

Income effects of trade destruction and deflection in Russia (2021-2024) - A Structural Decomposition Analysis

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The full-scale invasion of Ukraine in 2022 and the subsequent imposition of unprecedented sanctions by Western allies against Russia have reignited the debate on the effectiveness of economic weaponisation. Despite the severity of the measures, Russian GDP growth exceeded many initial forecasts (IMF, 2022), raising questions about the extent to which trade sanctions effectively constrained aggregate income. A growing literature documents the sharp reorientation of Russian trade from sanctioning countries to non-sanctioning partners, as well as instances of trade rerouting through third countries (eg: Chupilkin et al., 2023; Partsvaniya et al., 2024; Funke et al., 2025). While this evidence provides valuable insights into trade adjustments, it is often confined to specific sectors, trading partners, or trade flows. A comprehensive assessment of how each individual country-sector trade shifts contributed to Russian growth after 2022 remains lacking.

This paper addresses that gap by embedding Russia’s post-2022 trade reconfiguration within a structural global input-output (IO) framework. Our objective is to quantify the contribution to aggregate gross value-added (GVA) of each country-sector changes in Russian exports and imports between 2021 and 2024. In particular, we evaluate the extent to which income losses associated with declining trade with sanctioning countries - which we term the trade destruction effect - were offset by increased trade with non-sanctioning partners - the trade deflection effect.

Empirically, we implement a Structural Decomposition Analysis (SDA) grounded in an open Leontief interregional IO model of the global economy, using the Asian Development Bank Multiregional IO database at constant prices. We propose a decomposition strategy that isolates the contribution of each country-sector pair (63 countries and 35 sectors) to changes in Russian aggregate GVA, both for exports and imports. To check whether the identified effects reflect pure shifts in geographic trade patterns rather than broader changes in production technologies or final demand preferences, we complement the baseline specification with an alternative identification that isolates changes in geographic trade shares, following Oosterhaven (1998). The analysis spans 2021-2024 and includes year-by-year decompositions to capture the dynamic adjustment path.

Our results show that export-side adjustments dominate the macroeconomic impact of sanctions. Trade destruction from sanctioning economies reduced Russian GVA by -12.4% over 2021-2024, largely concentrated in energy-related sectors, particularly mining and refined petroleum. Trade deflection towards non-sanctioning partners only partially offset these losses, leaving a net export effect of -8.2% of total GVA. The compensatory mechanism is highly concentrated geographically: India (+2.5%) and China (+1.9%) account for most of the offset, followed by Turkey (+0.5%) and Brazil (+0.3%). While energy-related sectors again play a central role, China’s contribution is structurally broader, extending to other key exports, notably chemicals and basic metals.

Import-side effects are smaller in aggregate but display a clear substitution pattern. Trade destruction from sanctioning economies is widespread across country-sector pairs, yet China emerges as the dominant alternative supplier, particularly for technologically intensive inputs such as electronics and optical equipment. Import deflection is also evident in India and Turkey, as well as Kyrgyzstan and Kazakhstan, members of the Eurasian Economic Union (EAEU), a trade bloc that includes Russia, although Kazakhstan’s contribution is concentrated in the early phase of the conflict.

The contribution of the paper is methodological, empirical, and policy relevant. Methodologically, we extend the SDA literature by developing a global constant-price framework explicitly designed to disentangle trade shift effects at the country-sector level. By isolating export and import-side reorientation within an interregional IO model, the approach provides a granular mapping of how

geographic trade realignment translates into aggregate income outcomes. The framework is general and adaptable to contexts such as geoeconomic fragmentation, trade agreements, and supply-chain disruptions. Empirically, we provide a systematic ex-post quantification of how country-sector trade shifts after 2022 translated into Russian value-added dynamics, identifying the geographies and sectors most consequential for macroeconomic adjustment. From a policy perspective, we contribute to the debate on economic weaponisation by showing that trade reconfiguration follows geopolitical alignment lines and by identifying the key economies that mitigated the impact of trade disruptions. More broadly, the framework offers a structured tool to assess trade substitution capacity and evaluate trade-related interventions.