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Research Report

Examining the effects of potential shocks on the Russian economy

BOFIT Policy Brief, No. 19/2025

Provided in Cooperation with:

Bank of Finland, Helsinki

Suggested Citation: Simola, Heli (2025) : Examining the effects of potential shocks on the Russian economy, BOFIT Policy Brief, No. 19/2025, Bank of Finland, Bank of Finland Institute for Emerging Economies (BOFIT), Helsinki,
<https://nbn-resolving.de/urn:nbn:fi-fe20251208115658>

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19 • 2025

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BOFIT

THE BANK OF FINLAND
INSTITUTE FOR
EMERGING ECONOMIES

BOFIT Policy Brief
Editor-in-Chief Sanna Kurronen

BOFIT Policy Brief 19/2025
8 December 2025

Heli Simola:
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ISSN 2342-205X, online

The opinions expressed in this paper are those of the authors and do not necessarily reflect the views of the Bank of Finland.

Bank of Finland
Helsinki 2025

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Abstract

Applying the most recent international input-output tables, we examine potential short-term effects of various demand shocks on the Russian economy. Our analysis suggests that a reduction of 1 % in Chinese final demand results in a 0.1 % decline in Russian GDP. Similarly, a 10 % contraction in Russian oil production causes a a GDP decline of 1.6 %, while a contraction in oil refining activity leads to a GDP drop of 0.8 %. We also illustrate that Russia could achieve higher growth by real-locating public spending to non-military purposes, but maintaining military capability is a political priority for Russia's regime.

Keywords: Russia, China, oil, input-output

1. Introduction

In this brief, we examine potential short-term effects of various demand shocks on the Russian economy. We apply standard input-output methodologies to international input-output tables recently published by the ADB.¹ The international input tables, which depict global production as a network with output and inputs allocated across countries and industries, are based on official national accounts and customs statistics and complemented with estimated inputs. The data cover 72 economies and a “rest of the world” bloc. Economies are disaggregated into 35 branches. The data are expressed in US dollars, and include the 2024 estimates used as the benchmark for our simulations.

This framework allows us to follow the propagation of various shocks across Russian and international production networks over the short term. As the data are relatively aggregate at the industry level, the results are subject to uncertainty. Nevertheless, Simola (2022) obtains relatively accurate estimates using a similar methodology on the initial short-term effects of sanctions imposed on Russia. Taking this approach to focus on the short term, however, does not allow for possible adjustments over in longer term. For example, so far Russia has succeeded in mitigating some of the negative shock effects of sanctions. But as sanctions have become more extensive, Russia’s ability to adjust to additional shocks has become more limited.

The brief is structured in the following way. In section 2, we consider a shock to Chinese overall demand and examine the shock’s propagation in the Russian economy. Sections 3 and 4 provide estimates on the effects of a contraction in Russia’s oil extraction and oil refining industries. Section 5 offers an examination of the possible effects from shifting the structure of Russia’s public demand away from military-related industries to non-military industries. The findings are summarized in section 6.

¹ See e.g. Miller & Blair (2009).

2. Chinese demand shock

We start by considering the possible effects of a Chinese GDP contraction on the Russian economy. China is Russia's most important trading partner by far, accounting for about 30 % of Russian goods exports and half of Russian goods imports. While recent forecasts still anticipate Chinese growth in the years ahead, growth is expected to slow. Moreover, Chinese economic development is presently subject to a range of risks,² and unexpected shocks cannot be ruled out. Chinese official statistics show, for example, that China's GDP contracted significantly during the Covid-19 pandemic. Alternative estimates also suggest other episodes of declining GDP in the recent years.³

Assuming Chinese final demand overall contracts by 1 %, we simulate the propagation of this shock to the global production network, including Russia, to see the short-term effects. Our results suggest the shock causes a 0.1 % decline in the total value added produced in Russia (GDP). The largest contractions involve water transport, manufacturing of wood products and mining & quarrying (Figure 1). This reflects China's important role as an export market, especially for Russian seaborne oil shipments and timber. In the event of a drop in Chinese demand, Russia could struggle to find alternative export markets under the current sanctions regime. The EU, which previously was Russia's largest market for oil and wood, now bans imports of such commodities from Russia into the EU.

² See e.g. BOFIT's latest [Forecast for China 2025–2027](#).

³ See BOFIT's regularly updated [alternative indicators](#) of Chinese economic growth based on Kerola (2019).

Figure 1. Estimated impact on the Russian economy from a 1 % decline in China’s total final demand.



Source: Author’s calculations based on ADB data.

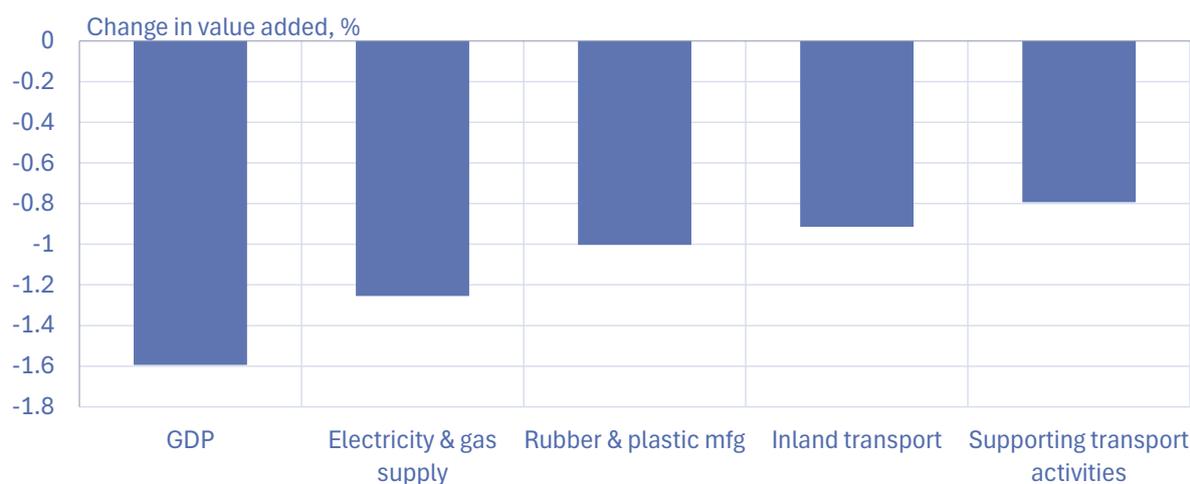
3. External energy demand shock

In this section, we examine the effects from reduced export demand for Russian oil. Due to the level of aggregation of the data, we proxy oil with the mining & quarrying industry as a whole (includes extraction of oil, gas and coal). Western sanctions have long restricted imports of Russian crude oil and oil products into the EU and certain other countries. The G7 and EU price cap mechanism aims to lower Russian oil prices without significantly cutting export volumes, helping maintain global supply.

Even as the geographical distribution of exports has changed dramatically in recent years, the volume of Russian oil exports has declined only moderately. According to the IEA (2025), China and India each now purchase about 30 % of Russian oil exports (crude and refined products combined). As Russia exports about half of its oil production, we can infer that both China and India consume about 15 % of the oil produced in Russia. Our simulations assume that both countries reduce their demand for Russian oil by a third (due to e.g. risks related to secondary sanctions). At least in the short term it would be difficult for Russia to find new buyers to offset the loss. Thus, we assume Russian oil output declines by a similar amount as demand – about 10 %.

Our results show Russian GDP declines by 1.6 % over the short term (Figure 2), largely due to the direct effect from the mining & quarrying industry. The shock also hits electricity & gas supply and transport services particularly hard. These industries are important in production and exporting of oil, so a decline in demand from the oil industry cuts their output.

Figure 2. Impact of a demand shock leading to a 10 % decline in Russian oil output.



Source: Author's calculations based on ADB data.

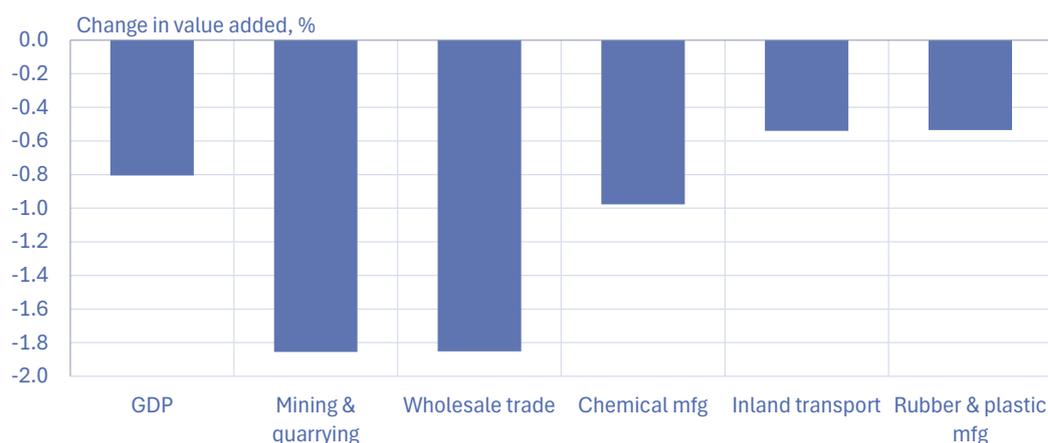
4. Oil refining output shock

Russia's oil refineries and related infrastructure have suffered heavily from Ukrainian drone and missile strikes. Estimates suggest that these attacks have temporarily paralyzed about 20–30 % of Russia's oil refining capacity. Given that Russia has plenty of idle capacity, the actual effect on refining output has been lower, likely topping out at around 5 %. Ukraine continues these attacks to increase damage while slowing and complicating repairs. For illustrative purposes, we examine the propagation of a 10 % decline in Russia's oil refining output to other parts of the economy.

The results suggest that the shock leads to a short-term contraction of Russian GDP of 0.8 % (Figure 3). The largest indirect effect focuses on mining & quarrying due to diminished demand (in this framework, an adjustment through increased exports of unprocessed oil is excluded). Russia so far has managed to compensate for the lost oil product exports by increasing exports of crude oil, but current

tighter sanctions could narrow its options, particularly over the short term. Other hard-hit industry categories include manufacturing of chemicals, manufacturing of rubber and plastic products, as well as inland transport.

Figure 3. Estimated impact of a supply shock from a 10 % decline in Russia’s oil refining output.



Source: Author’s calculations based on ADB data.

5. Shock to structure of Russian public spending

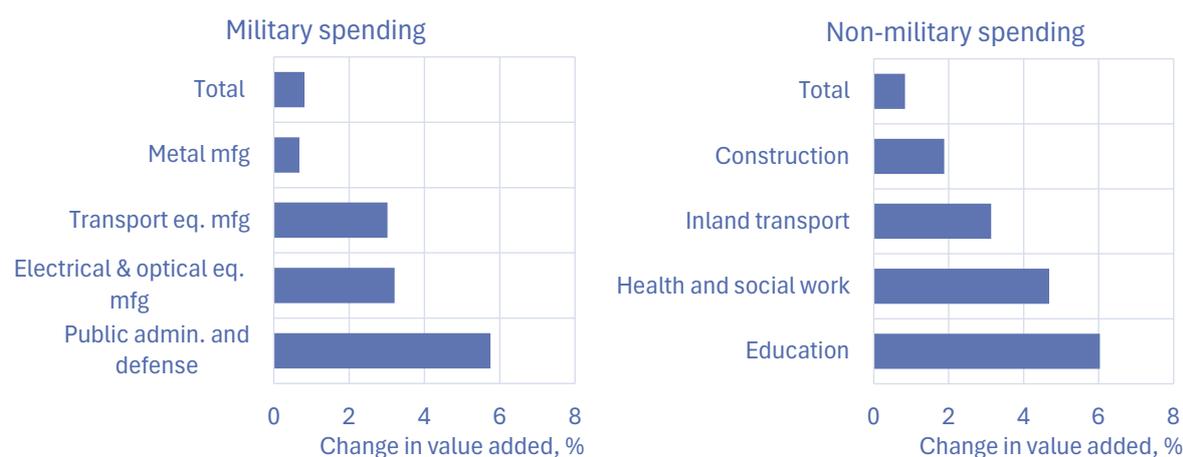
The substantial public spending increase of recent years has been driven by soaring growth in military expenditure. In this section, we compare the effects of public spending on military purposes compared to civilian purposes.

We start by simulating the effects of a 10 % increase in government demand on specific military-related industries. Following Simola (2024), we proxy these military-adjacent industries with the categories of “metals manufacturing,” “manufacturing of electronic and optical equipment,” “transport equipment other than automobiles,” and “public administration and defence” services. We allocate the same amount of money to other non-military industries (equal shares to construction, inland transport, education and healthcare), and compare outcomes.

The results suggest that the total increase of Russian GDP is actually slightly higher over the short term when public demand is redirected to purposes other than increasing military-related production (Figure 4). Note here that these calculations only provide estimates of *short-term* effects. Over the longer term, it is

likely that spending in such categories as infrastructure and education provide substantially higher long-term gains by supporting the economy's growth potential. This further illustrates that prioritizing military spending is a political choice of the Russian regime and not required to prop up the Russian economy.

Figure 4. Comparing effects of an increase in public demand directed towards military related production and other production.



Source: Author's calculations based on ADB data.

6. Concluding remarks

In this note, we examined the potential effects of various shocks on the Russian economy. Our results suggest that a 1 % reduction in China's overall final demand translates to a 0.1 % contraction in Russian GDP. Transport services and raw-material-intensive industries are hardest hit.

A decline of 10 % in Russia's oil production causes a 1.6 % contraction in Russian GDP, while a corresponding decline in oil refining leads to a 0.8 % contraction in Russian GDP. When both shocks occur simultaneously, Russian GDP contracts by about 2.5 % over the short term. Over longer term, the economy might manage (at least partially) to adjust to these shocks. Given the current tightened sanctions restricting Russian exports and imports, adjustment to such shocks could prove more difficult than previously.

We also examined the effects of the structure of Russia's public spending on short-term economic growth. Our results here further illustrate that it is by no means a given that Russia should stick to a policy of increased military spending to

sustain output growth, but the Russian regime prioritises military spending over economic interests.

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