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Effects of Trade Sanctions on Russia[1]

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I. Introduction

Various countries have imposed economic sanctions on Russia in response to Russia's military invasion of Ukraine, which began in late February 2022. Those sanctions include financial sanctions, as well as restrictions on exports and imports, and the revocation of Russia's Most Favored Nation (MFN) status under the World Trade Organization (WTO). Meanwhile, oil price hikes and exchange rate fluctuation, in tandem with the prolonged effects of COVID-19, have been driving growing uncertainty regarding the world economy.

The economic effects of the trade sanctions on Russia are investigated here by means of simulation studies using a Computable General Equilibrium (CGE) model of global trade. It will be some time before there is sufficient information to support prediction of the entire picture regarding sanctions on Russia. This article, then, presents a comparison of the economic effects under several possible scenarios, and an examination of the relative significance of the various forms of economic sanctions.

II. Scenarios of analysis

The economic effects of trade sanctions are estimated using a CGE model of the Global Trade Analysis Project (GTAP),[2] which is constructed based on the version 11 GTAP Database.[3] The dynamic effects of capital accumulation are incorporated into the

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[1] The views expressed in this article are the author's own and do not represent those of GRIPS Alliance or other organizations to which the author belongs. The author is grateful for useful suggestions for economic model analysis made by Professor Nobuhiro Hosoe, GRIPS. That said, any errors that may occur will be attributed to the responsibility of the author only.

[2] The current version of the standard GTAP model is version 7. The classic version, GTAP model version 6.2, is used in this article.

[3] The version 11 GTAP Database has not been made public as of April 2022 and the pre-release versions have only been provided to a select few, including the members of GTAP Consortium.

standard version of a comparative static model. GDP levels are updated to 2022,[4] to align with *World Economic Outlook Database, October 2021*, International Monetary Fund (IMF), which was created before Russia's military invasion of Ukraine.

This article investigates the effects of trade sanctions (among the various measures of economic sanctions) on Russia. In the course of that investigation, the article estimates the effects of extreme cases[5] in which imports from Russia and exports to Russia of goods are completely blocked.[6] The actual magnitude of the macroeconomic effects of trade sanctions would be proportional to the degree of changes in Russian trade. On the other hand, analysis of the effects of trade restrictions on specific commodities, which could vary depending on the features of those goods, would require a case by case approach.

Six scenarios of trade sanctions on Russia are examined below. First, the effects of trade sanctions by the world as a whole are compared with those of sanctions by western countries.[7] The effects of the blocking of all imports from Russia are compared with those of blocking all exports to Russia. In addition, the effects of the blocking of imports of mineral resources (oil, coal, gas) from Russia are estimated. The effects of the simultaneous blocking of imports from and exports to Russia would be somewhat smaller than the simple sum of the individual effects mentioned above.

Sanctions by the world

Imports	Blocks of imports of all commodities from Russia
(Mineral)	Blocks of imports of mineral resources from Russia
Exports	Blocks of exports of all commodities to Russia

[4] The most recent benchmark year of the GTAP Database 11 will be 2017.

[5] The magnitudes of import tariff hikes resulting from the revocation of Russia's MFN status under WTO would not necessarily be so large. As a matter of fact, according to Ministry of Finance documents (in Japanese), Japan's import tariffs for fisheries will be hiked from 3.5% to 5% and for wood from 4.8% to 8%. That said, in Japan's 2021 imports from Russia as a whole, fisheries accounted for around 8.9% and wood around 3.4%. The basic tariff rates for crude oil, coal, liquid gas and non-ferrous metal, whose share of Japan's total imports from Russia is around 80%, are zero and will not be hiked.
https://www.mof.go.jp/about_mof/councils/customs_foreign_exchange/sub-of_customs/proceedings_customs/material/20220328/kana20220328siryo1.pdf

[6] It is assumed in the technical methodology of the CGE model simulations reported in this article that export and import tariffs are adjusted so that the volumes of exports and imports would be reduced by one hundred per cent. It is important to note that the estimated results might be subject to a range of errors depending on the methodology of the model simulations.

[7] Japan, Korea, Australia, New Zealand, the United States (US), Canada, Mexico, the European Union (EU), the United Kingdom (UK) and the rest of the Organisation for Economic Co-operation and Development (OECD) Europe (Iceland, Norway, Switzerland), among the countries shown in Table 1.

Table 1 Changes in real GDP by trade sanctions on Russia

(%)

	Sanctions by the world			Sanctions by western countries		
	Imports	(Mineral)	Exports	Imports	(Mineral)	Exports
Russia	-29.6	-5.1	-23.9	-2.1	-1.4	-4.1
Japan	-2.3	-1.1	-0.4	-0.6	-0.5	-0.1
China	-2.5	-1.5	-0.5	-0.1	-0.1	0.0
Korea	-4.4	-2.2	-0.8	-1.0	-0.8	-0.2
ASEAN	-1.8	-0.3	-0.3	-0.3	-0.1	0.0
India	-3.8	-1.9	-0.4	-0.4	-0.4	0.0
Australia	1.5	2.5	0.3	0.2	0.4	0.1
New Zealand	-0.2	-1.7	0.0	-0.2	-0.1	-0.1
Rest of Asia-Pacific	-2.2	-0.9	-0.3	-0.2	-0.1	-0.1
US	-0.2	0.2	0.0	-0.1	0.0	0.0
Canada	0.3	0.2	0.1	0.0	0.0	0.0
Mexico	0.4	0.2	-0.3	-0.5	-0.3	-0.1
Rest of America	-0.1	0.3	-0.1	-0.1	0.0	0.0
EU	-3.7	-0.8	-0.9	-1.3	-0.6	-0.3
UK	-1.4	-0.3	-0.3	-0.4	-0.2	-0.1
Rest of OECD Europe	0.7	1.2	0.1	-0.1	0.1	0.0
Former Soviet Union	-10.0	-1.3	-3.7	1.1	0.8	1.2
GCC	5.1	1.9	0.4	0.3	0.2	0.0
Rest of the world	-0.8	0.1	-0.3	0.0	0.0	0.0
World total	-2.1	-0.6	-0.8	-0.4	-0.2	-0.1

Source: Author's simulations.

Sanctions by western countries

Imports	Blocks of imports of all commodities from Russia
(Mineral)	Blocks of imports of mineral resources from Russia
Exports	Blocks of exports of all commodities to Russia

III. Estimated effects of sanctions

The estimated macroeconomic effects of trade sanctions in the six scenarios above are shown in Table 1 in terms of changes in real GDP.

Russia's real GDP is estimated to decrease significantly, by around 29.6%, if the imports of all commodities from Russia are blocked by the world as a whole, and by around 23.9% if the exports of all commodities to Russia are blocked. On the other hand, it is estimated that real GDP of the world as a whole including Russia would also decrease but to a much smaller extent, by around 2.1% and around 0.8% respectively for the same two scenarios. This indicates that the adverse effects on those countries imposing sanctions on Russia would be limited, compared with the adverse effects on Russia. That

said, the adverse effects would be larger in the former Soviet Union countries that have relatively close relations with Russia. The effects of the blocking of imports from Russia on the world economy are estimated to be larger than those of the blocking of exports to Russia. This would be a reflection of higher inflation pressures resulting from adjustments of supply and demand in the world market in response to the blocks of imports from Russia.

It is estimated that if trade sanctions were imposed only by western countries, Russia's real GDP would decrease by around 2.1% as a result of the blocking of imports from Russia and by around 4.1% as a result of the blocking of exports to Russia—both much smaller than the decrease resulting from trade sanctions by the world as a whole. Western countries discussed in this article occupy a share of around 50% of Russia's trade market. The above effects would be relatively small compared to the market share. This could be attributed to associated trade diversion effects with the countries that would not join in the imposition of trade sanctions on Russia. The results suggest that cooperation by all countries other than Russia would be effective from the perspective of the efficiency of sanctions on Russia.

It is estimated that in countries producing mineral resources including oil, for example Australia, Canada and the members of the Gulf Cooperation Council (GCC), real GDP would increase as a result of trade sanctions on Russia. Russia is a major exporter of mineral resources and effects on trade in and the prices of mineral resources would be important issues. The current simulations reported here suggest that the prices of mineral resources, oil and coal products would rise much more than those of other commodities in the world market. Meanwhile, it is estimated that under sanctions by the world, the effects of the blocks of imports of mineral resources from Russia on world real GDP as a whole would be about 25% of the effects of blocks of imports of all commodities; and under sanctions by western countries, about 50%.

IV. Concluding remarks

The macroeconomic effects of trade sanctions on Russia would have a serious impact on the Russia economy, depending on the degree of those trade restrictions, but would have relatively limited impact on the economy in the rest of the world. That said, it is suggested that global cooperation would be effective from the perspective of the efficiency of economic sanctions on Russia. Meanwhile, effects on trade in and the prices of mineral resources (oil, coal, gas) would be important issues. A quantitative examination of the effects of economic sanctions on the development of the world economy would be valuable for strategic deliberation.