

## Assessing the potential impacts of the Ukraine-Russia conflict in Sierra Leone: A CGE analysis



August 2022

## ▪ Introduction

A new surge in the prices of petroleum products exacerbated by the Russia-Ukraine conflict intensified the energy shortage in Sierra Leone and is increasing transactions costs and creating more hardship for local businesses and consumers. The global economy was recovering slowly but surely from the pandemic, until the brutal conflict between Russia and Ukraine brings new layers of uncertainty to economic prospects. Russia and Ukraine are major players in global trade for some commodities. For example, Russia and Ukraine represent respectively 17% and 36% of the global trade in sunflower oil and seeds, and 18% and 9% of the trade in wheat. In addition, Russia is a key player in the international oil market as being the second largest exporter. Globally the impacts of the war were rapidly seen on the prices of oil and wheat especially in countries that are highly dependent on products from both countries. Oil and wheat prices are expected to maintain their upward trends as the situation evolves.

Unlike many other African countries<sup>1</sup>, especially North African countries such as Egypt and Tunisia, Sierra Leone is not dependent on wheat imported from Ukraine or Russia.

Although Ukraine and Russia are not among Sierra Leone's top trading partners, the war and the related economic sanctions on Russia have induced impacts on the local economy, compromises the favorable growth prospects and triggers social unrest due to disruptions of the supply chains, economic spillover effects and price transmissions which has led to domestic price surge, compounding potentially the economic recovery and eroding households' purchasing power.

There is a consensus that the war will continue to have impact on Sierra Leone and other African countries as it pushes prices upward. Therefore, it is timely to start assessing quantitatively these impacts on the local economy as the financial and economic implications are still uncertain.

## ▪ Oil, energy, and inflation



The increase in oil prices might generate increase in the production costs in many countries, including Sierra Leone, which is passed on to consumers and businesses having less capacities to switch to alternatives.

Inflation remains in double digits. The official annual national Consumer Price inflation figure for July 2022 stood at 29.47, driven mainly by food and non-alcoholic

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<sup>1</sup> African countries imported 4 billion USD of agricultural products from Russia in 2020, with

wheat representing 90%. The major importers being Egypt, Soudan, Nigeria, Tanzania etc.

beverages; housing, water, electricity, gas, and other fuels; health etc. The high inflation rate in the recent past was fueled by several factors including the significant depreciation of the Leone against the US dollar and the large budget and balance of payment deficit. In Sierra Leone, the fuel cost officially increased by 120% and over 150% on the black market in June 2022 and this tendency to escalate might be further accelerated by the spillover impacts of the war and have a ripple effect<sup>2</sup> on the cost of many other related commodities and services, especially transportation. Supply disruptions have also hit the global prices of several other commodities (gas, wheat, fertilizer, soybean etc.). The price rise has started since the beginning of the year owing to the excess in demand as oil participating countries failed to meet their production targets since December 2022. Global petroleum demand has increased progressively in 2021 following the increase of COVID-19 vaccination rates, the easing pandemic-related restrictions, and the economic recovery post-lockdown.

The high fuel prices and the decrease of the electricity supply are influenced by several internal and external factors including cost of importation, perceived risk of market disruptions, shipping and other transactions costs, premium etc. As a result of these trends, pump prices for March were adjusted several times, following the surge of oil price with the Ukraine and Russia conflict. The fuel cost officially increased by 20 percent and over 50 percent on the black market with Pump

prices for Petrol, Diesel, Kerosene, and other petroleum products, adjusted from 10 000 Leone to 12 000 on 7 March 2022. Prices were further adjusted to Leone 15 000 (25 percent increase) on 17 March 2022 and Leone 22 000 in June 2022 (Petroleum Regulatory Agency, 2022). High transactions costs and illegal transportation fares were reported and are affecting businesses and the movement of goods and people. Oil marketing companies such as NP and Leone oil confirmed that they were facing difficulties to import enough quantity of fuel as suppliers in Europe were impacted by the Ukraine-Russia conflict and asked to be paid in cash instead of credit. Dealers and transporters of petroleum products stopped their activities amid fear of price changes and margin losses as well as supply chain issues and fuel scarcity in the country. The rise in consumer prices observed in Sierra Leone might be accelerated if the Russia-Ukraine situation does not end<sup>3</sup> and appropriate measures not taken to ensure the import of enough fuel. Oil prices could hit \$150 a barrel (the highest ever was at \$147 in 2008), should the conflict continue to escalate, and no measures is taken from the global supply side. However, oil prices decreased following the latest peace talks and Russia's plan to reduce its military assault and at the national level oil marketing companies were able to import and hence reduce the supply gap thanks to the financial support they received from the Government and

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<sup>2</sup> Higher energy prices impact the cost of other commodities at both global and local level (Figure A.2).

<sup>3</sup> The rise in already inflated and climbing oil prices has accelerated since Russia invaded Ukraine. Oil

prices have increased more than 30% since 24 February. Russia is the second largest oil exporter with 11 percent of worldwide oil production in 2020.

the successful negotiation on the margins between the Government and the Petroleum Dealers and Transporters Union.

▪ **Agricultural commodities**



Russia and Ukraine are major wheat exporters representing together 27% of the global trade

and the conflict has increased the prices of these commodities which might impact the markets of other agricultural products. Wheat price on international market has reached its highest level in nearly 14 years.

Nitrogen fertilizer is one the products imported by Sierra Leone from Russia (14% of the import bills in 2019 and around 20% of the country demand for the product) and any lasting disruption might prompt a decrease on the agricultural productivity especially in the upcoming season and contribute to exacerbating the livelihoods of population in rural areas. However, this is a seasonal product, and it is early to determine the immediate effect of the war as the demand for it has not peaked yet. The rise of the price petroleum products might also negatively impact agricultural output through other energy-intensive inputs. A long-term rise of food prices could threaten food security in Sierra Leone which was already impacted by COVID-19 related supply chains disruptions.

▪ **Internal and external positions**



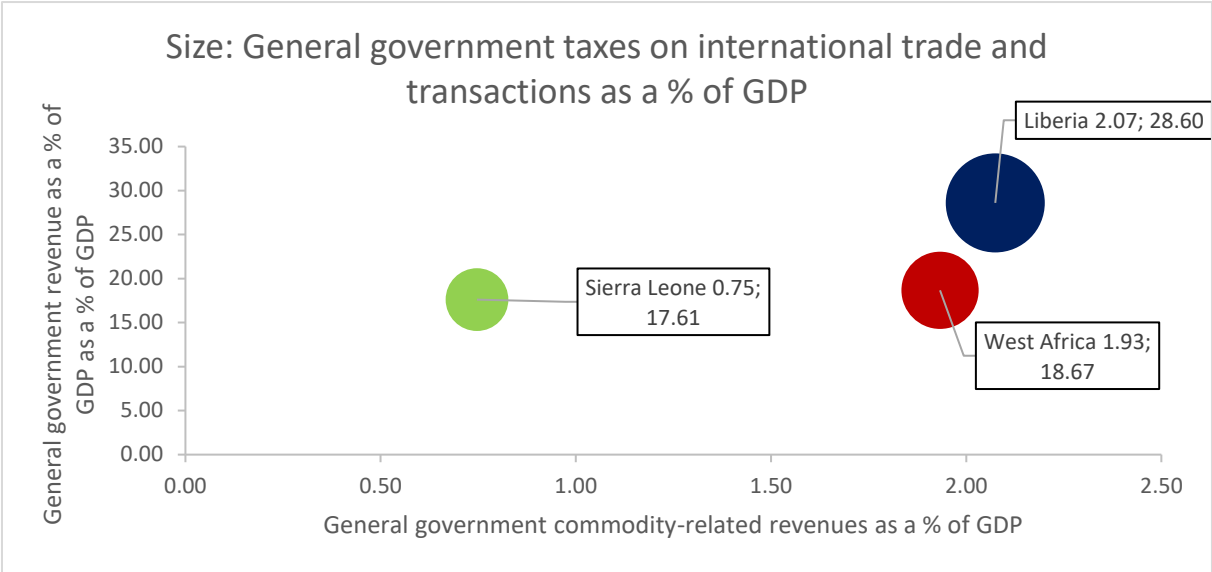
The conflict is impacting the global economy and increasing the volatility of financial markets. The rise in oil and commodities prices and their negative

impacts on consumers and businesses will have negative impacts on the current account balance, rising exchange rate pressure and reduce government revenue in Sierra Leone. The government’s actions to cushion the impacts and stabilize the price have also significant financial implications, thereby reducing the fiscal space and potentially increase debt, as an alternative to finance these additional public spending. As suggested in response to the negative impacts of the COVID-19 pandemic, from which Sierra Leone economy has not yet fully recovered, it is important to expedite efforts towards fiscal consolidation. Sierra Leone is at high risk of debt distress with a public debt to GDP ratio of 71.6 % in 2021, even though the external debt distress is at moderate risk (WB, 2021).

Domestic resource mobilization in Sierra Leone is lower than the average in West Africa with the Revenue to GDP ratio of

17.61 percent in 2021, against 18.67 for the average ratio in West Africa and 21.53 on

Figure 1: Government revenue and international trade



the continent. Sierra Leone’s reliance on international trade and transactions for government revenue is lower than the average of the West Africa region and countries like Liberia. This gives an indication on a relatively more limited impact of disruption in international trade on domestic resources. The government taxes on international trade and transactions ratio to GDP is estimated at 2.3 percent and the General government commodity-related revenue to GDP at 0.75 while the average of these ratios in 2021 are 3.54 percent and 1.93 percent for West African countries.

Monetary authorities might also consider enacting more restrictive monetary policies to bring the double-digit inflation under control. Regarding the Russia-Sierra Leone investment relationship, a delegation of Russian investors recently visited the Sierra Leone Investment and Export Promotion Agency (SLIEPA) in January 2022 to scope the investment opportunities in the country, as a result of Russia ambition to strengthen its presence in Africa.

Authors’ calculations from the IMF World Economic Outlook and AfDD Database

Regional trends



Trade

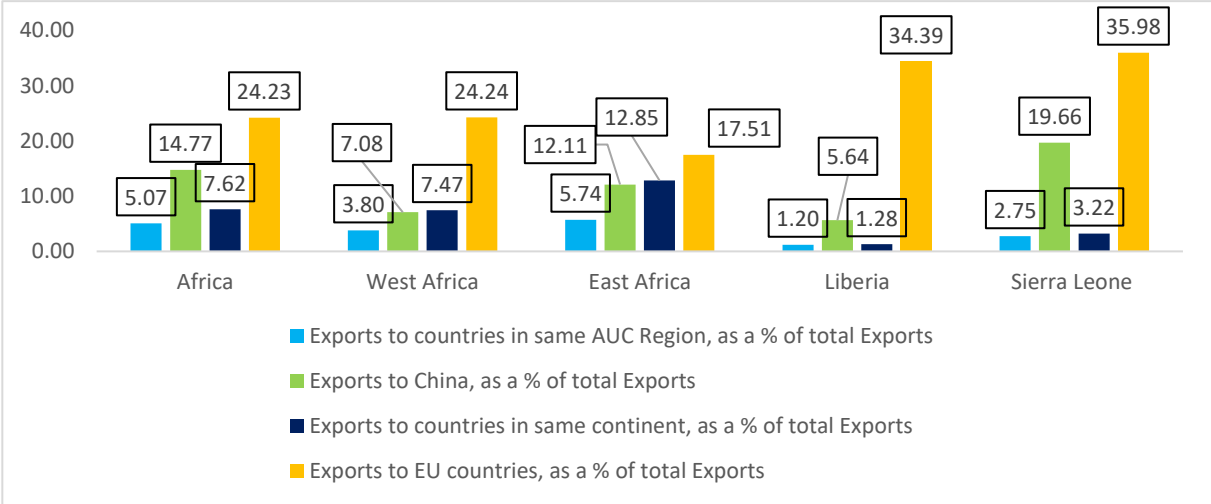
The role of Sierra Leone’s export in Africa remains relatively minor as only 2.75 percent of the exports are in the ECOWAS region and only 3.22 percent on the continent while exports to China and Europe for example accounts for respectively 19.66 percent and about 36 percent of the total exports in 2019.

The Herfindahl concentration index shows that Sierra Leone has a concentrated export basket like many countries in West Africa where the average concentration index (0.28) is higher than in East Africa (0.03). The exports basket contains only a few goods, 6 and 15, which accounts respectively to 75% et 90% of the exports

in 2019<sup>4</sup>. This export's structure makes the country's external balance highly dependent on the economic dynamics outside of Africa, especially in Europe. This makes Sierra Leone far from being invulnerable to the Ukraine-Russia situation and its implication on Europe and the global economy, despite having limited direct trading relation with the two main

revealing how it is crucial to build resilience, through advance partners, markets and products diversification, to limits imports and exports dependency, especially from unpredictable partners, as well as absorb the negative impacts of any supply chains disruption.

Figure 2: Exports destinations

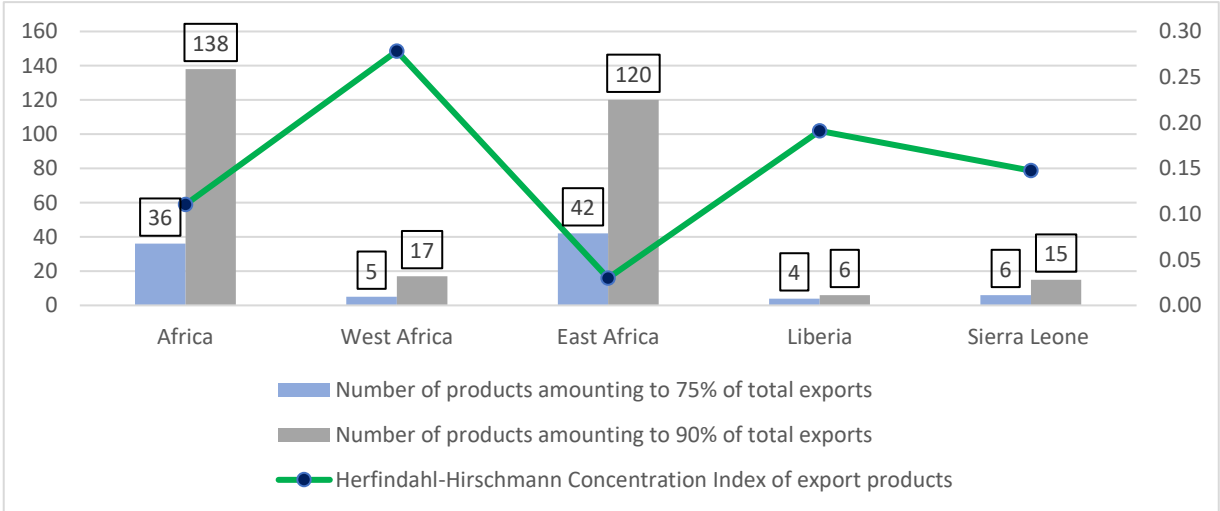


Source: Authors from COMTRADE

protagonists. Russia supplies about 40% of the Europe's demand of natural gas and Qatar who could be an alternative provider has its production at the maximum

**Diversification and external shocks**

Figure 3: Diversification and vulnerability to external shocks



Source: Authors from COMTRADE

capacity. After the COVID-19 pandemic, the current Ukraine and Russia crisis is

not, but not mounted or set; Titanium ores and concentrates; Aluminium ores and concentrates, Cocoa beans, whole or broken, raw or roasted etc.

<sup>4</sup> The export product categories with the largest share are Iron ores and concentrates, including roasted iron pyrites; Diamonds, whether worked or

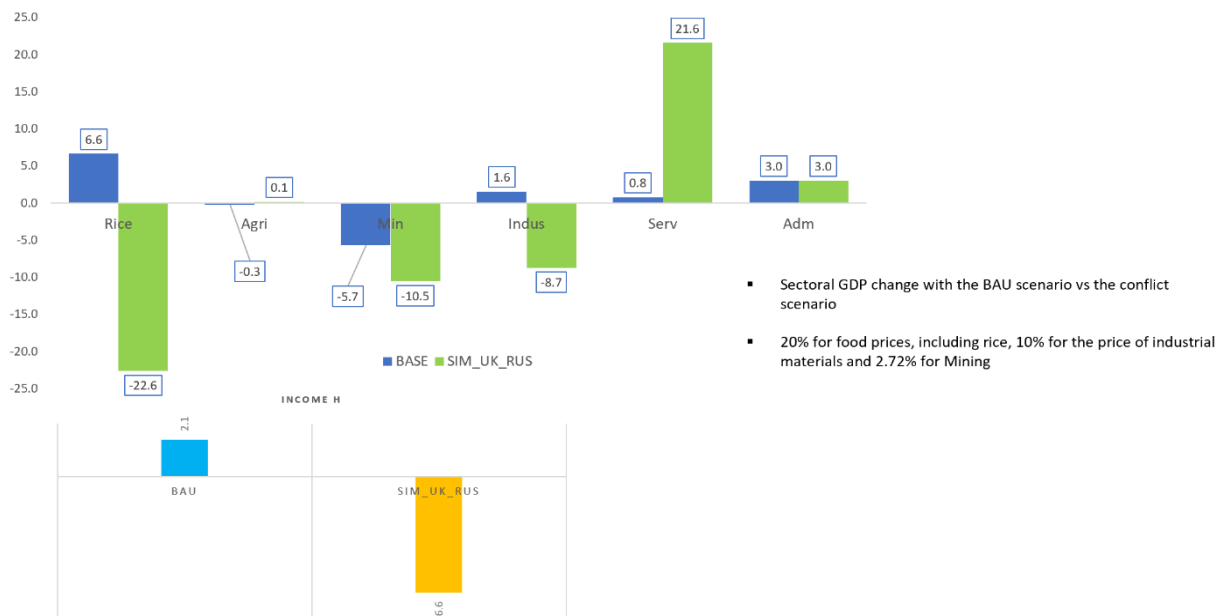
- **Assessing empirically the impact through a computable General Equilibrium Model**

For a quantitative assessment of the potential impact of the conflict, a dynamic extension of the standard model<sup>5</sup> was calibrated using a Social Accounting Matrix (SAM)<sup>6</sup> for Liberia. We used the model to replicate the movement of fuel and international commodity prices, while evaluating the economic effects after the external shocks. Our simulations are not replicating the whole functioning of the economy but focus on the extent of the transmission effects of international prices. The model is written as a set of simultaneous equations, including several nonlinear equations, defining the behavior of the different economic agents. The structure of the production technology has at the top level a constant elasticity of substitution (CES) function of the quantities of value-added and aggregate intermediate input. The former itself is a CES function of factors

whereas the latter is a Leontief of disaggregated intermediate inputs. The model assumes that each sectoral producer maximizes its profits by choosing the quantities, so that the marginal revenue products of the different factors are equal to their rents. We compared the growth rate between the conflict scenario, replicating the increased of international prices with 20% for food prices, including rice<sup>7</sup>, 10% for the price of industrial materials and 2.72% for Mining, and the growth rate of the base scenario which assume a normal evolution of the economy, where nothing happened. The conflict affects negatively sectoral growth dynamics with a limited overall impact compared to the baseline. The rice sector, Mining and Industry are the most affected sectors with respectively -22.6%, -10.5 and -8.7 in the conflict scenario. The analysis also reveals direct welfare/income implications of the crisis on the population.

Figure 4: CGE model outputs

Source: Authors from the macro model



<sup>5</sup> Thurlow, 2004; Lofgren, 2002 for the description of the model and the mathematical model statement with an equation-by-equation description.

<sup>6</sup> Using the structure of the SAM for the base year 2009.

<sup>7</sup> Rice is one of the main staple foods and a large quantity of the domestic supply is imported (300,000 metric tons out of the 1,000,000), making the economic and households vulnerable to food price volatility. 3/4 of rural households and about 2/3 of poor households grow rice.

### ▪ **Security and stability**

The risk of civil unrest cannot be discounted. A continuous increase in fuel prices and the rising inflation triggered social unrest and anti-government protests as the result of the negative impacts on household purchasing power and cost of operating businesses, in a country where two-thirds of the population are identified as multidimensionally poor. The energy and food crisis could further threaten the progress in SDGs implementation should the conflict continue to escalate, and no appropriate measures are taken to mitigate the impacts at local level.

Angry youths from various localities (Makeni, Magboraka, Kamakwie, Eastern part of Freetown, and Waterloo) demonstrated in August 2022 against the worsening economic hardship mainly driven by the high cost of petroleum and food products and were involved in blocking roads, burning tyres, and throwing stones at the police<sup>8</sup>. In a bid to stem protests/riots, a nationwide curfew was imposed but is not without associated socio-economic costs. Thirty-six percent (36%) of Sierra Leoneans think that the protests were genuine concerns about economic hardship and governance issues<sup>9</sup>.

From a regional perspective, in Mali, the Government brought in Russian military trainers - Wagner Group - and it is not excluded that they participate in the war as it was already reported that those in Libya could join Ukraine to complement Russian

forces on the battle ground. This could weaken their presence and involvement in this country and might impact the security dynamics in the Sahel and the stability of the whole West Africa region.

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<sup>8</sup> Rumors about demonstration against the high cost of petroleum products began to circulate at the beginning of July.

<sup>9</sup> Institute for Governance Reform, 2022. <http://igrsl.org/sierra-leoneans-are-deeply-divided-over-the-motivations-for-and-meaning-of-the-august-10-protest/>



## Key actions to mitigate the impacts



Source: Authors

## Annex

### Trade structure Pre COVID-19 pandemic

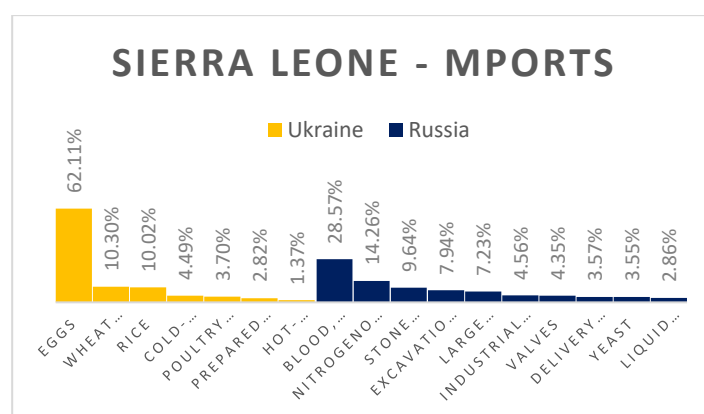
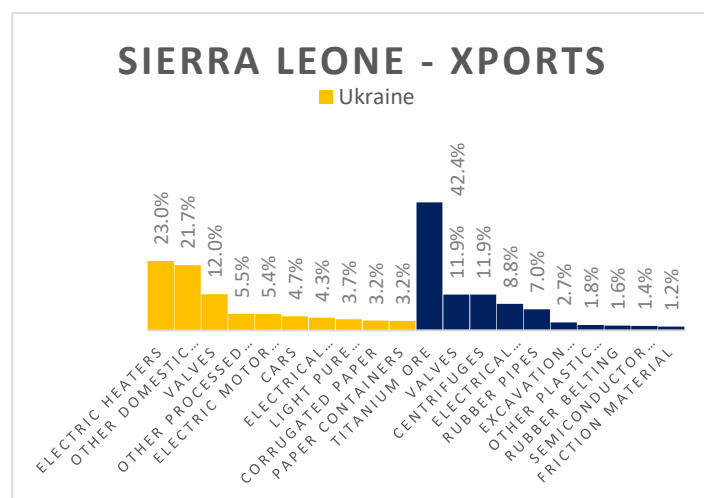
#### Imports

Russia is only the 49<sup>th</sup> most important country of origin of imports in Sierra Leone in 2019 with less than 1% of the total imports, the major trading partners being China 27% of the total imports, India 11%, USA 6.39 %, and Ghana 5.2%. Imports before the COVID-19 pandemic was estimated at 1.06 million USD with the main products being Bloods, antisera, vaccines, toxins and cultures (28%), nitrogenous fertilizer (14%) and stoness processing machines (9%). Sierra Leone imports from Ukraine accounted for 4.96 million USD in 2018 and were dominated by eggs (62%), wheat (10.3%) and rice (10.1%) and 5.44 million USD in 2019 dominated by eggs (73.5%) and wheat (11.4).

#### Exports

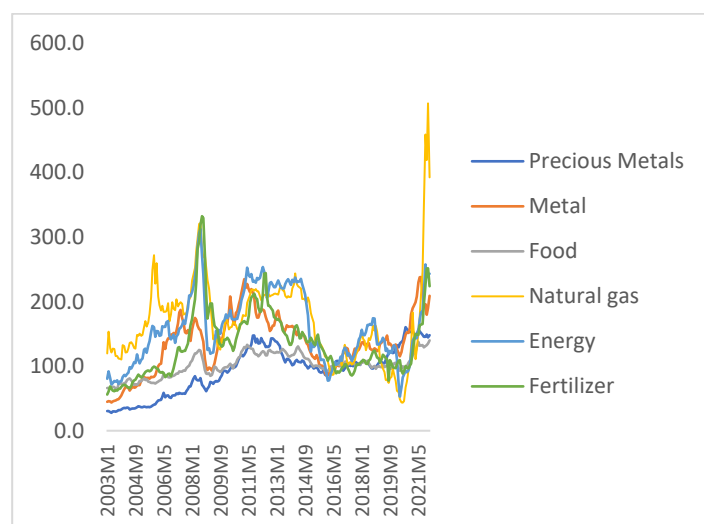
The participation of Ukraine and Russia in Sierra Leone exports has been peripheral. Exports to Ukraine were estimated at around 498 000 USD in 2018 and were mainly made up of Electric Heaters (23%), other domestic electric housewares (21%), valves (12%) and 81 000 USD in 2019 made up of unprocessed fruits (27%) and centrifuges (15%). Sierra Leone exported 524 000 USD to Russia in 2019 with the main products being titanium ore (42%), valves (12%) and centrifuges (12%).

Figure A1: Snapshot of the Trade structure - Sierra Leone, Ukraine, and Russia before the pandemic (2018-2019)



Source: Authors from UN COMTRADE/BACI

Figure A2: Global commodity prices



Source: Authors from the IMF Primary Commodity Price System

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