the three connected months to fill the overlap and get the totals right.

Third, we further validate data for Turkey, the UAE, and ex-Soviet republics through an intricate process. These countries are known enablers of circumvention, and Turkey also performs its own circumvention exports to Russia via ex-Soviet states. This context may give the countries motivations to under-report, and we want to validate whether they report trade values in full. Our database continuously estimates Western circumvention trade with Russia via third-countries, and Turkish circumvention trade with Russia via ex-Soviet third countries. This is done by applying the *excessive trade method* were excessive or abnormal exports to third-countries are being recorded. As excessive we identify all trade which in 2022 exceeds a baseline trade by more than 20 %, from January 2023 onwards increasing that threshold by another 1 %p every second month. The baseline period is either 2019-2021 or only 2021 (whichever is higher) except for Belarus, where the baseline period is alternatively the first quarter of 2022 (whichever is lower).[37] This excessive trade between Western countries and third countries is assumed to directly indicate circumvention trade with Russia.

The Russian customs service records some trade with Ukraine that is not reflected in Ukrainian import data, and seemingly include trade with the occupied territories Similarly, the Russian customs service similarly records some trade with North Ossetia and Abkhazia which we do not recognize as international trade. We exclude all these trades from the study, as we regard such trade as most probably supplying battlefield troops in addition to civilian populations under Russian occupation.

5.2. Trade between Russia and Belarus

Belarus followed Russia's example and totally stopped reporting country-by-country data for Russia and the other ex-Soviet countries in April 2022. We find Belarusian trade data from three main sources: monthly official trade data reported to UN ComTrade until April 2022; quarterly central bank BOP data reported to the EAEU until October 2022; and annual official data for trade with the whole ex-Soviet area and Russia from Belarus Statistical Agency (BelStat) in 2019 and 2020. From 2021

onwards, we get monthly BelStat for the whole ex-Soviet area partly directly and partly from the index data collected by economists at BEROC.[38] There is considerable fit between Belarusian BOP data reported to the EAEU, trade data from BelStat, and trade data reported to UN ComTrade.

For Belarusian average annual **exports** to Russia 2019-2021, the EAEU report USD 14.07 billion, BelStat reports 14.4 billion, and UN ComTrade 13.71 billion. BelStat presents total exports to the ex-Soviet area at an annual average of USD 20.37 billion, and for 2019 and 2020 we apply the annual exports to the ex-Soviet area and deduct Belarus' reported FOB exports to Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Ukraine and Uzbekistan to get find the implied residual exports to Russia. This implied export to Russia stands in 2019-2020 at an annual average of USD 13.70 billion, compared to USD 13 billion reported BOP data, USD 13.42 billion by BelStat, and USD 13.26 billion at UN ComTrade. Only UN ComTrade has monthly data 2019-2020, we apply those data for that period and adjust them upwards to match with the total annual value of implied residual exports to Russia.

From 2021 onwards we have monthly BelStat trade data for exports to the whole ex-Soviet, and deduct from those monthly data the monthly Belarusian reported FOB exports to the other ex-Soviet states, to arrive at the implied residual exports to Russia. From April 2022 we apply their reported CIF imports from Belarus and adjust it to their recent rate of under-reporting or over-reporting vis-à-vis Belarus' FOB export data. This means that BelStat export data for the ex-Soviet area minus Belarusian exports to the non-Russian countries form the basis of our estimates through the 2019-2024 period.

However, during 2022 there is a tendency of BelStat under-reporting exports compared with BOP data. The underreporting is 5 % in Q2, jumping to 11.8 % in Q3. In the third quarter, BelStat actually report less exports to the whole ex-Soviet area, than the Bank of Belarus reports to Russia alone in their last available BOP data. After Q3 we observe a rapid and strong increase in Belarus' BOP data for total global exports, which must imply a strong increase in the further BOP exports to Russia, which cannot be fully absorbed in BelStat export data into the winter of 2022-2023. This is the period when Belarus accelerates re-exports of Western circumvention goods to Russia, which we need to capture in our estimates and find out if BelStat tries to hide from the monthly reported totals. To check this hypothesis, we present an analysis of the various trade data in the following table.

Month, quarter *mio USD*	**01/22**	**02/22**	**03/22**	**04/22**	**05/22**	**06/22**	**07/22**	**08/22**	**09/22**	**Q4/22** *(est.)*
Monthly average of BOP export to Russia		**1,256**			**1,834**			**2,341**		***2,782***
BelStat exports to the whole ex-Soviet area	2,212	2,180	1,373	1,776	1,889	2,180	2,212	2,261	2,341	2,487
- export to non- Russia	168	186	107	133	136	143	162	163	218	161
= Residual net export to Russia	**2,044**	**1,994**	**1,266**	**1,643**	**1,753**	**2,037**	**2,050**	**2,098**	**2,123**	**2,325**
BelStat over (+) or under (-) reporting		**512**			**- 23**			**-251**		***- 457***
Monthly Corisk circumvention		0			1			160		313
Mis-reporting vs Corisk circumvention		**..**			**- 22**			**- 91**		***- 144***
Corisk estimate, export to Russia		**1,256**			**1,834**			**2,341**		**2,634**

The table presents the monthly average values of the quarterly Belarussian BOP exports to Russia up to and including Q3 2022, including our own estimates of the BOP export values for the fourth

quarter based on Belarus' global BOP exports (row 1). We then present BelStat official export data for the ex-Soviet area (from the BEROC index) and the Belarusian exports to the non-Russian partners in that area, which we then deduct to find the "Residual net export to Russia" (rows 2-4). These net values are compared to the BOP data with the difference indicated as "BelStat over (+) under (-) reporting" (row 5).[39] We then compare the over- or under-reporting to the value of re-exported Western circumvention goods based on the *Corisk Excessive Trade Model*, to assess whether BelStat under-reporting conceals re-exported Western goods (row 6, blue numerals). Finally, the Corisk monthly estimate of Belarus' FOB exports to Russia are presented (row 7, blue numerals).

We know that Western circumvention exports to Russia via third countries started shortly after Russia's second attack on Ukraine, and the shadow trade took off from April-May 2022.[40] Focusing on three quarters following the attack, the BelStat under-reporting against BOP data ranges from USD 23 million to 457 million (standard deviation 217.1). When we add estimated re-exports of Western circumvention goods, the under-reporting becomes much more modest and considerably less volatile, ranging from USD 22 million to 144 million (standard deviation 61.2). But how to explain that the BelStat under-reporting seems to grow faster than the estimated extent of circumvention (rows 5-6). First, BOP reporting and trade data reporting may be temporally skewed, indicated by the fact that the BelStat under-reporting in Q2-Q4 offsets the over-reporting in Q1. We also saw for Russia's imports that the CIF/FOB margin went "wild" in Q1 2022, indicating severe issues with reporting or goods clearance at the start of 2022 (Figure 7), which may help explain the massive over-reporting in Q1.[41] The under-reporting may also have declined into 2023 when Russia's total imports substantially fell, by which the scope for under-reporting must have narrowed. As to the increasing trend in under-reporting even after correction for circumvention trade, may indicate that the Corisk estimates of shadow exports are two conservative, which has also deliberately been intended. The highly volatile trade of Belarus 2021-2022 also makes it extra difficult to establish baseline and estimate excessive trade, as Belarus itself came under sanctions and the country's trade plummeted in early 2022.

Based on the improved coherency of BelStat under-reporting against BOP data after we introduce Corisk estimates of re-export of Western circumvention goods into the equation, we estimate the monthly exports to Russia from Q2 2022 by recording the implied residual net exports to Russia from total exports to the ex-Soviet area (BelStat), and adding the Corisk estimated circumvention exports.

For Belarusian **imports** from Russia, we have the same sources as for exports: monthly official trade data reported to UN ComTrade until 2Q 2022; quarterly central bank BOP data reported to EAEU until Q4 2022; and monthly data for imports from the ex-Soviet area directly from BelStat. The average monthly import value 2019-2021 from the three sources are presented in the table below.

Monthly average *mUSD*	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**
BelStat CIF from ex-Soviet area	2,005	1,535	2,145	*1,942*	*2,001*	*q1-q2* 2,150
- UN ComTrade CIF from others	165	154	136	*57*	*38*	*39*
= Implied CIF import from Russia	**1,841**	**1,381**	**1,989**	**1,885**	**1,963**	*q1-q2* **2,111**
BelStat CIF from Russia	1,835	1,376	1,972			
UN ComTrade CIF from Russia	1,802	1,354	1,281			
EAEU national BOP data	1,705	1,367	2,032	*q1-q3* 1,866		
Corisk estimate, CIF import	**1,841**	**1,381**	**1,989**	**1,885**	**1,963**	*q1-q2* **2,111**

From the table we observe the considerable coherency between the data sources. Seen top-down, we observe that BelStat publishes continuous data series for CIF imports from the ex-Soviet, and for each of those countries 2019-2021 that we may deduct from the totals to get implied CIF imports from Russia alone (rows 1-3). From 2022 onwards, we estimate the CIF import from ex-Soviet states based the recent rate of underreporting in Belarus FOB reporting against each of the trade partners (row 2). BelStat also publishes stand-alone import data for Russia, but only annual and only 2019-2021 (row 4). The Belarusian reporting to UN ComTrade is consistent with other data except in 2021, where for some reason they are considerably lower than the three other sources (row 5). The quarterly BOP data released via EAEU are lower than official trade data except in 2021 (row 6). This is a rare instance of under-reporting by central banks against official trade data.

Based on the fit between sources and the continuous release of official trade data via BelStat and UN ComTrade, we consistently apply the implied CIF imports from Russia (row 3) as reference level of CIF imports. For 2019-2020 we use monthly UN ComTrade data for volatility and adjust them up to 2 percent to match BelStat totals, while from 2021 onwards we apply the monthly implied data directly. The implied data are construed from official CIF imports from the ex-Soviet area, by deducting official Belarusian CIF imports from non-Russian trade partners 2019-2021, and by estimate these values from trade partner FOB exports to Belarus 2022-2024.

5.3. Variations in national reporting

Some ex-Soviet states release updated and granular data are highly consistent with Western data, including Armenia and Kazakhstan, while Georgia seems to clearly under-report trade with several Western partners. Western countries with seemingly comprehensive and consistent reporting include France, Germany, and the Nordic countries. Italy does not publish national data except more granular data via Eurostat and UN ComTrade. The Netherlands seems to struggle with estimation, they regularly revise past records more than a year back, and under-report trade with for example Armenia. Other countries that frequently do back revisions to prior data include Egypt, France, and the UK. We make informed judgements by inspecting several sources and apply the latest versions of the same source of trade by consignment as far as possible across the whole timeframe of inquiry.

For the 170 studied providers of Russia's imports there is generally good local data, matching or ahead of Russian trade data, in all of the Western countries and Argentina, Armenia, Azerbaijan, Benin, Bolivia, Botswana, Chile, China, Colombia, Dominican Republic, Ecuador, Egypt, Ethiopia, Faeroe Islands, Georgia, India, Israel, Kazakhstan, Kenya, Kyrgyzstan, Malawi, Mauritania, Mexico, Namibia, Nicaragua, Oman, Pakistan, Paraguay, Peru, Philippines, Rwanda, Tanzania, Thailand, Togo, Turkey, Ukraine, United Arab Emirates, Uzbekistan, and Vietnam. For these countries we apply local data, and fill in any data gaps with Russian data deducted a 2-10 % shipping cost.

We find under-reporting from Bahrain, Bangladesh, Bosnia-Hercegovina, Brazil, Cameroon, Costa Rica, Cote d'Ivoire, Ghana, Hong Kong, Indonesia, Jordan, Macao, Madagascar, Malaysia, Moldova, Montenegro, Morocco, Mozambique, Nigeria, Qatar, Senegal, Singapore, South Africa, Sri Lanka, Tunisia, Uganda, Venezuela, Zambia and Zimbabwe. For these countries, we apply local data adjusted for under-reporting against verifiable Russian data, or Russian data deducted a 2-10 % shipping cost.

We find deficient reporting from Afghanistan, Albania, Algeria, Angola, Bahamas, Burkina, Burundi, Cambodia, Central African Republic, Chad, DR Congo, Congo Republic, Cuba, Djibouti, El Salvador, Eritrea, Gabon, Greenland, Guatemala, Guinea, Honduras, Iran, Iraq, Jamaica, North Korea, Kuwait, Laos, Libya, Maldives, Marshall Islands, Mauritius, Myanmar, Niger, Somalia, South Sudan, Sudan, Tajikistan, Turkmenistan, and Togo. Here we apply Russian data, deducted a 2-10 % shipping cost.

For countries with 10 million dollars or more in monthly exports to Russia, noteworthy uncertainties pertain to the exports of Iran after 2021, Cote d'Ivoire after 2022, Belarus after June 2023; Bangladesh, Ghana, Guinea, Jamaica, Kyrgyzstan, Macao, Maldives, Morocco, Pakistan Singapore, South Africa UAE and Uruguay in 2024; and to the exports of Hong Kong, Israel, Kazakhstan, Moldova, Taiwan, Thailand and Vietnam after March 2024. For these countries, estimates are done for the periods mentioned based on available local data, legacy under-reporting rates, and Russian customs data. Uncertainties pertain to approximately 10 % of the exports to Russia in the second half of 2023, and 15 % in the second quarter of 2024. Provided we regard all existing and verified data as "correct", the months with national data uncertainties should create a margin of error for the total value of all the 170 exporting countries in the range of perhaps 2-4 percent.

For the 170 studied buyers of Russia's exports, we find good local data, matching or ahead of Russian data, for the Western countries and Angola, Argentina, Armenia, Bangladesh, Belarus, Benin, Bolivia, Bosnia-Hercegovina, Botswana, Brazil, Brunei, Cabo Verde, Cameroon, Chile, China, Colombia, DR Congo, Costa Rica, Cote d'Ivoire, Dominican Republic, Ecuador, Egypt, Ethiopia, Faeroe Islands, Gambia, Georgia, Ghana, Guatemala, India, Indonesia, Israel, Kazakhstan, Kenya, Kyrgyzstan, Macedonia, Macao, Malawi, Malaysia, Mexico, Moldova, Morocco, Mozambique, Namibia, Nicaragua, Pakistan, Panama, Paraguay, Peru, Philippines, Qatar, Rwanda, Senegal, Singapore, South Africa, Sri Lanka, Tanzania, Thailand, Turkey, Uganda, Ukraine, United Arab Emirates, Uzbekistan, Vietnam, Zambia, and Zimbabwe. For these countries, we apply local data, and fill in any data gaps with Russian data deducted a 2-10 % distance- and logistic-based shipping cost.

We find evidence of under-reporting or deficient reporting of imports from Russia in Afghanistan, Albania, Algeria, Azerbaijan, Bahamas, Bahrain, Barbados, Bonaire-St-Eusabius-Saba, British Virgin Islands, Brunei, Burkina, Cambodia, Cayman Islands, Chad, Republic of Congo, Cook Island, Cuba, Djibouti, El Salvador, Eritrea, Gabon, Guinea, Guyana, Honduras, Hong Kong, Iran, Iraq, Jamaica, Jordan, North Korea, Kuwait, Laos, Lebanon, Libya, Madagascar, Mali, Marshall Islands, Mauritania, Mauritius, Mongolia, Montenegro, Myanmar, Nepal, Netherlands Antilles, Niger, Nigeria, Oman, PNG, St Lucia, Saudi Arabia, Somalia, South Sudan, Sudan, Suriname, Syria, Tajikistan, Trinidad & Tobago, Togo, Tunisia, Turkmenistan, Uruguay, Venezuela and Yemen. For these countries, we apply either Russian customs data, or Russian reporting to UN ComTrade plus a 2-10 % shipping cost.

For countries with USD 10 million or more monthly imports from Russia, key uncertainties pertain to Iran after 2020, Kyrgyzstan and Moldova after June 2023; Myanmar and Sri Lanka in 2024; and Algeria, Armenia, Brazil, Colombia, Indonesia, Kazakhstan, Malaysia, Mexico, Pakistan, South Africa, Taiwan, Tunisia and Vietnam after March or April 2024. For these countries, estimates are done for the periods mentioned based on available local data, legacy mis-reporting rates, and the availability of credible Russian customs data. The uncertainties pertain to approximately 4 % of the imports from Russia in the second half of 2023, and 7 % in the second quarter of 2024. Provided we regard all

existing and verified data as "correct", the months with data uncertainties should create a margin of error for the total value of all the 170 importing countries in the range of perhaps 2-4 percent.

The evidence sheds light on reporting resources. Compared to the situation for partner exports to Russia (Russian imports), we see that partner imports from Russia are more comprehensively reported and match or exceed Russian data for more countries, including many countries in Africa and Latin America. While a total of 64 out of the 129 non-Western countries (50 %) provide good-quality import data, only 39 out of 129 non-Western countries (30 %) provide good-quality export data. This confirms the impression that countries more rigorously record imports, than exports.

5.4. Selected countries

Our estimates of Russia's foreign commodity trade in this report include the following 170 countries:

41 Western states

27 EU member states	
4 EFTA member states	Iceland, Liechtenstein, Norway, Switzerland
3 European states	Faeroe Islands, Greenland, United Kingdom
2 North American states	Canada, United States of America
5 Asian-Oceanic states	Japan, Korea, Taiwan, Australia, New Zealand

129 Other states

11 ex-Soviet states	Armenia, Azerbaijan, Belarus, Georgia, Kazakhstan, Kyrgyzstan, Moldova, Tajikistan, Turkmenistan, Ukraine, Uzbekistan
8 semi-Western states	Albania, Bahamas, Bosnia-Hercegovina, British Virgin Islands, Cayman Islands, Macedonia, Mexico, Montenegro
39 Asian states	Afghanistan, Bahrain, Bangladesh, Brunei, Cambodia, China, Cook Island, Hong Kong, India, Indonesia, Iran (incomplete), Iraq, Israel, Jordan, North Korea (incomplete), Kuwait, Laos, Lebanon, Macao, Malaysia, Maldives, Marshall Islands, Mongolia, Myanmar, Nepal, Oman, Pakistan, Papua New Guinea, Philippines, Qatar, Saudi Arabia, Singapore, Sri Lanka, Syria, Thailand, Turkey, United Arab Emirates, Vietnam, Yemen
45 African states	Algeria, Angola, Benin, Botswana, Burkina Faso, Burundi, Cabo Verde, Cameroon, Central African Republic, Chad, Cote d'Ivoire, DR Congo, Republic of Congo, Djibouti, Egypt, Eritrea, Ethiopia, Gabon, Gambia, Ghana, Guinea, Kenya, Libya, Madagascar, Malawi, Mali, Mauritania, Mauritius, Mozambique, Morocco, Namibia, Niger, Nigeria, Rwanda, Senegal, Somalia, South Africa, South Sudan, Sudan, Tanzania, Togo, Tunisia, Uganda, Zambia, Zimbabwe
26 Latin America states	Argentina, Aruba, Barbados, Bolivia, Bonaire-St-Eusabius-Saba, Brazil, Chile, Colombia, Costa Rica, Cuba (possibly incomplete), Curacao, Dominican Republic, Ecuador, El Salvador, Guatemala, Guyana, Honduras, Jamaica, Nicaragua, Panama, Paraguay, Peru, St Lucia, Suriname, Uruguay, Venezuela (incomplete)

These countries include all the 150 largest trade partners and more than 99.5 % of Russia's trade.

5.4. Data sources per country

Applying the same data source and data type for each country throughout the period, is a vital safeguard against double counting. We *always* confer UN ComTrade and TradeMap, and apply local trading party data for the overwhelming majority of the trade with Russia, confining the use of Russian data to countries that do not themselves report, and countries stat have very small trade with Russia. Countries that are estimated via Russian trade data represent 7-8 % of Russia's total trade. These are included in order to estimate the total trade volume, and thus to be able to compare totals with official Russian data and develop trade data for macro-economic analysis.

For each country we record data from the following sources, listed first for Russia's exports and then for Russia's imports, with an indication of how we form our final data estimate and how much of Russia's total trade each region represents. In the tables, we include the following colour codes:

Green	Country (left column)	Data series are constructed from a single source across 2019-24.
	Corisk estimate (right)	The Corisk estimate is based solely on local (national) data.
Red	Country (left column)	Data series are constructed from two or more sources across 2019-24.
	Corisk estimate (right)	The Corisk estimate is based solely on Russian data

Table 1. Sources for each country's imports from Russia (Russian exports):

Country	Source 1	Source 2	Source 3		Corisk estimate data basis
Western states					***33 % of Russia's exports***
EU-27	Eurostat	Statistics agencies	Central Banks		Eurostat
USA	UN ComTrade	US Census			US Census
Canada	UN ComTrade	Statistics Canada			Statistics Canada
Japan	UN ComTrade	ESTAT			ESTAT
Korea	UN ComTrade	KOSIS			KOSIS
Taiwan	UN ComTrade	Russian customs	Trade Dept		Trade Department
Australia	UN ComTrade	Russian customs			Local UNCT data
New Zealand	UN ComTrade	Russian customs			Local UNCT data
UK	UN ComTrade	ONS			ONS
Switzerland	UN ComTrade	Swiss Customs			Swiss Customs
Norway	UN ComTrade	Statistics Norway			Statistics Norway
Iceland	UN ComTrade	Russian customs			Local UNCT + 200 %
Faroe Islands	UN ComTrade	Russian customs			Russian customs
Greenland	UN ComTrade	Russian customs			Russian customs / UNCT
Liechtenstein	UN ComTrade	Russian customs			Russian customs
Albania	UN ComTrade	Russian customs	TradeMap		Russian customs
Bosnia & Herc	UN ComTrade	Russian customs			Local UNCT
Macedonia	UN ComTrade	Russian customs	TradeMap		Local UNCT
Montenegro	Un ComTrade	Russian customs	TradeMap		Russian customs
Serbia	UN ComTrade	Customs Serbia	RZS (statistics)		Local RZS
Ex-Soviet states					***12 % of Russia's exports***
Armenia	UN ComTrade	Statistics agency	TradeMap		Statistics Armenia
Azerbaijan	UN ComTrade	Russian customs	TradeMap		Russian customs
Belarus	UN ComTrade	EAEU	BelStat, BEROC		Local EAEU / BEROC
Georgia	UN ComTrade	Russian customs			Local UNCT / Rus customs +2%
Kazakhstan	UN ComTrade	EAEU	Statistics agency		Local UNCT / EAEU
Kyrgyzstan	UN ComTrade	Central Bank	Statistics agency		Central Bank / EAEU / Corisk
Moldova	UN ComTrade	Russian customs			Local customs / UNCT
Tajikistan	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Turkmenistan	UN ComTrade	Russian customs			Russian customs / UNCT
Ukraine	UN ComTrade	Statistics Ukraine			Local Statistics Ukraine
Uzbekistan	UN ComTrade	Statistics Uzbek	TradeMap		Local UNCT / Stat Uzb - 2 %

(cont.)	Source 1	Source 2	Source 3		Corisk estimate data basis
Asian states					***51 % of Russia's exports***
Afghanistan	UN ComTrade	Russian customs			Russian customs
Bahrain	UN ComTrade	Russian customs			Local UNCT / Russian customs
Bangladesh	UN ComTrade	Russian customs			Local customs / UNCT
Brunei	UN ComTrade	Russian customs	TradeMap		Russian customs
Cambodia	UN ComTrade	Russian customs			Russian customs
China	UN ComTrade	Russian customs	Customs China		Customs China
Hong Kong	UN ComTrade	Russian customs			Russian customs
India	UN ComTrade	Russian customs	Min of Commerce		Local MOC
Indonesia	UN ComTrade	Customs Indonesia	BPS (statistics)		Local UNCT / customs
Iran	UN ComTrade	Russian customs	TradeMap		Russian customs / Corisk est.
Iraq	UN ComTrade	Russian customs	Central Bank		Russian customs
Israel	UN ComTrade	Russian customs	CBS (statistics)		Local UNCT
Jordan	UN ComTrade	Russian customs			Russian customs
North Korea	UN ComTrade	Russian customs			Russian customs
Kuwait	UN ComTrade	Russian customs			Russian customs
Laos	UN ComTrade	Russian customs			Russian customs
Lebanon	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Macao	UN ComTrade	Russian customs			Local UNCT
Malaysia	UN ComTrade	Russian customs	Min of Economy		Local MOC
Maldives	UN ComTrade	Russian customs			Russian customs / UNCT
Marshall Is	UN ComTrade	Russian customs			Russian customs
Mongolia	UN ComTrade	Russian customs	Central Bank		Russian customs
Myanmar	UN ComTrade	Russian customs			Russian customs / UNCT + 5%
Nepal	UN ComTrade	Russian customs	TradeMap		Local TradeMap / Rus customs
Oman	UN ComTrade	Russian customs	TradeMap		Local UNCT / Rus customs
Pakistan	UN ComTrade	Russian customs	TradeMap		Local UNCT
Papua N Guinea	UN ComTrade	Russian customs	TradeMap		Russian customs
Philippines	UN ComTrade	Russian customs	PSA / Customs		Local PSA / Rus customs
Qatar	UN ComTrade	Russian customs	TradeMap		Local UNCT / Russian customs
Saudi Arabia	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Singapore	UN ComTrade	Russian customs	Customs Singapore		Local UNCT / customs
Sri Lanka	UN ComTrade	Russian customs	TradeMap		Local UNCT + 40 %
Syria	UN ComTrade	Russian customs			Russian customs
Thailand	UN ComTrade	Russian customs	Central Bank		Local central bank
Turkey	UN ComTrade	Russian customs	TradeMap		Local UNCT
UAE	UN ComTrade	Russian customs	FCSC (statistics)		Local data / Rus customs -30%
Vietnam	UN ComTrade	Russian customs	GSO (statistics)		Local UNCT
Yemen	UN ComTrade	Russian customs			Russian customs
African states					***2 % of Russia's exports***
Algeria	UN ComTrade	Russian customs			Russian customs / UNCT
Angola	UN ComTrade	Russian customs	Customs Angola		Local UNCT / customs
Benin	UN ComTrade	Russian customs			Local UNCT
Botswana	UN ComTrade	Russian customs	Customs Botswana		Russian customs
Burkina Faso	UN ComTrade	Russian customs	TradeMap		Russian customs
Burundi	UN ComTrade	Russian customs	TradeMap		Local TradeMap / Rus cust +10%
Cabo Verde	UN ComTrade	Russian customs	TradeMap		Local TradeMap
Cameroon	UN ComTrade	Russian customs	Customs Cameroon		Local customs
Central Afr Rep	UN ComTrade	Russian customs			Russian customs
Chad	UN ComTrade	Russian customs			Russian customs
Congo DR	UN ComTrade	Russian customs	Customs Congo		Local customs
Congo Rep	UN ComTrade	Russian customs			Russian customs
Cote d Ivoire	UN ComTrade	Russian customs	TradeMap		Local UNCT / Russian cust x 2
Djibouti	UN ComTrade	Russian customs	TradeMap		Russian customs
Egypt	UN ComTrade	Russian customs	CAPMAS statistics		Local UNCT / CAPMAS
Eritrea	UN ComTrade	Russian customs			Russian customs
Ethiopia	UN ComTrade	Russian customs	Customs Ethiopia		Local customs
Gabon	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Gambia	UN ComTrade	Russian customs	TradeMap		Local TradeMap

(cont.)	Source 1	Source 2	Source 3		Corisk estimate data basis
Ghana	UN ComTrade	Russian customs	TradeMap		Local UNCT / Russian customs
Guinea	UN ComTrade	Russian customs			Russian customs
Kenya	UN ComTrade	Russian customs	Customs Kenya		Local customs
Libya	UN ComTrade	Russian customs			Russian customs / UNCT
Madagascar	UN ComTrade	Russian customs			Russian customs
Malawi	UN ComTrade	Russian customs	TradeMap		Local TradeMap
Mali	UN ComTrade	Russian customs	TradeMap		Russian customs
Mauritania	UN ComTrade	Russian customs	TradeMap		Russian customs
Mauritius	UN ComTrade	Russian customs			Russian customs
Mozambique	UN ComTrade	Russian customs	TradeMap		Local UNCT
Morocco	UN ComTrade	Russian customs			Local UNCT / Rus customs x 2
Namibia	UN ComTrade	Russian customs			Local UNCT
Niger	UN ComTrade	Russian customs	TradeMap		Russian customs
Nigeria	UN ComTrade	Russian customs	Statistics Nigeria		Local stat / Rus cust / UNCT
Rwanda	UN ComTrade	Russian customs	TradeMap		Local UNCT
Senegal	UN ComTrade	Russian customs	Customs Senegal		Local customs / UNCT
Somalia	UN ComTrade	Russian customs	TradeMap		Russian customs
South Africa	UN ComTrade	Russian customs	TradeMap		Local UNCT
South Sudan	UN ComTrade	Russian customs	TradeMap		Russian customs
Sudan	UN ComTrade	Russian customs			Russian customs
Tanzania	UN ComTrade	Russian customs	Customs Tanzania		Local UNCT / customs
Togo	UN ComTrade	Russian customs			Russian customs
Tunisia	UN ComTrade	Russian customs	INS (statistics)		Local UNCT / INS
Uganda	UN ComTrade	Russian customs	TradeMap		Local customs
Zambia	UN ComTrade	Russian customs	TradeMap		Local UNCT
Zimbabwe	UN ComTrade	Russian customs			Local UNCT
Latin American states					***2 % of Russia's exports***
Argentina	UN ComTrade	Russian customs	INDEC (statistics)		Local UNCT / customs
Bahamas	UN ComTrade	Russian customs			Russian customs
Bolivia	UN ComTrade	Russian customs			Local UNCT
Brazil	UN ComTrade	Russian customs	MDIC (govt)		Local UNCT / MDIC
Brit Virgin Is	UN ComTrade	Russian customs			Russian customs
Cayman Is	UN ComTrade	Russian customs	TradeMap		Russian customs
Chile	UN ComTrade	Russian customs	Customs Chile		Local UNCT / customs
Colombia	UN ComTrade	Russian customs			Russian customs / UNCT
Costa Rica	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT - 8%
Cuba	UN ComTrade	Russian customs	TradeMap		Russian customs
Domin. Rep	UN ComTrade	Russian customs			Local UNCT / Russian cust
Ecuador	UN ComTrade	Russian customs	TradeMap		Local UNCT / customs
El Salvador	UN ComTrade	Russian customs			Russian customs / UNCT - 8%
Guatemala	UN ComTrade	Russian customs	TradeMap		Local UNCT
Guyana	UN ComTrade	Russian customs			Russian customs
Honduras	UN ComTrade	Russian customs	TradeMap		Russian customs
Jamaica	UN ComTrade	Russian customs	TradeMap		Russian customs
Mexico	UN ComTrade	Russian customs	INEGI (statistics)		Local INEGI
Neth Antilles	UN ComTrade	Russian customs	CSB (statistics)		Russian customs / UNCT
Nicaragua	UN ComTrade	Russian customs			Russian customs
Panama	UN ComTrade	Russian customs			Russian customs / UNCT
Paraguay	UN ComTrade	Russian customs	TradeMap		Local UNCT
Peru	UN ComTrade	Russian customs	TradeMap		Local UNCT / Rus customs
St Lucia	UN ComTrade	Russian customs			Russian customs
Suriname	UN ComTrade	Russian customs			Russian customs
Trinidad &Tob	UN ComTrade	Russian customs			Russian customs
Uruguay	UN ComTrade	Russian customs	TradeMap		Russian customs
Venezuela	UN ComTrade	Russian customs			Russian customs.

Table 1 above illustrates how trade partner import data are much more often comprehensive; in that we are more likely to be able to find local (national) CIF import data that capture Russian exports to

the partner countries. This enables us to apply one single data source across the whole time period for more of the countries, and for most of the trade under study.

The same table can be similarly constructed for Russia's imports from trade partners. Again, the **green** coloured **Country** name in the left column means that we apply only one data source over the time period, while green coloured **Corisk estimate** source in the right column means that we apply only local (national) data. Conversely, **red** coloured country name means that we apply two or more sources over the time period, and red coloured right column means that we apply only Russian data.

Table 2. Sources for each country's exports to Russia (Russian imports):

Country	Source 1	Source 2	Source 3		Corisk estimate data basis
					Shares of trade 2022-2023
Western and European states					***27 % of Russia's imports***
EU-27	Eurostat	Statistics agencies	Central Banks		Eurostat
USA	UN ComTrade	US Census			US Census
Canada	UN ComTrade	Statistics Canada			Statistics Canada
Japan	UN ComTrade	ESTAT			ESTAT
Korea	UN ComTrade	KOSIS			KOSIS
Taiwan	UN ComTrade	Russian customs	Ministry of Trade		Russian customs
Australia	UN ComTrade	Russian customs			Local UNCT
New Zealand	UN ComTrade	Russian customs			Local UNCT
UK	UN ComTrade	ONS			ONS
Switzerland	UN ComTrade	Swiss Customs			Swiss Customs
Norway	UN ComTrade	Statistics Norway			Statistics Norway
Iceland	UN ComTrade	Russian customs			Local UNCT + 200 %
Faroe Islands	UN ComTrade	Russian customs			Russian customs / UNCT
Greenland	UN ComTrade	Russian customs			Russian customs / UNCT
Liechtenstein	UN ComTrade	Russian customs			Russian customs
Albania	UN ComTrade	Russian customs			Russian customs / UNCT
Bosnia & Herc	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Macedonia	UN ComTrade	Russian customs	TradeMap		Local UNCT + 60 %Russian customs / UNCT
Montenegro	Un ComTrade	Russian customs	TradeMap		Local UNCT + 700 % Russian customs / UNCT
Serbia	UN ComTrade	Customs Serbia	RZS (statistics)		Local RZS
Ex-Soviet states					***19 % of Russia's imports***
Armenia	UN ComTrade	Statistics agency			Statistics Armenia
Azerbaijan	UN ComTrade	Russian customs	TradeMap		Local TradeMap / Russian customs
Belarus	UN ComTrade	EAEU	BelStat, BEROC		Local EAEU / BEROC
Georgia	UN ComTrade	Russian customs			Local UNCT
Kazakhstan	UN ComTrade	EAEU	Statistics agency		Local UNCT / EAEU
Kyrgyzstan	UN ComTrade	Central Bank	Statistics agency		Central Bank / EAEU / Corisk
Moldova	UN ComTrade	Russian customs	Customs Moldova		Russian customs / UNCT - 2 %
Tajikistan	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Turkmenistan	UN ComTrade	Russian customs			Russian customs / UNCT
Ukraine	UN ComTrade	Statistics Ukraine			Local Statistics Ukraine
Uzbekistan	UN ComTrade	Statistics Uzbek	TradeMap		Local UNCT / Stat Uzb
Asian states					***52 % of Russia's imports***
Afghanistan	UN ComTrade	Russian customs			Russian customs
Bahrain	UN ComTrade	Russian customs			Russian customs + 35 %
Bangladesh	UN ComTrade	Russian customs	Customs Banglad.		Rus customs +100 % / UNCT
Brunei	UN ComTrade	Russian customs	TradeMap		Russian customs
Cambodia	UN ComTrade	Russian customs	TradeMap		Russian customs
China	UN ComTrade	Russian customs	Customs China		Customs China
Hong Kong	UN ComTrade	Russian customs			Local UNCT / Rus cust – 5 %
India	UN ComTrade	Russian customs	Min of Commerce		Local UNCT
Indonesia	UN ComTrade	Russian customs	BPS (statistics)		Local UNCT / BPS + 20%

(cont.)	Source 1	Source 2	Source 3		Corisk estimate data basis
Iran	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Iraq	UN ComTrade	Russian customs	Central Bank		Russian customs
Israel	UN ComTrade	Russian customs	CBS (statistics)		Local CBS
Jordan	UN ComTrade	Russian customs			Local UNCT + 450 % Russian customs + 100 %
Kuwait	UN ComTrade	Russian customs			Russian customs
Laos	UN ComTrade	Russian customs			Russian customs
Lebanon	UN ComTrade	Russian customs			Russian customs / UNCT
Macao	UN ComTrade	Russian customs			Russian customs – 5 %
Malaysia	UN ComTrade	Russian customs	Min of Economy		Local MOC / UNCT
Maldives	UN ComTrade	Russian customs			Russian customs / UNCT
Marshall Is	UN ComTrade	Russian customs			Russian customs
Mongolia	UN ComTrade	Russian customs	Central Bank		Central Bank
Myanmar	UN ComTrade	Russian customs			Russian customs / UNCT
Nepal	UN ComTrade	Russian customs			Russian customs
Oman	UN ComTrade	Russian customs	TradeMap		Local UNCT / Rus customs
Pakistan	UN ComTrade	Russian customs	TradeMap		Local UNCT
Papua N Guinea	UN ComTrade	Russian customs	TradeMap		Russian customs
Philippines	UN ComTrade	Russian customs	PSA / Customs		Russian customs – 4 %
Qatar	UN ComTrade	Russian customs			Local UNCT + 400% Russian customs + 800 %
Saudi Arabia	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Singapore	UN ComTrade	Russian customs	Customs Singapore		Local UNCT + 30% / Rus cust
Sri Lanka	UN ComTrade	Russian customs	Customs Sri Lanka		Local UNCT + 40 %
Thailand	UN ComTrade	Russian customs	Central Bank		Local UNCT
Turkey	UN ComTrade	Russian customs	Customs Turkey		Local UNCT
UAE	UN ComTrade	Russian customs	FCSC (statistics)		Local UNCT / FCSC
Vietnam	UN ComTrade	Russian customs	GSO (statistics)		GSO / Russian customs
African states					***1 % of Russia's imports***
Algeria	UN ComTrade	Russian customs			Russian customs / UNCT
Angola	UN ComTrade	Russian customs	Customs Angola		Russian customs x 10
Benin	UN ComTrade	Russian customs			Local UNCT / Rus cust - 10 %
Botswana	UN ComTrade	Russian customs	Customs Botswana		Local customs
Burkina Faso	UN ComTrade	Russian customs	TradeMap		Russian customs
Burundi	UN ComTrade	Russian customs	TradeMap		Local TradeMap
Cabo Verde	UN ComTrade	Russian customs	TradeMap		Local TradeMap
Cameroon	UN ComTrade	Russian customs	Customs Cameroon		Russian customs x 5 / UNCT
Central Afr Rep	UN ComTrade	Russian customs			Russian customs
Congo DR	UN ComTrade	Russian customs	Customs Congo		Local customs
Congo Rep	UN ComTrade	Russian customs			Russian customs
Cote d Ivoire	UN ComTrade	Russian customs	TradeMap		Russian customs x 15 / UNCT
Djibouti	UN ComTrade	Russian customs			Russian customs
Egypt	UN ComTrade	Russian customs	CAPMAS statistics		Local CAPMAS
Eritrea	UN ComTrade	Russian customs			Russian customs
Ethiopia	UN ComTrade	Russian customs	Customs Ethiopia		Local customs
Gabon	UN ComTrade	Russian customs			Russian customs
Ghana	UN ComTrade	Russian customs	Customs Ghana		Russian cust / UNCT - 10%
Guinea	UN ComTrade	Russian customs			Russian cust + 15% / UNCT
Kenya	UN ComTrade	Russian customs	TradeMap		Local UNCT / Russian cust
Libya	UN ComTrade	Russian customs			Russian customs / UNCT
Madagascar	UN ComTrade	Russian customs			Russian customs x 2 / UNCT
Malawi	UN ComTrade	Russian customs	TradeMap		Local TradeMap
Mali	UN ComTrade	Russian customs			Russian customs
Mauritania	UN ComTrade	Russian customs			Local UNCT / Rus customs
Mozambique	UN ComTrade	Russian customs			Russian customs / UNCT
Morocco	UN ComTrade	Russian customs			Russian customs / UNCT - 5 %
Namibia	UN ComTrade	Russian customs	TradeMap		Local UNCT / Rus cust x 2
Niger	UN ComTrade	Russian customs			Russian customs
Nigeria	UN ComTrade	Russian customs	Customs Nigeria		Russian cust / UNCT - 10%

(cont.)	Source 1	Source 2	Source 3		Corisk estimate data basis
Rwanda	UN ComTrade	Russian customs	TradeMap		Local UNCT / Russian UNCT
Senegal	UN ComTrade	Russian customs	Customs Senegal		Russian customs / UNCT
Somalia	UN ComTrade	Russian customs			Russian customs
South Africa	UN ComTrade	Russian customs	TradeMap		Russian cust +50% / UNCT -10%
South Sudan	UN ComTrade	Russian customs			Russian customs
Sudan	UN ComTrade	Russian customs			Russian customs / UNCT
Tanzania	UN ComTrade	Russian customs	Customs Tanzania, TradeMap		Local UNCT Russian cust / UNCT - 10 %
Togo	UN ComTrade	Russian customs	TradeMap		Local UNCT / Rus cust - 10 %
Tunisia	UN ComTrade	Russian customs	INS (statistics)		Local INS / Russian UNCT x2
Uganda	UN ComTrade	Russian customs	TradeMap		Russian customs
Zambia	UN ComTrade	Russian customs			Russian customs x 15 / UNCT
Zimbabwe	UN ComTrade	Russian customs			Russian customs x 3.5 / UNCT
Latin American states					***1 % of Russia's imports***
Argentina	UN ComTrade	Customs Argentina	INDEC (statistics)		Local UNCT
Bahamas	UN ComTrade	Russian customs			Russian customs
Bolivia	UN ComTrade	Russian customs	Customs Bolivia		Local UNCT / Rus customs
Brazil	UN ComTrade	Russian customs			Local UNCT + 20 %
Brit Virgin Is	UN ComTrade	Russian customs			Russian customs
Cayman Is	UN ComTrade	Russian customs			Russian customs
Chile	UN ComTrade	Russian customs	Customs Chile		Local customs
Colombia	UN ComTrade	Russian customs			Russian customs / UNCT
Costa Rica	UN ComTrade	Russian customs	Customs Costa Rica		Russian customs / UNCT - 8%
Domin. Rep	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Ecuador	UN ComTrade	Russian customs	Customs Ecuador		Local UNCT / customs
El Salvador	UN ComTrade	Russian customs			Russian customs / UNCT - 8%
Guatemala	UN ComTrade	Russian customs	TradeMap		Russian cust +100 % / UNCT
Guyana	UN ComTrade	Russian customs			Russian customs
Honduras	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Jamaica	UN ComTrade	Russian customs			Russian customs / UNCT - 7%
Mexico	UN ComTrade	Russian customs	INEGI (statistics)		Local INEGI
Neth Antilles	UN ComTrade	Russian customs	CSB (statistics)		Russian customs / UNCT
Nicaragua	UN ComTrade	Russian customs	TradeMap		Local UNCT / Rus cust - 7 %
Panama	UN ComTrade	Russian customs	TradeMap		Russian customs / UNCT
Paraguay	UN ComTrade	Russian customs	TradeMap		Local UNCT
Peru	UN ComTrade	Russian customs	Customs Peru		Local UNCT / Rus cust - 10%
Suriname	UN ComTrade	Russian customs			Russian customs
Uruguay	UN ComTrade	Russian customs	TradeMap		Russian customs – 10 %
Venezuela	UN ComTrade	Russian customs			Russian UNCT / Corisk est.

Table 2 above illustrates how trade partner export data are often deficient - we often lack local (national) export data and need to apply Russian recorded import data to capture comprehensive values of trade. For countries with noteworthy export volumes, we must then apply Russian data deducted a distance- and logistics-based trade cost. We deduct from 2 % to 10 % in trade cost according to distance from Russia, land-locked positions, and the assessed availability of maritime or land-based logistics routes between the trading partners.

The two tables above may give the impression that Russian trade and customs data have been widely used to establish our total trade estimates, since many African and Latin American countries have had their trade estimated in this way. But countries that are estimated by use of local (national) trade data represent more than 90 % of the total trade volume, making sure that the inclusion of the CIF/FOB margin covers a high proportion of trade, enabling analysis of the magnitude of Russian trade and shipment costs, circumvention risk costs, and other potential deviations.

5.5. Specific risks of double counting

For Russia's imports, these mainly consist of finished goods and are imported directly from trading partners, or indirectly from intermediary countries and neighbours in the case of sanctioned Western goods. This situation does not create substantial risks of double accounting. Corisk regularly updates a database of Western circumvention exports and indirect exports to Russia, and in Western trade data this trade will appear as sales to the third countries including many of Russia's neighbours. Thus, it will not appear in the Western countries' exports to Russia, but if the intermediaries re-export the goods to Russia, it shall be included in the reported trade between them and Russia. Thus, we must make sure to retrieve data that include all of Russia's trade with neighbours, including with members of the Eurasian Economic Union (EAEU). We apply BOP-based transaction data for all trade within the EAEU, and we observe in these data a considerable increase in trade from mid-2022 onwards, indicating inclusion of the Western goods from Western indirect exports. We further validate this by estimating the total Western circumvention exports via each intermediary, and retrieve data on trade in domestically produced goods where that is available, to ensure that the totals sum up to comprehensive trade values for Russia and its neighbours including Turkey and UAE. We believe that we have managed to include all intra-EAEU and intra-CIS trade, including that in foreign goods.

For Russia's exports, Western direct imports of oil and gas and their derived products were gradually abandoned in the trade with Russia during 2022 and early 2023 and switched to supplies from other countries such as Azerbaijan and Kazakhstan. The European Union only allows a minor quota of oil to be imported by Bulgaria, and somewhat more natural gas to Central Europe. Any illicit Western circumvention or indirect imports of Russian oil products via neighbours such as Azerbaijan, Kazakhstan or Turkey, should ideally be visible either in Russia's trade with these intermediaries, or with the Western countries themselves, with low risk of double counting, but with a certain risk of Russia earning non-captured revenues by secret trade via the intermediaries.

However, for sea-borne oil cargoes the risk of double counting is higher, especially when Russian oil or oil products are shipped by vessels of the so-called "shadow fleet". First and foremost, there will be risk that Russia transfers oil ship-to-ship and conceals the trade and revenue transactions, thus earning revenues that go unaccounted. Especially, this may be the case if the trade is intertwined with transfers connected with Venezuela, Iran, or North Korea. Further, Russia customs record large exports of oil and oil products to the Netherlands Antilles, and more modest volumes to Panama, which we cannot validate in data from the importing countries. Sorting out duplications in the data, we find that the states of the former Netherlands Antilles ceased importing oil products from Russia in 2019 and 2020. These are not recorded double by the Netherlands.[42] But the exports recorded by Russian customs include vast quantities of crude oil, nickel, chemicals and numerous semi-finished and finished goods, always with buyer country stated as "unknown", and the thousands of monthly exports end abruptly on 1 August 2020. Nationally, there are no traces of the imports neither from the statistics offices of Curacao nor Aruba.[43] The values also include Russian export totals that mismatch grossly with the totals reported by the Central Bank of Russia for 2019 and 2020. We conclude that Russian customs has systematically used "Netherlands Antilles" as a "residual post account" for a high number of export shipments going elsewhere, and we expect to find these Russian exports in the import data of other countries.

Similarly, there are Russian exports of up to 277 million dollars per month to Panama, which are not visible in Panama national trade data. The Canal Zone may involve transfer activities that allow for recording confusion, and the Russian customs data contain a repetition of the exact same monthly figures January-May 2023 and January-May 2024, leading us to suspect that the 2024 figures are invalid. Therefore, we have chosen to rely on Panama imports data for the whole period 2019-2024 which are 2.34 billion dollars lower than the Russian data. Zimbabwe, Libya, Jamaica and Marshall Islands are other smaller trade partners that reveal strongly increasing, though still modest, imports from Russia. Hong Kong and Macao will retain a certain risk of double counting with imports to China, but they absorb less than 1 % of Russia's total exports.

In our accounting of the trade of Switzerland, we exclude the country's extensive trade in gold both in circumvention estimates, and for the direct trade with Russia. While for Russia and many other countries gold is a normal trade commodity, we regard the Swiss trade in gold as a predominantly financial transaction. However, we do not exclude gold from the trade between Russia and other countries and intermediaries, and in the total values that gold will still be included in our totals if it is being re-exported to Russia. This makes comparison with Russian BOP data more accurate.

Trade between Hong Kong and Russia is considerable, with exports amounting to 10.7 billion USD in 2022-2023, and imports amounting to 13.3 billion dollars. The methodology documentation from Customs China does not explicitly state that goods from and to Taiwan, Hong Kong and Macao are excluded, but the four entities conduct separate reporting to UN ComTrade which specifically states that the four trading states are reported separately.[44] The Chinese and Hong Kong data reported to UN ComTrade match with their other published data including those applied in this study.

Regarding the situation in Ukraine, trade to and from Crimea is explicitly accounted and reported by Russia, and explicitly not reported by Ukraine.[45] We have not encountered methodological documents regarding Donbas, but for the foreign exports of grain to Africa we widely apply Russian customs data which explicitly include (stolen) Ukrainian grain from Donbas, which we do not assume to be accounted by Statistics Ukraine. Altogether and given the military situation in the area, the foreign trade of the Donbas must be assumed to be relatively marginal.

5.6. Discussion of trade costs

Trade costs are a complex term, but it is normally defined as all costs associated with delivering a good or a service to a customer through (cross-border) trade.[46] In macroeconomic and policy analysis, trade costs are often derived from regression of various logistic and regulatory variables against the prevalence of trade, often within a gravity-model equation framework.[47]

In this study, we shall define it as all costs connected with cross-border trade between two countries, but excluding explicit taxes and tariffs. In line with the OECD, we identify trade costs in the difference between Country A's recorded import CIF, and Country B's recording of the same trade as export FOB.[48] The OECD study applies so-called explicitly reported CIF/FOB margin data at disaggregated product and country-pair level and then aggregate these up using total CIF import value as weights. The French institute CEPII perform similar analyses from UN ComTrade data, where they validate both that country-pairs have recorded exports FOB and imports CIF, and that they have recorded the

same volumes (tons, liters, pieces) for the trade in question.[49] However, since February 2022 Russia has stopped issuing any needed micro-level data for such analyses – country-.pair trade, volumes or values, be it at aggregate or commodity level. This means that trade cost analysis at the micro level, where symmetric recording between exporter and importer can be validated, is impossible for Russia. Alas, the OECD and CEPII databases do not contain recent trade cost information for Russia.

These costs include more elements than the classical CIF cost components of insurance, financial transaction costs, commodity shipment, and other transportation or logistics costs. For example, they may include middleman trader costs and commissions deriving from re-export, added customs clearance, briberies to customs officials, or smuggling costs. Our estimates will not capture fiscal taxes and tariffs administered by governments directly at each end of the trade but may capture such costs of middlemen if added to the re-export commodity price to final importers.

In a best-effort application of the CEPII methodology, we apply analysis directly at the macro level for all countries simultaneously. This means that we incur all the methodological weaknesses that CEPII sums up, and we must see to it that we capture the trade of all of Russia's trade partners, so that we construct a country-pair consisting of Russia as one part, and all other countries as the other.

The basic equation regardless of applying a disaggregated or aggregated approach, is:

Relative CIF/FOB margin = (CIF value – FOB value) / CIF value

For that to bear fruit we must capture a maximum complete flow of trade, and measure that same, complete flow through the period. The sources of error that micro analyses run into, include the completeness of recording problem, the value/volume alignment, the gross/net unit of weight measurement problem, the exchange rate measurement problem, the CIF/FOB recording issue, and the country of consignment versus origin problem, among which the latter three are momentous. [50]

When performing the estimates directly at the macro level, we run into all of these issues and we only solve them in a few areas, first of all observing that the Russian measurement is collected from the methodologically uniform BOP statistics throughout the period, and that we on the trade partner side collect all data by country of consignment (to avoid double counting) and double-check all data with one uniform source (UN ComTrade). What we cannot validate at the aggregate level is that all imports are recorded CIF and all exports FOB (in line with UN recommendation), that the time of currency conversion is uniform, and that no trade is recorded by country of origin. However, we feel confident that the following considerations support our application of the macro approach:

- Most of the trade is recorded by well-established institutions that explicitly state their methodology or recording and reporting, including the EU (Eurostat), US Census, the customs organisations of China, Japan and Korea, and the trade statistics organisations of several ex-Soviet states.

- We have not recorded instances of countries changing their principles of recording or measurement during the time period, so that sources of error will stay constant over time with limited impact on *changes* to the cost of trade in Russian foreign commodity trade.

- Under the "law of big numbers" other sources of error such as changed composition of traded goods, temporally skewed trade flow, or the value/volume alignment issue, may be more inclined to even out over a sample of 170 countries and a temporal granularity spanning 66 months.

In line with these considerations, we call upon caution in interpreting our estimates as *accurate*, and believe our analysis can first of all shed valuable light on *changes* to the Russian costs of trade. We also believe these changes are more pronounced and significant on imports, which display greater shifts and changes than the costs of trade of importers on acquiring Russian exports. While Russia has no scope for substation of imports from *the World*, the World can considerably substitute their imports from Russia. In theory, the cost of trade equals the elasticity of substitution, all else being equal. This leads to Russian exporters and foreign importers indulging in all kinds of trade-cost-cutting including price rebates, shadow fleets, and alternative insurance schemes. We see this difference in scope in the costs of trade on Russia's exports which grew only gradually (Figure 3e), while the trade costs on Russia's imports almost trebled from one year to the next (Figure 7e). In this perspective, the cost of trade measured at Russia's imports appear somewhat more convincing.

The *WTO Trade Cost Index* finds that key components of trade costs include transport and travel costs, information and transaction costs, ICT connectedness costs, governance deficiency cost, and policy or regulatory costs including taxes, tariffs and other non-tariff barriers to trade, and "other" costs.[51] They find trade costs to be highest for services and lowest for manufactured goods, with agricultural goods falling in between.[52] Trade policy barriers such as tariffs and regulations on average make up 14 % of trade costs, more for less developed countries than for developed. Transportation is the highest cost component for trade between high-income countries, as these have generally reduced or abolished tariffs and other technical or regulatory barriers to trade.

The gravity theory of trade places high emphasis on the trade cost of geographical distance, stating empirically that larger economies, and neighbours and countries within shorter distance, tend to trade more. Studies indicate that the cost of distance may have increased over time, favouring short-distance trade over long-distance.[53] The gravity model also considers the size of the involved economies, the quality of trade infrastructure, and the prevalence of landlocked trade.[54]

Analysing the foreign trade of **Russia**, several factors come into play as determinants of trade costs:

1. Universal trends. Several studies have found trade costs to having generally declined over the later decades.[55] The WTO finds trade costs to having fallen by 15 % from 2000 to 2018.[56] However, several studies have concluded in more long-term and general increases in trade costs, though that may be attributed to longer supply chains and location of production in more distant low-cost countries, and not necessarily increased costs of performing the same trade or transport over time.[57] Trade costs are higher for less developed countries, having fallen only for high-income and upper middle-income economies.[58] Global value chain participation (GVCP) tends to reduce trade costs, and Russia may have shifted trade to partners that are less likely to take part in global value chain. However, raw material bulk exports may have a low GVCP in the first place, and thus be less vulnerable to such shifts.[59] Finally, so-called 'deep' trade agreements are a framework tending to reduce trade costs.[60]
2. Transport costs are paramount to Russia's exports, which consists of either special-transport items (natural gas) or heavy, shipping-intensive bulk commodities (oil, metals, ores). Further, changing away Western trade partners for new partners in Asia and Africa may shift trade to partners with more red tape and less cost-efficient infrastructure, logistics, or trade services. Increased trade with African countries may result in costs associated with the considerably

higher costs of clearing goods there, than in Asian or OECD countries.[61] Transport costs for liner shipping are relatively vulnerable to shipment providers' market power, which is stronger on less-served routes, and which we expect to be stronger for sanctioned goods and for trade hit Western bans on Russian logistics.[62] Lastly, we observe the general trend of falling global maritime shipment rates after 2022, but we find that these falling costs have not translated into reduced trade costs for Russia. One study proposes that declining transport costs are offset by higher adjacent, trade-facilitating costs as distances increase.[63]

3. Geographical distance to trade has increased, as nearby legacy markets in Europe, Korea and Japan have reduced their scope of trade and Russia needs to find markets further afield. Not least, this is the case for oil and gas products that were until recently sold, predominantly, to Europe and ex-Soviet neighbours including Ukraine. New dominating trade markets in China, India and the Global South increase both shipment costs and time.

4. Sanctions on trade, introducing effects reminiscent of an indefinite tariff or similar regulatory burden. Sanctions pose total barriers to trade, but just like an indefinite tariff the barrier can be overcome by circumventing it via export and re-export through third countries, Such circumvention has costs connected with transportation and logistics, alternative financial transaction schemes, trader profits, bribery needs, currency risks, and secondary sanction risks. In addition, sanctions will stimulate asymmetric market powers by empowering Russia's non-sanctioning trade partners, with consequences for Russia's trade costs.[64] Finally, sanctions have introduced a price cap on crude oil and oil products under regulated shipment, inducing downward price pressure from foreign customers, partly mitigated through the build-up of a shadow tanker fleet for oil but not for liquified natural gas.

Altogether, we find from the literature that the most relevant cost components to Russian trade before and after the second attack, are sanction costs and barriers, changes to geographic distance, shifts to less developed trade partners, and middleman costs that are unique to the context.

5.7. Trade costs and inflation

Increased trade costs spill directly over on import prices, accelerating import inflation with more persistent and longer-term effects than many other price shocks have.[65] Studies reveal that shipping costs spill less over on inflation in countries that practice monetary policies of credible inflation targeting, and on countries with relatively lower imports to GDP.[66] Russia has an import level around 10 % to GDP which is far below the global average of 30-40 %, and the country officially practices the 4 % inflation targeting with floating exchange rate, using policy interest rates as the main monetary instrument.[67] But since Russia has run out of most of its hard currency reserves, the Ruble has depreciated, inflation and bank runs remain constant threats, monetary measures have become more dramatic including solid interest rate hikes, occasional capital controls and forced conversions. As discussed in Chapter 4.1, sanctions force high-priority and war-relevant goods to take longer and more complex trade routes which severely add trade costs where gradually more of the across-supply-chain inflation will be missed by our country of consignment analysis as more non-accounted supply-chains are added with their trade cost margins. This calls for stronger real trade costs than our estimates indicate, and a corresponding stronger effect on inflation in Russia.

6. Raw data and assumptions

In the following tables, we present selected data on FOB export to Russia and CIF import from Russia, as far as we can discern from the available statistical data sources. For presentation purposes we combine three-month data into quarterly values, starting from April 2022. Chapter 5.4, above, reveals the sources applied for each trading partner country to measure their exports and imports with Russia. For quarterly imports from Russia (Table 3), we present official and direct trading data, irrespectively of the origin of the commodities. This means that if Russia sells a sanctioned export good to Belarus, which then sells it to Germany, the trade will only be recorded as exports from Russia to Belarus. This means that Russian indirect (circumvention) exports will not be identified in the table, but instead remain hidden as a non-quantified component to the total direct trade.

For quarterly exports to Russia (Table 4), we record first "direct" exports to Rusia as they appear in official statistics (black). However, there are substantial indirect Western exports and circumvention exports to Russia via third countries, of which we continuously estimate the value of circumvention via Belarus, Armenia, Azerbaijan, Georgia, Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, Uzbekistan, Turkey, and the UAE (but not China, Hong Kong). Circumvention exports are estimated as the 'abnormal' Western export to a third country when this export after February 2022 exceeds a 20 % growth threshold over the 2019-2021 baseline, adding from January 2023 onwards another 1 %p every second month to that threshold.[68] For Belarus, we apply January-April 2022 as baseline. Under Western countries in Table 4, we add the value of these indirect "circumvention exports" (red) via facilitating third countries. These indirect exports come in addition to the official direct exports to Russia, and illustrate the magnitude of circumvention sales from each Western exporter state.

Under facilitating third countries, we also quantify the value of Western goods exported indirectly to Russa via that country, calling this "of which circumvented" (red). Here, these circumvention values are included in the country totals (black). As an example, if Germany sells abnormal amounts of goods to Belarus which are then (assumed) re-exported to Russia, the goods will not appear in the direct German exports value (black), but in the indirect German circumvention exports value (red). For Belarus, they will appear both in the export totals (black), and in the part circumvented (red).

For facilitating third countries, the difference between total direct exports to Russia (black) and the component of that which are circumvented goods (red), leaves a residual which in principle equals normal legacy volumes of re-exported Western goods, plus domestically produced export goods, plus re-exported non-Western goods. However, in reality this residual is not accurate for Turkey (and probably not for the UAE). Since the entry into force of sanctions. Turkey has also itself performed indirect exports to Russia via other third countries, perhaps to conceal their intermediary role or avoid secondary sanctions. Compared to the 2019-2021 baseline, Turkey's exports in 2023 increased by 163 percent to Kazakhstan, by 116 percent to Belarus, and by 93 percent to Kyrgyzstan. This indicates that some of the Western circumvention goods flowing to Russia via Turkey, do in fact flow from Turkey to Russia via another third country, and is therefore absent in the total Turkish export value to Russia. This gives volatility to the residual values without indicating domestic exports values.

Table 3. Quarterly imports CIF from Russia (Russian exports) in million USD

Country	2019-2021	2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2
WORLD	**109,197**	**160,704**	**152,523**	**146,656**	**126,052**	**116,654**	**113,062**	**118,616**	**115,324**	**118,249**
Western	**56,878**	**76,339**	**56,867**	**46,817**	**31,660**	**19,606**	**18,180**	**19,631**	**16,199**	**14,112**
UK	3,007	667	264	69	20	18	14	19	19	21
Switzerland	288	529	426	758	2,084	873	592	931	7	5
USA	5,734	3,870	1,339	1,965	1,713	1,131	792	929	959	923
Canada	334	164	35	15	18	8	15	10	13	10
Japan	3,268	4,093	3,428	2,877	2,501	1,733	1,239	1,994	1,684	1,287
South Korea	3,456	3,554	2,723	3,159	2,576	2,372	2,052	1,892	1,690	1,601
Taiwan	949	1,498	1,212	853	715	1,073	1,177	1,307	988	1,173
Australia	71	133	8	2	6	1	1	1	1	1
EU-27	38,671	60,616	46,550	36,117	19,612	10,998	11,631	11,548	10,557	8,626
Germany	8,224	11,402	7,458	5,046	1,790	927	675	623	616	527
France	2,349	4,623	3,035	3,124	1,367	786	734	1,078	1,179	1,018
Italy	4,508	9,543	7,965	3,880	2,174	1,281	813	500	803	986
Spain	1,157	1,983	2,311	1,706	1,129	868	677	710	746	518
Netherlands	4,165	6,575	4,777	3,007	2,733	1,371	1,396	1,168	858	707
Belgium	1,607	3,770	2,261	1,943	1,558	1,233	410	584	785	788
Poland	3,991	4,446	2,825	2,321	1,140	457	369	418	444	427
Czechia	1,249	4,201	3,744	1,150	723	734	936	1,064	877	601
Slovakia	1,287	1,803	1,435	2,383	1,602	814	964	1,559	1,308	956
Finland	2,234	1,402	1,013	771	510	239	415	347	236	210
Lithuania	1,121	666	203	230	103	81	83	91	51	38
Hungary	945	2,260	2,202	3,316	7,203	1,179	1,442	1,740	1,481	1,044
Austria	700	2,335	1,344	2,265	1,563	804	720	882	618	602
Latvia	364	425	530	427	188	161	143	164	162	111
Sweden	707	47	47	31	13	5	12	8	16	23
Ex-Soviet	**14,299**	**15,325**	**16,513**	**20,001**	**16,492**	**15,493**	**14,833**	**17,314**	**18,458**	**20,004**
Belarus	5,211	5,314	5,324	6,005	5,654	5,543	6,012	6,345	6,068	6,595
Kazakhstan	3,846	4,959	5,517	6,696	5,644	5,002	4,147	4,332	4,000	4,630
Kyrgyzstan	406	678	933	932	893	972	873	1,124	984	1,563
Uzbekistan	1,118	1,407	1,504	1,791	1,626	1,513	1,548	1,820	2,038	1,901
Armenia	440	673	802	940	768	705	787	1,785	3,619	3,340
Azerbaijan	622	839	902	1,890	743	747	726	891	662	950
Georgia	247	432	537	592	490	437	437	380	459	399
BRICS-8	**21,590**	**43,154**	**52,361**	**52,235**	**52,468**	**57,001**	**56,759**	**56,826**	**55,245**	**60,341**
China + HK + Macao	16,599	29,083	32,645	30,638	30,869	34,008	35,433	35,575	32,987	33,595
India	1,901	9,267	13,511	13,987	15,641	15,341	15,070	13,855	15,798	19,398
Brazil	1,056	2,781	2,089	1,716	1,881	2,420	2,921	3,347	2,368	3,190
UAE	894	786	2,754	3,956	2,164	3,385	1,507	2,401	2,344	2,350
Iran *(uncertain)*	*361*	*362*	*362*	*362*	*390*	*450*	*450*	*450*	*450*	*450*
Egypt	815	770	849	1,403	1,471	1,311	1,119	1,056	1,208	1,225
South Africa	99	100	150	144	51	84	259	126	31	167
All Other	**16,430**	**25,887**	**26,783**	**27,604**	**25,432**	**24,553**	**23,289**	**24,845**	**25,421**	**23,792**
Turkey	5,825	15,019	16,898	13,212	13,076	11,507	10,120	10,899	11,983	10,057
Mongolia	566	636	692	1,039	507	565	425	691	681	682
Vietnam	517	475	338	467	361	436	524	569	601	585
Thailand	467	415	300	208	145	168	209	170	195	220
Philippines	220	110	162	107	42	74	77	57	11	69
Malaysia	250	618	621	460	381	683	472	922	621	487
Indonesia	293	408	454	690	558	658	595	623	516	546
Singapore	781	334	292	565	760	955	933	935	1,345	1,138
Bangladesh	319	203	184	542	344	326	644	759	483	649
Pakistan	115	107	92	219	370	141	117	298	446	300
Saudi Arabia	297	373	486	509	318	364	483	173	*330*	*330*
Algeria	812	756	695	1,531	1,341	1,377	1,950	2,184	1,700	1,800
Tunisia	119	233	317	254	368	593	689	591	494	451
Nigeria	347	180	225	290	758	395	222	228	592	365
Mexico	368	629	593	541	494	739	510	407	509	646
Argentina	224	101	65	44	25	58	63	33	16	38
Colombia	83	78	82	98	81	72	91	83	73	75
Peru	105	56	76	168	107	73	96	56	103	93
Ecuador	72	67	53	87	40	56	13	32	53	18

Table 3. Quarterly direct and indirect exports FOB to Russia (Russian imports) in million USD

Country Direct + indirect	2019-2021	2022 Q2	2022 Q3	2022 Q4	2023 Q1	2023 Q2	2023 Q3	2023 Q4	2024 Q1	2024 Q2
WORLD	**63,851**	**46,966**	**64,536**	**73,813**	**68,055**	**71,298**	**66,719**	**69,443**	**60,478**	**64,704**
Western	**33,160**	**16,268**	**17,077**	**19,340**	**17,354**	**15,362**	**13,346**	**13,454**	**12,613**	**11,920**
+Circumvention export	**0**	**1,069**	**4,025**	**7,678**	**6,887**	**6,642**	**5,377**	**6,769**	**6,588**	**7,150**
UK	975	249	270	234	302	295	228	236	346	185
+Circumvention export	0	25	251	330	89	115	69	85	117	35
Switzerland	911	875	720	851	794	802	601	675	521	669
+Circumvention export	0	24	48	189	223	34	73	82	76	89
USA	1,422	224	240	256	172	156	106	163	110	124
+Circumvention export	0	42	342	1,102	1,131	800	608	1,084	1,081	834
Japan	1,747	710	1,039	1,228	900	876	637	437	432	564
+Circumvention export	0	130	175	461	439	475	517	645	666	854
South Korea	2,054	896	1,403	1,940	1,668	2,147	1,155	1,196	1,472	998
+Circumvention export	0	23	109	212	337	454	414	376	535	724
Taiwan	288	125	197	256	176	198	201	218	171	139
+Circumvention export	0	9	13	23	21	29	37	15	20	7
EU-27	**24,521**	**12,108**	**12,361**	**13,517**	**12,348**	**9,884**	**9,622**	**9,668**	**8,858**	**8,396**
EU-19	**22,903**	**11,144**	**11,282**	**12,309**	**11,064**	**8,730**	**8,687**	**8,739**	**8,087**	**7,443**
+Circumvention export	**0**	**815**	**3,075**	**5,215**	**4,551**	**4,674**	**3,652**	**4,455**	**4,075**	**4,600**
Germany	7,695	3,324	3,300	3,116	2,990	2,366	2,233	2,045	2,032	1,959
+Circumvention export	0	176	839	1,289	1,288	1,119	896	1,048	1,047	778
France	1,746	591	566	701	646	513	480	571	567	496
+Circumvention export	0	30	318	425	398	393	578	840	562	887
Italy	2,627	1,596	1,694	1,748	1,645	1,258	1,370	1,368	1,283	1,088
+Circumvention export	0	189	131	480	212	356	183	447	531	756
Poland	2,280	938	1,081	1,363	1,095	975	999	887	789	740
+Circumvention export	0	101	310	490	464	610	433	423	455	372
Lithuania	1,180	552	678	808	664	616	533	511	393	290
+Circumvention export	0	105	635	955	726	593	294	192	161	183
Ex-Soviet	**7,506**	**9,223**	**12,460**	**14,281**	**12,079**	**12,996**	**11,769**	**12,755**	**11,488**	**12,863**
of which circumvented	**0**	**860**	**3,193**	**5,454**	**4,522**	**4,605**	**3,941**	**4,250**	**3,375**	**3,834**
Belarus	3,974	5,436	6,751	7,914	6,920	7,094	6,399	6,907	6,860	7,283
of which circumvented	0	3	478	931	687	596	576	923	647	483
Armenia	189	364	876	1,033	798	901	892	827	743	665
of which circumvented	0	168	446	570	416	406	303	300	215	265
Georgia	129	147	207	178	177	167	168	145	161	179
of which circumvented	0	137	377	752	631	652	524	558	549	638
Kazakhstan	1,469	1,849	2,590	2,653	2,467	2,763	2,144	2,415	1,843	2,430
of which circumvented	0	378	1,342	2,175	1,769	1,540	1,263	1,176	1,024	1,218
Kyrgyzstan	92	249	518	822	706	845	900	950	820	960
of which circumvented	0	57	357	659	734	983	829	864	731	830
Uzbekistan	456	727	1,003	935	552	660	824	831	685	909
of which circumvented	0	15	163	288	227	421	403	369	151	158
BRICS-8	**17,356**	**16,063**	**27,179**	**29,727**	**29,346**	**33,200**	**33,811**	**34,221**	**28,416**	**31,667**
China + HK + Macao	15,257	14,041	24,318	26,196	25,691	29,671	30,148	30,934	24,928	27,707
India	881	655	1,007	1,010	1,213	1,104	1,184	1,326	1,350	1,403
Brazil	473	423	488	680	502	439	380	291	202	510
UAE	246	287	733	1,222	1,252	1,118	1,425	963	1,220	1,181
of which circumvented	0	98	163	486	498	298	288	815	691	563
Iran *(uncertain data)*	209	*240*	*240*	*280*	*360*	*360*	*360*	*360*	*360*	*360*
Egypt	114	295	117	167	231	264	82	163	201	210
South Africa	185	120	272	168	91	241	230	181	150	280
All Other	**5,829**	**5,412**	**7,823**	**10,477**	**9,276**	**9,740**	**7,792**	**9,014**	**7,980**	**8,254**
Turkey	1,290	2,140	2,568	5,418	4,760	4,612	3,712	4,144	4,125	4,175
of which circumvented	0	276	444	1,333	1,418	1,574	1,039	1,321	1,845	1,950
Vietnam	754	576	803	1,019	829	910	646	908	570	655
Thailand	385	351	401	493	641	900	508	791	356	252
Malaysia	209	96	155	129	162	143	147	176	159	346
Indonesia	333	381	392	411	311	230	247	308	268	345
Singapore	251	21	43	37	48	55	35	32	24	29
Tunisia	68	210	317	238	345	593	685	575	488	531
Argentina	232	135	276	182	133	125	95	78	121	163
Ecuador	268	173	234	275	260	239	198	251	255	242

In the following table, we present the monthly USD/EUR currency rates applied, from the source xe.com. We have applied the method “average over the month” rather than end-of-month rates.

Table 4. Monthly conversion rates of most important currencies applied

USD/EUR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	0,875	0,882	0,885	0,886	0,8925	0,885	0,890	0,895	0,900	0,900	0,904	0,899
2020	0,900	0,915	0,900	0,920	0,915	0,890	0,875	0,845	0,845	0,850	0,845	0,820
2021	0,820	0,825	0,840	0,835	0,825	0,830	0,840	0,850	0,850	0,862	0,875	0,885
2022	0,880	0,880	0,915	0,920	0,940	0,950	0,980	0,985	0,995	1,015	0,970	0,940
2023	0,925	0,935	0,930	0,910	0,920	0,920	0,900	0,915	0,935	0,945	0,925	0,915
2024	0,918	0,925	0,918	0,937	0,925	0,929						

GBP/EUR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	1,130	1,165	1,165	1,155	1,155	1,150	1,115	1,090	1,120	1,135	1,160	1,175
2020	1,175	1,190	1,120	1,140	1,120	1,110	1,105	1,110	1,105	1,105	1,115	1,105
2021	1,116	1,150	1,165	1,160	1,150	1,165	1,170	1,170	1,165	1,175	1,180	1,175
2022	1,195	1,190	1,195	1,195	1,175	1,165	1,180	1,185	1,140	1,150	1,150	1,150
2023	1,140	1,130	1,130	1,130	1,150	1,165	1,160	1,165	1,160	1,150	1,145	1,164
2024	1,164	1,170	1,1675	1,166	1,168	1,180						

JPY/EUR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	0,0080	0,0080	0,0080	0,0080	0,00825	0,00825	0,0085	0,0085	0,0083	0,0083	0,0083	0,0083
2020	0,0083	0,0085	0,0085	0,0085	0,0085	0,00825	0,00825	0,0080	0,0080	0,0080	0,0080	0,0080
2021	0,0080	0,0078	0,0078	0,0077	0,0076	0,0075	0,0076	0,0076	0,0077	0,0077	0,0077	0,0077
2022	0,0076	0,0077	0,0075	0,0075	0,0075	0,0073	0,0073	0,0073	0,0070	0,0068	0,0069	0,0070
2023	0,0072	0,0070	0,00695	0,0068	0,0067	0,0065	0,0064	0,00631	0,00633	0,00632	0,00615	0,00635
2024	0,00625	0,00618	0,0062	0,0061	0,00595	0,00585						

CHF/EUR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	0,880	0,880	0,880	0,890	0,880	0,890	0,905	0,920	0,920	0,910	0,910	0,915
2020	0,920	0,93	0,94	0,945	0,940	0,930	0,9925	0,925	0,925	0,930	0,9275	0,925
2021	0,925	0,920	0,900	0,905	0,910	0,915	0,920	0,930	0,920	0,93	0,950	0,960
2022	0,9625	0,950	0,975	0,980	0,965	0,970	1,000	1,025	1,030	1,020	1,015	1,015
2023	1,000	1,000	1,005	1,010	1,020	1,025	1,035	1,042	1,040	1,048	1,035	1,058
2024	1,068	1,055	1,035	1,025	1,018	1,040						

CAD/EUR	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
2019	0,660	0,667	0,663	0,664	0,664	0,666	0,675	0,675	0,685	0,685	0,685	0,685
2020	0,687	0,690	0,645	0,650	0,653	0,655	0,650	0,640	0,641	0,643	0,645	0,640
2021	0,645	0,650	0,665	0,665	0,672	0,680	0,675	0,676	0,668	0,69	0,695	0,691
2022	0,698	0,692	0,715	0,733	0,735	0,737	0,760	0,765	0,758	0,750	0,730	0,695
2023	0,690	0,695	0,680	0,670	0,680	0,690	0,685	0,680	0,693	0,691	0,675	0,682
2024	0,681	0,687	0,6785	0,681	0,6765	0,679						

7. Endnotes

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[3] Andres Fiallos, Antonella Liberatore, Steven Cassimon (2024): CIF/FOB margins: Insights on global transport and insurance costs of merchandise trade, SDD Working paper No 124, *OECD Statistics Working Papers* 2024/05, 24 June 2024. In line with the OECD ITIS framework. Estimates of historic trade costs are usually based on gaps between selected export prices and import prices on the same commodities, see for example: David Chilosi and Giovanni Federico (2015): Early globalizations: The integration of Asia in the world economy, 1800-1938, *Explorations in Economic History*, Volume 57, July 2015, pp 1-18. Federico Tadei, Nektarios Aslanidis and Oscar Martinez (2024): Trade costs and the integration of British West Africa in the global economy, c 1840-1940, *The Economic History Review*, 2 May 2024. However, since there is no access to granular Russian trade data, micro-level analysis is currently impossible and leaves us with the option of a more granular and cruder basis for estimation.
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[36] Trade in fish and crude oil are especially hard to control, with much illegal and unrecorded trade.
[37] This baseline period for Belarus is chosen to take account of the considerable fallout of trade from early 2022. In the months before and during Russia's full-scale attack on Ukraine in February 2022, Belarus' imports declined considerably. This was presumably due to three factors – disturbances to regional logistics chains, a general and lasting depression where Belarus experienced negative economic growth in 2022, and new sanctions being introduced on Belarus. These events established a much lower 'normality' for trade in early 2022, against which later trade developments must be compared.
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