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# Implications of the Russian Invasion of Ukraine for the European Economy

**SINGLE MARKET  
ECONOMICS BRIEFS**

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ROMÁN ARJONA  
FRANCESCO DI COMITE  
PAOLO PASIMENI

## **EUROPEAN COMMISSION**

Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs  
Directorate A – Strategy & Economic Analysis  
Unit A1 – Chief Economist Unit

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Contact: Roman Arjona, Francesco Di Comite and Paolo Pasimeni

E-mail: [Roman.ARJONA-GRACIA@ec.europa.eu](mailto:Roman.ARJONA-GRACIA@ec.europa.eu); [Francesco.DI-COMITE@ec.europa.eu](mailto:Francesco.DI-COMITE@ec.europa.eu); [Paolo.Pasimeni@ec.europa.eu](mailto:Paolo.Pasimeni@ec.europa.eu)

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# **Implications of the Russian Invasion of Ukraine for the European Economy**

Single Market Economics Briefs

*Roman Arjona*

*Francesco Di Comite*

*Paolo Pasimeni*

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## Implications of the Russian Invasion of Ukraine for the European Economy<sup>1</sup>

The European Council conclusions of 24 February 2022 condemned Russia's war of aggression against Ukraine<sup>2</sup> and called for the urgent preparation and adoption of a sanctions package.<sup>3</sup> By June 2022, six main packages of EU sanctions and various ancillary measures have been adopted against businesses and individuals in Russia and Belarus<sup>4</sup>.

This shock has come at a time in which the European economy was still recovering from the impact of the Covid-19 pandemic and it is leading to a worsening economic outlook. The revisions of major official forecasts for this year, all point to the same direction: accelerating inflation and decelerating growth. The cost of the war, so far, can be estimated at around one-and-a-half point of lower real growth and about three additional points of headline inflation<sup>5</sup>.

This note provides an overview of economic and trade exposures of the EU economy to Russia, including on strategic dependencies at the product level and a novel monitoring approach to detect supply chain distress<sup>6</sup>. It also covers recent trends in energy prices.

### 1. Economic and trade exposure of the EU to Russia

#### *a. Value chain integration*

Russia accounts for 3% of total EU imports and 1.7% of total exports. However, looking at trade in value added the EU is exposed to Russian direct inputs for 1.0% of the total value added it produces, and Russian final demand accounts for 0.7% of total EU production. Yet Russia is more exposed to the EU: 7.4% of total Russian value added is due to direct inputs originating from the EU, and the EU final demand absorbs 9.4% of the total Russian production. No other region is as important for Russia as the EU; China comes second.

There are large differences among EU Member States in their bilateral exposure to Russia. The contribution of Russian demand is the highest for Cyprus, Lithuania, Latvia, Estonia and Bulgaria, at 2% or more of their GDP; it is also non-negligible for Germany, at 0.7% of GDP.

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<sup>1</sup> Note prepared by the Chief Economist Team - European Commission - Directorate General for Internal Market, Industry, Entrepreneurship and SMEs (GROW.A1), on 11 July 2022.

<sup>2</sup> European Council conclusions, 24 February 2022, <https://www.consilium.europa.eu/en/press/press-releases/2022/02/24/european-council-conclusions-24-february-2022/>

<sup>3</sup> The sanctions built upon the regime in place since 2014: Council Decision (CFSP) 2022/337 of 28 February 2022 amending Decision 2014/145/CFSP on restrictive measures in respect of actions undermining or threatening the territorial integrity, sovereignty and independence of Ukraine, <http://data.europa.eu/eli/dec/2022/337/oj>, and Council Decisions (CFSP) 2014/145 and 2014/386.

<sup>4</sup> Official Journal of the EU, [L 042I](#), 23/02/2022; OJEU, [L050](#), [L051](#), [L052](#), [L053](#), [L054](#), 25/02/2022; OJEU, [L057](#), [L058](#), [L059](#), [L060](#), [L061](#), 28/02/2022, [L062](#), [L063](#), [L065](#), [L066](#), [L067](#) and 3/03/2022 and OJEU, [L081](#), [L082](#), 9/03/2022; OJEU, [L087I](#), 15/03/2022; OJEU, [L110](#), [L111](#), 8 April 2022; OJEU, [L153](#), 3 June 2022.

<sup>5</sup> This is estimated by averaging the revisions in the main official forecasts: the European Commission's Spring Forecasts with respect to the Winter Forecasts. The IMF World Economic Outlook published in April 2022 compared with to the October 2021 WEO. The OECD Economic Outlook published in June 2022, with respect to the December 2021 Economic Outlook.

<sup>6</sup> See forthcoming papers "*The Economic Implications of the Russian invasion of Ukraine: Monitoring Structural Exposures of the European Economy*" and "*Supply chain alert notification monitoring system*" in DG GROW's [Single Market Economic Paper series](#).

On the supply side, Lithuania, Bulgaria, Cyprus and Latvia are the most exposed to Russian intermediate products, which contribute to more than 4% of the total value of their production. Among the largest economies, Germany is the most exposed to Russian inputs (1% of its total value added), followed by Italy (0.9%), France (0.6%) and Spain (0.5%).

The sectoral detail (Table A1) shows that the EU industry is exposed to Russian inputs for 3% of total value added produced, considerably more than other major partners, while Russian industry is exposed to EU's inputs for almost 11% of the total value added produced, more than to any other country. Russian industry is also highly exposed to Chinese inputs.

The exposures of the EU industry concentrate in the energy intensive sectors, while Russian exposures concentrate in machinery, motor vehicles, equipment, and pharmaceuticals; sanctions hit Russia most in these sectors (Table A1). The country detail shows that the key Russian exposure in these sectors mainly originates from Germany. In the case of services, then, the exposures of the EU is very limited, while Russia is highly exposed to EU inputs in some services sectors, mainly transport, publishing and audio-visual. The country detail shows that the key Russian exposures in transport originate from Germany and in publishing and audio-visual from Ireland.

As Table A1 shows, China and the EU have a very similar exposure to Russian inputs, and also Russia and the EU a very similar exposure to China. This points to a high degree of substitutability between the EU and China as key trading partner for Russia, something that may already be happening.

#### ***b. Foreign Direct Investment (FDI)***

In terms of financial exposure, EU total cross border-asset holdings in Russia amount to €307.5bn, which is roughly 30% of Russian GDP and slightly less than 2% of Russian total capital stock.<sup>7</sup> In terms of recorded foreign assets in Russia, EU residents account for 72% of the entire stock. In terms of share of EU GDP, that amounts to 2.3%.

Some Member States are significantly more exposed than the average: Cyprus' assets exposure is more than 5 times its GDP; Luxembourg's one is 123% of the country's GDP. In terms of composition, slightly more than half of these EU assets (€166.4bn) are FDIs (e.g., equity capital); €4.7bn are invested in listed stocks (e.g., shares of public companies); €41.8bn are debt instruments (e.g., bonds); €94.7bn are other forms of investments (including deposits in banks).

On the other side, Russian residents hold assets for €460.6bn in the EU, equal to roughly 3.4% of EU's GDP (or 0.46% of EU's capital stock). This is partly driven by the treasury management of large conglomerates and high-wealth Russian individuals, with residence in the EU.

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<sup>7</sup> Information on Russian capital stock retrieved from University of Groningen and University of California, Davis, and from from FRED, Federal Reserve Bank of St. Louis; June 24, 2022.

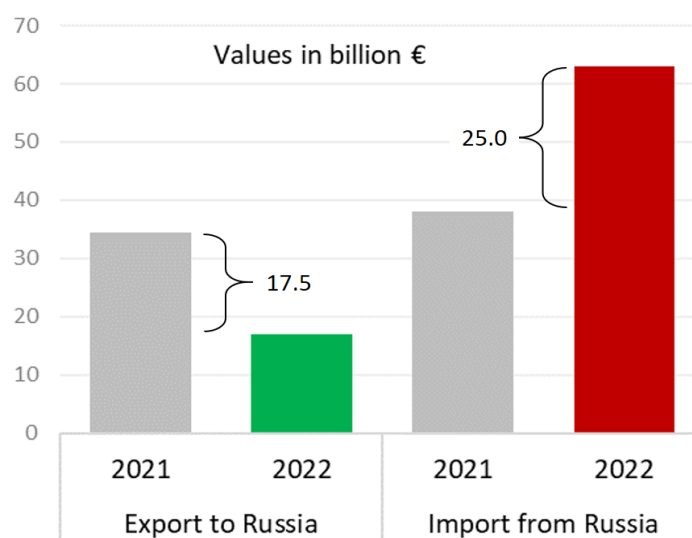
### c. Recent trade trends using real-time customs data

Volumes of most of the main imported goods from Russia to the EU, including notably oils and natural gas, have declined since the invasion of Ukraine. Prices have increased considerably for most of these imported goods, and mainly for energy commodities<sup>8</sup>.

The total value of EU exports to Russia has so far decreased by roughly €17.5bn as compared to the same period in 2021 (end-February to mid-June). On the other side, the total value of the EU imports from Russia has increased by almost €25bn since the beginning of the invasion. These aggregate import figures are largely dominated by energy imports. The aggregate value of energy imports reflects a combination of declining volumes and increasing prices. In particular for oil and coal, imports are now significantly below the levels of the same period last year

The combination of the decrease in the total value of EU exports and the increase in the total value of EU imports adds up to a total increase in the bilateral trade surplus of Russia vis-à-vis the EU of roughly €42.5bn since the beginning of the invasion, which represents 2.7% of Russia's annual GDP (Chart 1). This is likely to be a driving factor behind the strengthening of the Ruble.

**Chart 1: Total trade flows between the EU and Russia in the period since the Russian invasion.**



Source: GROW.A1 elaborations on TAXUD customs data. *Data cut-off date: 19 June.* Note the data show the value of bilateral trade flows during the weeks between the invasion (24 February) and the last observation (19 June), in both years.

After a sudden decrease of export to Russia, with the introduction of the sanctions, export to Russia stabilized at 50% of the pre-invasion level, of beginning 2022. The EU imports from Russia have been gradually decreasing since February 2022, notwithstanding higher import prices and the high volatility. This increased volatility is due to the fact that fossil fuel imports account for more than 80% of imports from Russia.

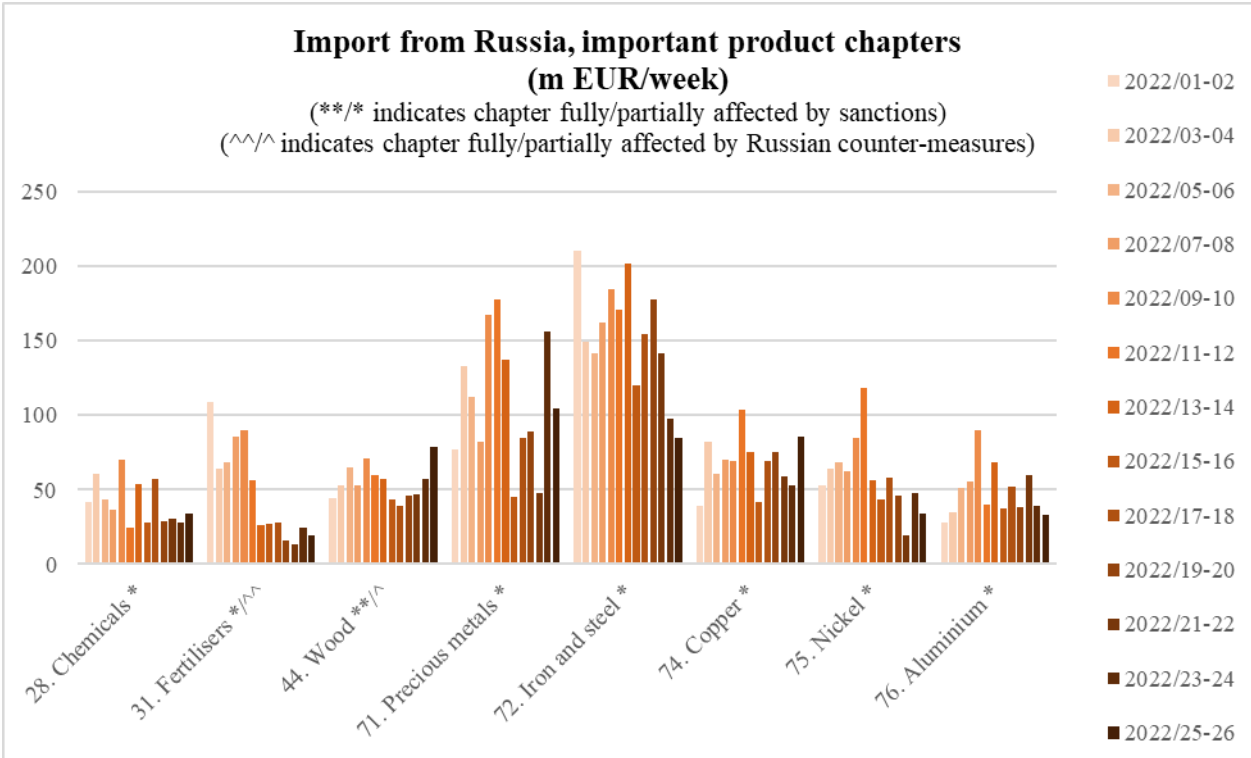
<sup>8</sup> European Commission, DG TAXUD customs data. Data cut-off date: 19 June.

The value of fossil fuels import has decreased since the beginning of the year (from four billion euros to one and a half billion euros), but not so much in comparison to last year. The reason is that, despite a considerable reduction in the volumes of fossil fuel imports, the price of such fuels has increased so much to compensate for that reduction in volumes and to keep the overall value rather stable. In terms of volumes, oil, gas and coal imports were consistently above 2021 levels until week 10, but have been gradually decreasing since. Gas import quantities in week 24 were at roughly 1/3 of 2021 levels; oil imports halved; coal imports are 2/3 of 2021 levels (Chart 2).

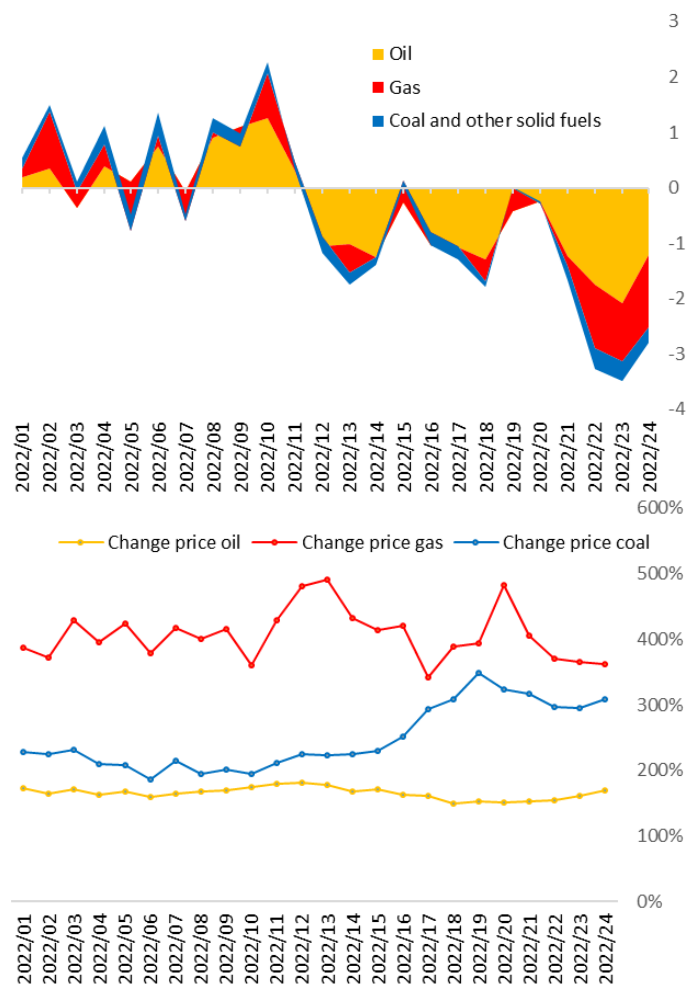
Imports of non-energy goods from Russia were 26% lower over weeks 25 and 26 (€0.66bn/week) compared to the beginning of the year (€0.89bn/week), following a marked hike at the onset of the invasion. The decline is most visible for imports of fertilisers, affected by Russian counter-measures, and more recently for iron and steel, covered by sanctions since 17 June.

Overall, and since the beginning of the invasion, the value of EU imports of goods under sanctions has been 16% above the comparable period last year. For non-sanctioned goods, the value of imports has been 18% higher than in the same period in 2021. Energy imports have been 261% above the same period last year.

**Chart 2: Change in volumes and price of weekly import of fossil fuels from Russia in comparison with last year.**







Source: GROW.A1 elaboration of TAXUD customs data. *Data cut-off date: 19 June (week 24).*

At product level, EU exports to Russia are mainly chemical/pharmaceutical products and investment goods. On the other side, EU imports from Russia are very much concentrated in energy commodities. Five out of the top six imported products are fossil fuels (oils, natural gas, coal), the sixth one is copper. Russia is the most important provider of selected raw materials for the EU, in particular copper, nickel, palladium, phosphate rock, selenium, neon, krypton, xenon, potash, and rhodium (Table A2).

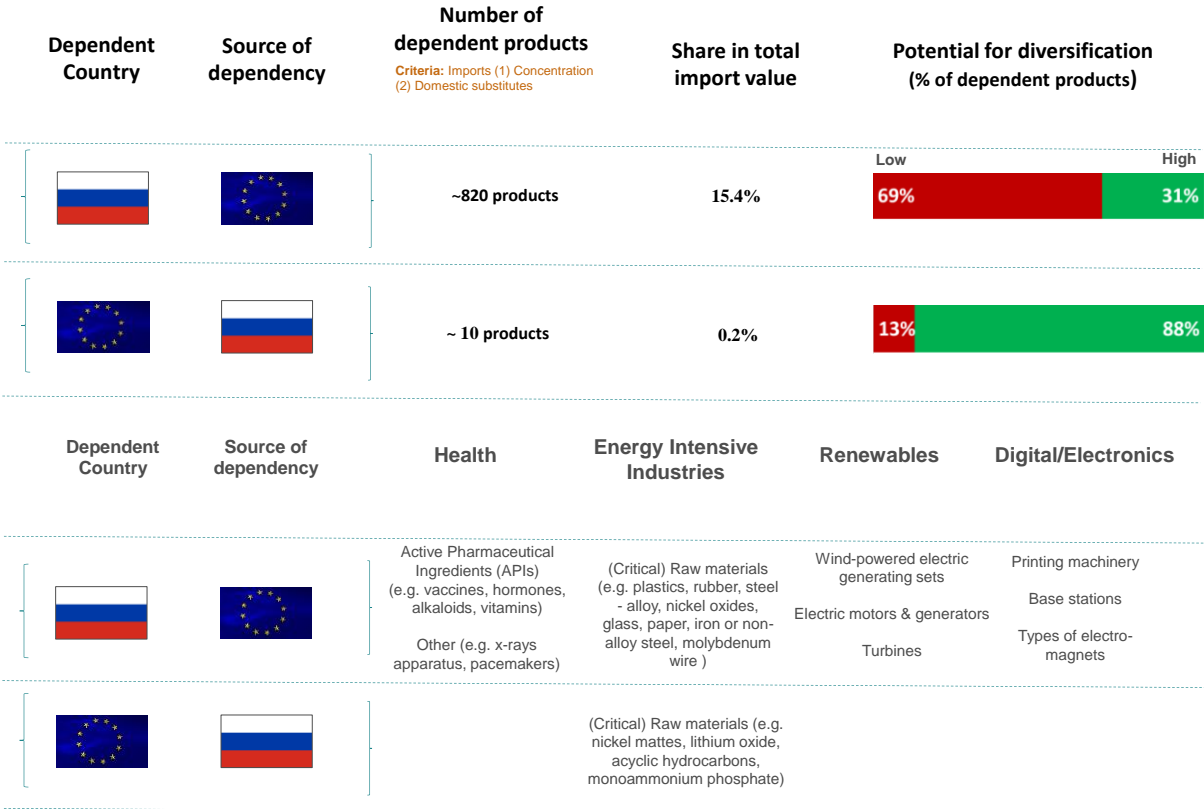
#### ***d. Strategic dependencies at product level***

The 2021 Updated Industrial Strategy was accompanied by a report analysing Europe's strategic dependencies. This report included an analysis of over 5,000 products, where 137 products in sensitive ecosystems were found to be highly dependent on foreign suppliers. In addition, the report presented a first stage of in-depth reviews for six strategic areas where the EU faces dependencies, namely raw materials, batteries, active pharmaceutical ingredients, clean hydrogen, semiconductors as well as cloud and edge technologies.

Following the methodology of this analysis, and focussing on the concentration of imports and the possible substitutability of those products with domestic production, it is also possible to analyse the dependencies of non-EU countries and to uncover the main source of

dependency. Chart 3 below presents the 820 products for which Russia faces dependencies on the EU. These represent more than 15% of Russia’s total imports. About 70% of those products have a low potential for diversification when examining current international trade networks. On the other hand, the EU is experiencing dependencies on Russia in about 10 products that represent 0.2% of the EU total imports and for which less than 15% have a low potential for diversification.

**Chart 3: Overview and examples of EU & Russia strategic dependencies in sensitive ecosystems**



Source: GROW A1 calculations based on the BACI database

According to this analysis, Russia faces product dependencies on the EU mostly in goods which hold a downstream position in the production chain, such as Active Pharmaceutical Ingredients (APIs), wind-powered generators or electric motors, while the EU imports from Russia concentrate on goods that fall within the energy intensive industries and renewables ecosystems.

In addition, Russia appears as one of Ukraine’s main trading partners (the most important after China), with a particular weight in relation to Ukrainian imports of intermediate goods for industrial production, where Russia accounts for 12.11% of the imports.

In relation to Ukrainian exports, agricultural products account for almost 47% of all exports, followed by metals and minerals. Despite the ongoing sustained integration pace of the EU and Ukrainian economies, swifter integration will require progress for example in the recognition of local phytosanitary controls for agricultural products and closer integration of significant production of industrial intermediate goods, such as metals (iron and steel) and minerals (ores, slag, and ash particularly).

Real-time customs data show that EU exports to Ukraine took a hit in the first weeks of the invasion, falling from a weekly value of around €600M to less than €200M. However, it rebounded thereafter. In the last available observation (week 24, ending on 19 June), for example, EU exports to Ukraine amounted to €660M, which is higher than the values of exports in the first weeks of 2022. It is also higher than the value of exports in the same week of 2021 (roughly €570M).<sup>9</sup>

## 2. Supply chain distress in raw materials

Using a novel indicator-driven approach to monitor supply chain distress<sup>10</sup>, Table 1 below presents those raw materials most affected by the Russian invasion of Ukraine<sup>11</sup>. It includes indicators about the importance of Russia in the EU imports of those raw materials in columns 2 and 3. Columns 4 and 5 display the changes in import prices and quantities for those commodities. The subsequent four columns present a set of foreign dependency structural indicators that aim at proxying the underlying level of risk of supply chain disruption.

**Table 1: Illustration of supply chain distress at product level: the case of raw materials**

			Block 1: As-real-time-as-possible indicators		Block 2: Structural Indicators				Problematic?
	RU share of EU imports	RU rank as source of import	Change in Traded price	Change in quantity	Concentration of extra-EU imports	Share 1st source in extra-EU imports	Ratio of extra-EU imports and total EU exports	Exposure index (without Exports)	
aluminium and bauxite	7.10%	3	131%	-21%	0.1	27.10%	1	47%	
cadmium	13.80%	2	20%	-22%	0.7	83.90%	1	0%	cadmium
coking coal	11.60%	3	209%	3%	0.3	41.90%	1.2		
copper	36.60%	1	49%	-3%	0.2	36.60%	0.6	32%	
germanium	0.20%	9	12%	-10%	0.3	50.60%	1.6	54%	
helium	1.00%	6	31%	-32%	0.3	41.70%	0.6	63%	
iridium, osmium, ruthenium	8.60%	4	19%	-49%	0.3	46.90%	0.3	43%	
iron	12.70%	5	30%	-18%	0.2	23.80%	2.1	80%	
magnesium	1.10%	4	200%	2%	0.8	91.30%	1.3	83%	magnesium
manganese	1.20%	8	69%	24%	0.3	41.10%	1.4	67%	
molybdenum	1.90%	8	86%	-30%	0.2	22.20%	1	74%	
natural graphite	1.40%	11	-1%	4%	0.2	25.20%	1.7	4%	
neon, krypton, xenon	20.20%	3	-22%	-50%	0.2	33.60%	0.3	36%	
nickel	54.30%	1	130%	-35%	0.3	54.30%	1.2	74%	
palladium	37.40%	1	66%	-34%	0.3	37.40%	0.8	84%	
phosphate rock	40.70%	1	127%	-42%	0.3	40.70%	11.3	96%	
platinum	10.50%	4	32%	-12%	0.3	46.30%	0.6	64%	
potash	23.30%	3	174%	-66%	0.2	31.80%	2.7	32%	
rare earth elements	0.90%	8	114%	-24%	0.2	34.70%	0.9	21%	
rhodium	15.30%	3	47%	-50%	0.3	49.30%	0.5	77%	
selenium	31.00%	1	31%	-18%	0.2	31.00%	0.4	54%	
silicon metal	1.00%	11	82%	-20%	0.3	50.00%	1	45%	
steel	44.80%	1	84%	-13%	0.3	44.80%	1.2	4%	
tellurium	1.40%	5	137%	334%	0.4	62.30%	3.1	66%	tellurium
tungsten	6.60%	6	55%	-42%	0.2	23.70%	0.4	14%	

<sup>9</sup> A significant part of this rebound is linked to the exports of military equipment linked to the military effort.

<sup>10</sup> See forthcoming paper “Supply chain alert notification monitoring system” in DG GROW’s [Single Market Economic Paper series](#).

<sup>11</sup> The European Commission’s Summer Economic Forecast underlines that logistic and supply chain disruptions hamper global activity, despite signs of easing and that “persistent lockdowns in some of the key manufacturing and transport hubs in China led to congestion in Chinese ports, adding stress on global value chains.”

([https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/summer-2022-economic-forecast-russias-war-worsens-outlook\\_en](https://economy-finance.ec.europa.eu/economic-forecast-and-surveys/economic-forecasts/summer-2022-economic-forecast-russias-war-worsens-outlook_en))

Source: GROW A1 calculations based on the European Commission customs database, COMEXT and PRODCOM.

Note: Block 1 relies on high-frequency customs data and compares the average for March/April/May 2022 with that of the same period of 2021, 2020 and 2019. Block 2 uses the most up-to-date trade information (COMEXT 2021), except for the fourth indicator, where it uses trade (COMEXT) and production (PRODCOM) for 2019.

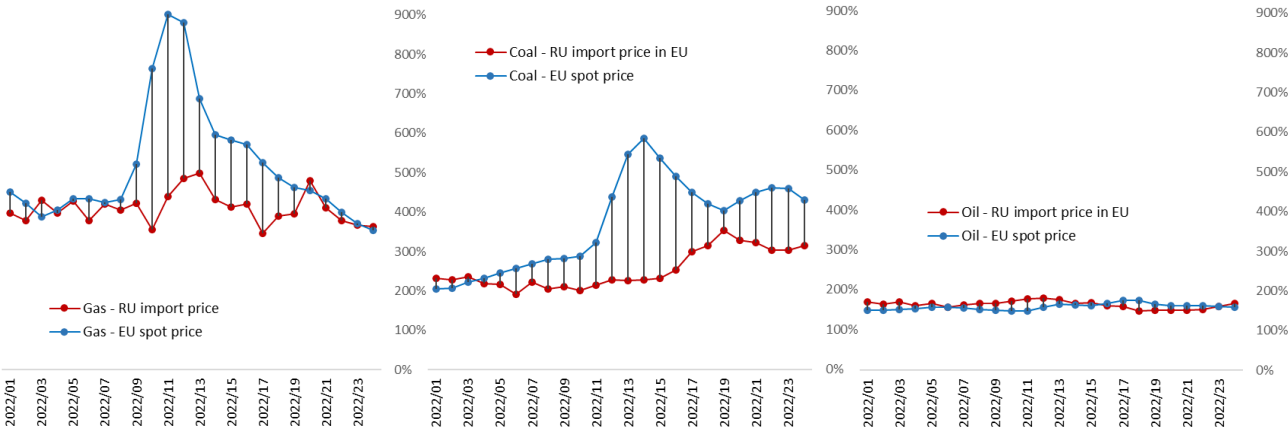
With a few exceptions (e.g. neon, natural graphite and tellurium), most raw materials have experienced an increase in import prices combined with a decrease in imported quantities. Products with an important ex-ante underlying risk in all four structural indicators, such as magnesium and tellurium, are highlighted in red. Those with an important ex-ante underlying risk in at least two complementary indicators are in orange, as is the case of cadmium.

### 3. Higher and more volatile energy prices

The impact of the war on energy prices is certainly a risk factor for the EU economy. High-energy prices are feeding inflation, hurting Europe’s economy, and slowing down its recovery from the COVID-19 crisis.<sup>12</sup> However, the analysis and comparison of the most recent data suggest that such impact varies over time and across fuels. In the case of natural gas and of oil prices, for the moment, it does not seem to have dramatically modified the pre-invasion trend, when prices were nevertheless already higher than last year. The impact is more visible in the case of coal.

The prices of imported Russian oil and gas has been remarkably stable, with respect to pre-invasion levels. Only a small part of the price spot price increases have been reflected in actual costs of gas imports from Russia. The EU spot price for gas is today 3.5 times higher than last year, but that was already the case in January and February, before the invasion of Ukraine. This spot price has increased up to nine times the value of last year in the few weeks after the invasion, but has returned to previous values in May and June. Interestingly, the price at which the EU imports gas from Russia has remained stable throughout this year, though on a level much higher than last year (Chart 4).

**Chart 4: European spot price and Russian import price with respect to 2021 – Gas, Coal, and Oil.**



<sup>12</sup> See Communication from the Commission of 23 March 2022 [COM\(2022\) 138 final](#) “Security of supply and affordable energy prices.”

Source: GROW.A1 elaboration based on TAXUD customs data and Bloomberg spot price data. Note: the data points show 3-week moving averages of prices normalised with respect to the values of the same week in 2021.

The shock is more visible in the case of coal prices. After the invasion, the spot price has increased dramatically, to then decrease only partially, and today is more than four times the value of last year, i.e. an increase of more than 300%. The import price, instead, has increased at a slower pace since the invasion and is today three times the value of last year. Finally, oil prices are much more stable: they oscillate around the same price as last year, with a recent increase of 70% for the import price from Russia and 60% for the spot price.

#### **4. Conclusions**

The analysis of structural exposures shows that, while Russia is not one of the main trading partners for the EU, these exposures consist mainly of energy commodities and raw materials. At the same time, there are significant differences in the specific bilateral exposures among the Member States of the EU. The EU and China represent possible substitutes for Russia as main trade partners.

The volume of EU trade with Russia is decreasing in most categories of goods. Nevertheless, since imports of energy fossil fuels are less elastic to prices, and prices for these goods have increased, the value of EU imports has also increased since the invasion of Ukraine. This has led to an overall increase in the bilateral trade surplus of Russia vis-à-vis the EU of roughly €42.5bn in the past four months.

Russia faces strategic dependencies on the EU on 820 products which represent more than 15% of Russia's total imports, and about 70% of those products have a low potential for diversification. On the other hand, the EU experiences strategic dependencies on Russia in about 10 products that represent 0.2% of the EU total imports and for which less than 15% have a low potential for diversification.

Using a novel indicator-driven approach to monitor supply chain distress and focusing on those raw materials most affected by the Russian invasion of Ukraine, distress is particularly detected for magnesium and tellurium, with values above indicated thresholds in all structural indicators used for the monitoring, and to a lesser extent for cadmium, with values above thresholds in half of the indicators of supply chain distress.

Energy prices have increased with respect to last year, very significantly in the case of gas and coal, and have experienced high volatility over the course of 2022. The comparison of actual import prices from Russia with respect to last year, however, shows that in the case of gas and oil the increase at the end of June is at the same level as it was at the beginning of the year, before the invasion; in the case of coal, it is now slightly higher.

While the short-term economic impacts on the European economy seem of a smaller order of magnitude compared with the previous pandemic shock, the longer-term consequences may be extremely relevant. They will probably require a deep structural adjustment. The energy shock is set to be a structural one and some financial and trade flows will need to adjust too. This transition will have to take place at the same time as the green and digital ones.

## ANNEX

**Table A1: Cross bilateral exposures in integrated value chains**

	USA from CHN	USA from RUS	USA from EU27	CHN from USA	CHN from RUS	CHN from EU27	RUS from USA	RUS from CHN	RUS from EU27	EU27 from USA	EU27 from CHN	EU27 from RUS
TOTAL ECONOMY	2.2	0.2	2.5	1.7	0.5	2.2	1.7	3.3	7.4	2.5	2.0	1.0
Agriculture, hunting, forestry	9.5	0.2	2.5	0.7	0.2	0.5	0.3	4.5	2.7	1.1	5.0	0.4
Fishing and aquaculture	11.1	1.1	3.5	0.9	0.4	0.1	0.2	4.5	0.8	4.8	6.5	0.8
Mining and quarrying, energy producing products	2.6	2.5	0.3	2.0	6.0	0.1	0.9	2.4	0.6	3.4	3.0	18.5
Mining and quarrying, non-energy producing products	6.3	1.6	1.8	1.0	1.1	0.9	0.8	4.2	2.1	2.6	6.0	5.6
Mining support service activities	0.5	0.7	0.4	1.6	3.7	0.9	1.0	0.6	2.3	4.3	2.1	12.5
Food products, beverages and tobacco	3.0	0.1	3.1	0.6	0.2	1.4	0.3	2.7	5.3	0.7	2.0	0.2
Textiles, wearing apparel, leather and related products	29.9	0.1	5.0	0.4	0.0	2.5	0.5	24.6	11.3	0.6	15.3	0.2
Wood and products of wood and cork	8.0	0.3	3.9	1.7	1.7	2.3	1.2	7.5	12.9	1.5	4.6	1.1
Paper products and printing	5.1	0.1	4.4	1.8	0.5	2.5	2.1	6.2	15.4	3.0	3.9	0.6
Coke and refined petroleum products	3.7	2.6	2.2	1.8	2.8	1.0	0.8	2.6	2.3	4.7	5.5	18.5
Chemical and chemical products	10.0	0.5	8.4	2.5	0.3	3.4	3.7	13.8	20.0	5.3	9.3	1.6
Pharmaceuticals, medicinal chemical and botanical products	1.7	0.0	18.0	2.6	0.0	6.1	5.8	2.9	29.5	10.3	2.0	0.1
Rubber and plastics products	9.1	0.1	6.4	1.5	0.1	4.2	2.1	11.1	23.7	2.0	5.5	0.3
Other non-metallic mineral products	11.0	0.1	4.6	0.3	0.0	0.6	0.6	9.3	8.4	1.4	6.4	0.5
Basic metals	17.4	2.4	6.6	1.0	0.6	1.3	1.3	10.2	5.9	4.0	14.1	5.0
Fabricated metal products	7.6	0.1	7.1	1.6	0.1	5.3	2.1	9.6	20.7	1.9	4.8	0.4
Computer, electronic and optical products	13.2	0.1	3.9	4.4	0.1	3.2	7.0	22.9	11.0	11.0	14.9	0.3
Electrical equipment	17.3	0.1	8.9	1.0	0.1	4.2	2.3	19.0	25.1	2.3	10.3	0.3
Machinery and equipment n.e.c	6.7	0.1	12.6	1.8	0.1	6.5	4.2	10.7	38.2	3.0	4.3	0.2
Motor vehicles, trailers and semi-trailers	3.2	0.0	9.9	0.9	0.0	4.9	2.1	4.9	24.5	1.2	1.6	0.1
Other transport equipment	1.2	0.3	5.0	17.1	0.5	9.5	14.3	2.2	10.6	21.0	3.0	1.5
Manufacturing nec; repair, installation of machinery & equipment	9.4	0.2	9.0	1.4	0.4	5.5	1.7	6.5	17.4	2.6	4.2	0.4
Electricity, gas, steam and air conditioning supply	3.5	0.3	2.3	0.7	0.5	1.4	0.4	2.5	3.5	1.0	2.5	1.2
Water supply; sewerage, waste mgmt, remediation activities	2.6	0.3	5.2	0.5	0.3	3.4	0.5	2.9	11.3	0.4	1.0	0.4
Construction	0.0	0.0	0.7	0.1	0.1	0.4	0.1	0.0	1.6	0.2	0.0	0.2
Wholesale and retail trade; repair of motor vehicles	3.0	0.3	3.3	2.4	0.8	3.4	1.6	3.5	8.1	2.6	2.4	1.3
Land transport and transport via pipelines	5.5	0.6	4.7	1.9	1.0	3.4	1.1	4.2	8.4	2.5	3.9	2.5
Water transport	8.0	0.3	11.6	0.9	0.4	8.9	0.9	8.7	23.6	1.1	5.8	1.0
Air transport	2.0	0.2	3.9	8.7	0.7	5.2	9.8	4.3	18.4	13.4	3.7	2.2
Warehousing and support activities for transportation	2.4	0.6	7.8	3.4	1.8	10.3	1.4	1.9	12.8	2.1	1.2	2.0
Postal and courier activities	2.3	0.1	2.4	3.3	0.1	2.8	5.3	6.3	13.3	8.0	2.2	0.4
Accommodation and food service activities	0.8	0.0	2.2	2.8	0.1	2.0	2.5	2.9	19.0	1.5	0.8	0.1
Publishing, audiovisual and broadcasting activities	0.3	0.0	1.8	10.7	0.2	7.8	14.3	1.4	20.6	12.9	1.1	0.3
Telecommunications	0.5	0.0	1.2	1.8	0.1	1.7	1.5	1.1	6.2	3.1	0.8	0.4
Computer programming, consultancy, information services	1.3	0.1	2.4	2.5	0.1	4.0	4.8	3.7	19.3	4.3	2.4	0.5
Financial and insurance activities	1.7	0.1	1.6	1.5	0.1	1.0	2.9	4.1	5.9	5.7	2.5	0.5
Real estate activities	0.3	0.1	0.7	1.1	0.2	1.2	0.8	0.6	3.0	1.0	0.3	0.3
Professional, scientific and technical activities	0.7	0.1	3.3	6.7	0.4	6.7	4.5	1.4	11.7	5.6	0.8	0.5
Administrative and support services activities	1.7	0.1	3.4	2.5	0.3	4.3	4.1	3.9	17.0	4.1	1.5	0.5
Public administration and defence; compulsory social security	0.0	0.0	0.3	0.4	0.0	0.4	0.2	0.0	0.8	0.5	0.0	0.0
Education	0.0	0.0	0.4	2.5	0.0	0.5	0.6	0.1	1.8	0.7	0.0	0.0
Human health and social work activities	0.0	0.0	0.1	0.2	0.0	0.3	0.1	0.1	0.8	0.1	0.0	0.0
Arts, entertainment and recreation	0.2	0.0	1.2	1.4	0.1	2.2	0.9	0.7	5.2	1.1	0.3	0.1
Other service activities	0.6	0.0	0.9	0.3	0.0	0.6	0.6	1.9	6.2	0.4	0.5	0.0
Activities of households as employers	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total industry (mining, manufactures and utilities)	7.0	0.6	5.9	1.7	0.9	2.7	2.2	7.1	10.8	3.3	5.2	3.0
Total services (incl. construction)	1.0	0.1	1.7	1.8	0.3	2.1	1.6	1.8	6.3	2.4	1.1	0.5
Total services	1.1	0.1	1.8	2.1	0.3	2.4	1.8	2.0	6.8	2.5	1.1	0.5
Information, finance, real estate and other business services	0.9	0.1	1.9	2.4	0.2	2.5	2.8	2.0	8.1	3.9	1.2	0.4
Information industries	3.3	0.1	2.4	3.8	0.1	3.6	5.7	8.3	13.5	6.9	4.0	0.4

Source: GROW.A1 elaboration on the basis of OECD TiVA data. Note: the table shows the share of local value added due to foreign countries' final demand (including consumption and investments), for country pairs.

**Table A2: List of Selected raw materials<sup>13</sup>**

Selected raw materials	Russian import share (% , 2021)	RU ranking among countries of origin
aluminium and bauxite	7.1%	# 3
cadmium	13.8%	# 2
cobalt	0.1%	# 8
coking coal	11.6%	# 3
copper	36.6%	# 1
germanium	0.2%	# 9
helium	1.0%	# 6
iridium, osmium, ruthenium	8.6%	# 4
iron	12.7%	# 5
magnesium	1.1%	# 4
manganese	1.2%	# 8
molybdenum	1.9%	# 8
natural graphite	1.4%	# 11
neon, krypton, xenon	20.2%	# 3
nickel	54.3%	# 1
palladium	37.4%	# 1
phosphate rock	40.7%	# 1
platinum	10.5%	# 4
potash	23.3%	# 3
rare earth elements	0.9%	# 8
rhodium	15.3%	# 3
selenium	31.0%	# 1

Source: GROW.A1 elaborations on TAXUD customs data.

<sup>13</sup> Defined at the HS6, on which the EU has an exposure vis-à-vis Russia that deserves monitoring. Out of those selected raw materials, the following are considered critical raw materials in the Commission Communication “Critical Raw Materials Resilience: Charting a Path towards greater Security and Sustainability”, COM(2020) 474 final: bauxite, cobalt, coking coal, germanium, iridium, ruthenium, magnesium, natural graphite, phosphate rock, heavy and light rare earth elements.

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