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Research Report

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SAFE Policy Letter, No. 102

Provided in Cooperation with:

Leibniz Institute for Financial Research SAFE

Suggested Citation: Egorov, Konstantin (2023) : Why did Russian economy not collapse under sanctions: Pre-war evidence, SAFE Policy Letter, No. 102, Leibniz Institute for Financial Research SAFE, Frankfurt a. M.

This Version is available at:

<https://hdl.handle.net/10419/277739>

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Why Did Russian Economy not Collapse under Sanctions: Pre-War Evidence

SAFE Policy Letter No. 102 | September 2023

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Why Did Russian Economy not Collapse under Sanctions: Pre-War Evidence*

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September 2023

Abstract

This Policy Letter presents two event studies based on the pre-war data that foreshadows the remarkable way in which Russian economy was able to withstand the pressure from unprecedented package of international sanctions. First, it shows that a sudden stop of one of the two domestic producers of zinc in 2018 did not lead to a slowdown in the steel industry, which heavily relied on this input. Second, it demonstrates that a huge increase in cost of fuel called mazut in 2020 had virtually no impact on firms that used it, even in the regions where it was hard to substitute it for alternative fuels. This Policy Letter argues that such stability in production can be explained by the fact that Russian economy is heavily oriented toward commodities. It is much easier to replace a commodity supplier than a supplier of manufacturing goods, and many commodity producers operate at high profit margins that allow them to continue to operate even after big increases in their costs. Thus, sanctions had a much smaller impact on Russia than they would have on an economy with larger manufacturing sector, where inputs are less substitutable and profit margins are smaller.

I. Introduction

On February 24th of 2022 Russia has invaded Ukraine. This has led to an unprecedented level of international sanctions – an embargo on high-tech imports and equipment, targeted actions against prominent firms, an upcoming oil embargo, and exit of large multinational companies. All these actions were supposed to limit the government’s resources to continue the war. And yet Russia saw no major disruptions in its production or spikes in unemployment. Why did Russian economy not succumb to this extraordinary pressure?

At the start of the conflict the implemented sanctions were widely believed to make a huge impact on the Russian economy. This belief was in large part based on the vulnerability of modern economies to

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shortages of key intermediate inputs. This vulnerability was recently brought to everyone's attention during the Covid-19 pandemic, when the global supply chains for many final products broke down. This fact together with the high dependence of the Russian economy on the world markets led many experts to forecast a significant decline in production in Russia¹.

In this Policy Letter, I look at *two* of the main channels through which the imposed sanctions were supposed to make a devastating impact on the Russian economy, and, by using pre-war data, I show why these channels did not work as expected.

First, sanctions were supposed to restrict access of the Russian economy to many of its key inputs, mostly by drastically decreasing supplies from its main trading partner – European Union. Even though many of these inputs were expected to be sourced from other countries instead, not all of them were expected to be easily replaced. Right before the war the global economy suffered from the lack of many irreplaceable inputs. For example, the production of many electronic products was slowed down for years even after the worst part of the Covid recession because of the persistent lack of microchips. Similar slowdown was observed in other sectors as well, when some of the provinces in China were under quarantine measures and could not provide its inputs to the rest of the world. Thus, many experts anticipated that missing European inputs in Russia would be as irreplaceable as Chinese inputs and microchips were for the world economy.²

Second, even those missing European inputs that were expected to be eventually replaced were supposed to be replaced at a much higher cost. Partially because they would be sourced not from the closest or from the best supplier and partially because of the additional risks that its sellers would have to take in order to provide Russia with the banned goods. Again, many experts forecasted that this would slow down the Russian economy by at least as much as the world economy is slowed down now by the increased energy prices.

In the remaining two sections of this Policy Letter, I provide two event studies based on the pre-war data. Each of them illustrates why each of the channels described above did not work as expected. In particular, I show how the Russian economy has overcome similar challenges before. And while many researchers currently use the war-time data to answer the same questions, the evidence presented in this Policy Letter suggests new hypotheses to test and shows how the low effectiveness of sanctions could have been anticipated even before they were implemented.

¹ E.g., see <https://www.ft.com/content/47121812-621a-404a-b60f-e2a7f62c5236>.

² E.g., see <https://www.ft.com/content/6c01e84b-5333-4024-aaf1-521cf1207eb4>.

II. Shortages of key inputs

The Russian economy has never been cut off from so many of its inputs as under the current sanctions' regime. Thus, it was hard to predict the effect of a wide-scale lack of inputs. Still, sudden shortages of similar size have occurred before at the level of individual inputs.

One such shortage started on the 21st of October in 2018. This day a fire destroyed most of the plant called "Electrozinc", which was permanently closed afterwards. "Electrozinc" was one of only two plants that produced zinc in Russia and it accounted for about 27% of domestic production of zinc in 2017³, while exports of zinc was slightly higher than its imports and both were rather small relative to the domestic production⁴. Many experts claimed that the loss of the supply of zinc represents a serious threat to the Russian steel industry, as zinc is mostly used for galvanizing steel to protect it from corrosion. Thus, overnight Russia lost more than a quarter of one of the key inputs to its steel industry.

Using the data on railroad shipments between all Russian firms, I identified all former clients of the destroyed "Electrozinc". Figure 1 plots the monthly volume of zinc clients have received from all of their suppliers (in logs, solid blue), as well as the monthly volume of all of the products the clients produced and sent to their customers (in logs, dashed green). Hence, this Figure shows both the changes in the key input and in the total output for these clients' plants.

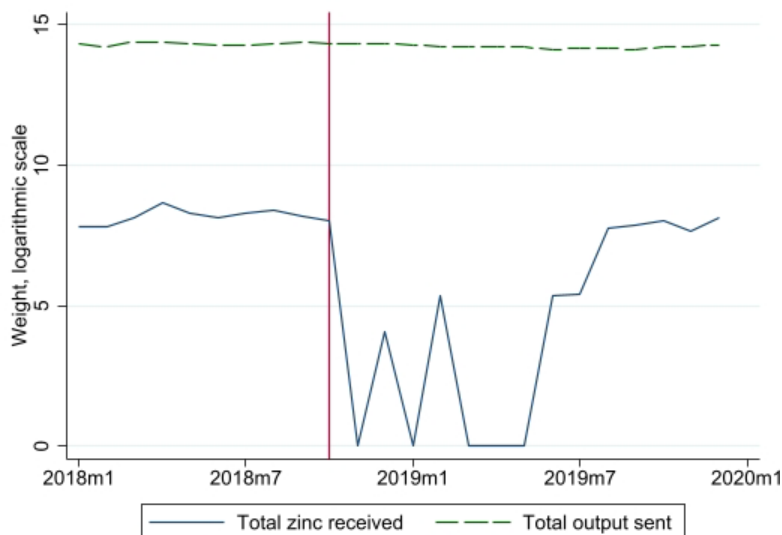


Figure 1: Total zinc received and total output sent for all clients of "Electrozinc"

All volumes are measured as $\log(1+\text{weight})$ and represent only shipments made through the railroad network. The vertical line shows the date of the fire that destroyed "Electrozinc".

³ <https://www.vedomosti.ru/business/articles/2018/12/14/789318-elektrotsink>

⁴ <https://ritm-magazine.com/ru/news/novosti-otrasli/v-rf-rastet-vidimoe-potreblenie-cinka-obzor-rynka>

As can be seen from Figure 1, all former clients of “Electrozinc” relied on it completely, as they received no shipments of zinc the month after the fire. Moreover, it took them almost a year to find reliable new suppliers that could replace “Electrozinc” on a permanent basis. However, Figure 1 also shows that the former clients of the destroyed plant had experienced no major disruption or even a slowdown of their economic activity. Indeed, the output that they have produced is remarkably stable. This is quite surprising given the facts: 1) zinc plays a central role in the production of steel, 2) “Electrozinc” was the only supplier for these firms, 3) it took a long time for them to find a permanent replacement.

The divergence between the two lines can be partially explained by an important caveat of this data, namely that it shows only shipments made through the railroad network. Allegedly, immediately after the fire in “Electrozinc” many firms have bought zinc on the international metal exchanges. It is likely that these shipments were delivered by trucks, which is generally a more expensive way of delivery than by trains.

While the data presented does not explain such notable stability of these firms’ output, it is consistent with the argument that makes a sharp distinction between commodities and manufacturing goods. In general, commodities such as zinc or other raw resources are traded in many organized exchanges and are very standardized. That is, it’s quite easy to determine the quality of this product, and usually it does not matter to clients from which supplier to receive a shipment.

In contrast, manufacturing goods such as microchips are sold directly from one firm to another and are quite tailored to each firm-to-firm relationship. By and large, it is hard to replace a supplier of manufacturing goods because the quality of a new product is hard to test and because clients usually work with their suppliers to design a version of the product that is specifically customized to the client. This is why a loss of a supplier of manufacturing goods can be much more devastating for production than a loss of a commodities supplier. Since the Russian economy is much more oriented towards commodities, this could at least partly explain its stability after the loss of the inputs from the European Union in 2022.

III. Increase in costs for the key inputs

Again, it is hard to find an episode that is comparable in scale to the massive increase in costs of imports for Russia in 2022. Nevertheless, there are specific events where the costs of individual inputs increased substantially. One such event was due to the introduction of a new tax on April 1st of 2020. To boost revenues, the government imposed a tax on the consumption of a fuel product called mazut. The size of the tax was fixed at around 9,585 rubles per tonne of mazut, while its market price at the

time of the introduction of this tax was about 9,000 rubles. Thus, this tax has more than doubled the cost of this fuel overnight. At the end of the same year the tax was abolished and the cost of mazut came back to its market price⁵.

Similar to zinc, mazut plays a key role within the production of several industries. Most intensively, mazut is used by the producers of steel and mineral fertilizers. However, in contrast to zinc, it is easy to replace mazut with other types of fuel such as natural gas. While it is hard and expensive to deliver gas by usual modes of transportation, most of Russian regions have access to an extensive network of gas pipelines. Still, some of the regions are completely excluded from this network, and thus it is much more difficult for them to substitute shipments of mazut with alternative fuel⁶. One such region is Murmansk oblast, a northern region on the border with Finland and Norway.

Figure 2 shows the total shipments of mazut (in logs, solid blue) received by all firms in Murmansk oblast and the total output sent (in logs, dashed green) by all users of mazut located in Murmansk oblast. As one can see, mazut shipments are very seasonal, with a substantial slump during summer months when there is less demand for fuel that is used for heating as well. Still, the shipments of mazut in 2020, when the tax was collected, do look surprisingly similar in comparison to the year before or the year after. This is consistent with the absence of a feasible substitute for this type of fuel in Murmansk oblast.

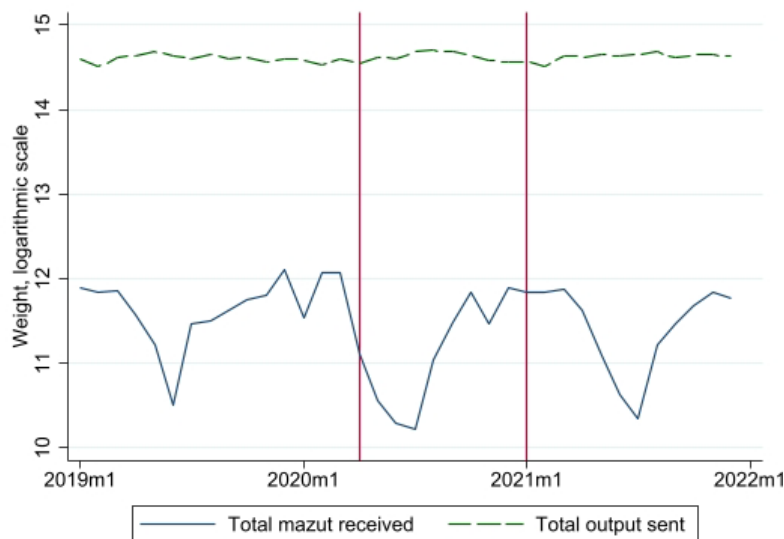


Figure 2: Total mazut received and total output sent for all consumers of mazut in Murmansk

⁵ The new tax was discussed for some time, but it was announced on July 30, 2019. For more details see <https://www.reuters.com/article/oil-tax-russia-idRUL5N2713DF>.

⁶ E.g., see <https://www.vedomosti.ru/business/articles/2020/01/22/821232-rost-tsen-na-mazut>.

All volumes are measured as log(weight) and represent only shipments made through the railroad network. The vertical lines mark the first and the last months when the new tax was in use.

The remarkable part of this Figure is that the total output by users of mazut also seems entirely unaffected by the introduction of the new tax. This is surprising as the cost of the major and irreplaceable input has effectively doubled for these firms, and yet their output remained exceptionally constant⁷. Therefore, this event study also foreshadows the stability of Russian production in 2022, when prices of many inputs have increased due to longer routes and higher risks associated with imposed sanctions.

Once again, the data presented does not explain this remarkable stability of production in spite of large external shocks. It is however consistent with the high profit margins under which many firms operate in Russia. Both steel and mineral fertilizers, that rely on mazut much more than other industries, are also commodities, prices of which are determined in the world markets. The introduction of the new tax in Russia did not have a substantial impact on these prices, and thus the firms in Murmansk appear to have the constant stream of revenues while their costs have increased substantially. This is consistent with relatively high profit margins, which are not uncommon for commodity producers, since world prices for many commodities are notoriously volatile. In general, high profit margins allow commodity producers to maintain a constant level of production despite volatile world prices for their output. Thus, the same producers would be able not to decrease their production after a sudden increase in costs as well.

IV. Conclusion

In 2021, only 6.6% of Russia's exports and 49.3% of its imports were highly specialized manufacturing goods like machinery, cars, or equipment. The bulk of the remaining products was much closer to commodities than to manufacturing goods. This included not only oil, gas, and multiple other raw materials, but also chemical products, food, textiles.⁸ The evidence presented in this Policy Letter does not explain how Russia managed to avoid sanctions and to continue to import the specialized manufacturing products it needs. Instead, it illustrates why a significant reduction in the rest of the foreign trade was unlikely to disrupt domestic production. Specifically, it argues that it is relatively easy to substitute missing inputs that are non-specialized and that many Russian producers can continue to operate despite a sharp increase in their costs. Still, it is important to draw a distinction between short-

⁷ While some firms certainly did buy and store mazut before introduction of the tax, Figure 2 also shows that it did not happen on a massive scale.

⁸ See https://rosstat.gov.ru/statistics/vneshnyaya_torgovlya# or <https://oec.world/en/profile/country/rus?depthSelector1=HS2Depth&tradeScaleSelector1=tradeScale0&yearlyTradeFlowSelector=flow1>.

and long-term effects of sanctions. While most commodity producers do not require inputs of manufacturing goods in their day-to-day operations, at some point they will need to update or replace their equipment. And then the increased costs of such equipment could make a significant difference in their decision whether to continue to operate.