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Exposure of African Economies to Global Commodity Trade and Market Disruptions: Impacts on Growth, Poverty, and Food Security in Nigeria

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Introduction

The economic impacts of the global market disruptions brought on by the Russia-Ukraine conflict are dependent on the composition of a country's import and export commodity baskets. Global market disruptions impact a country's economy through a variety of channels, and the shocks can affect aggregate indicators such as national economic growth rate, job creation numbers, poverty levels, and food security. International shocks initially impact a country's economy through the import and export prices of goods. The weight of each good in the country's international trade basket determines how vulnerable it is to the disturbance. The shift in the economy's Terms of Trade (ToT), or the difference between export and import prices, is used to quantify the direct impacts. A worsening of the ToT, or the loss of the ability to cover the cost of imports using export revenues, is seen in the increase of import prices relative to export prices. On the other hand, a lower ratio of import to export prices alters the balance of payments, boosts total output, and impacts the overall economy through the exchange rate. This brief summarizes the main findings from an analysis of the global commodity price shocks caused by the Russia-Ukraine war and their effects on Nigeria's economy in the 2022-2024 period.

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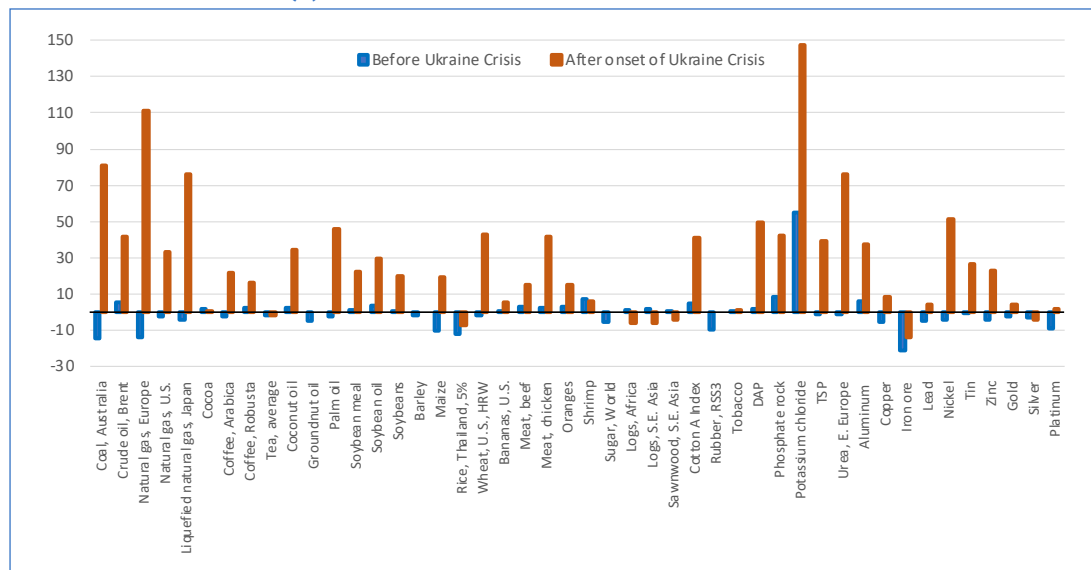
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THE UKRAINE CRISIS
AND AFRICAN ECONOMIES

1. Global Commodity Price Shocks Under the Russia-Ukraine Conflict

The impacts of the global market disruptions on Nigeria’s economy can be calculated by comparing the levels of economic growth, poverty, and food security, before and after the Russia-Ukraine conflict. In October 2021, before the war’s outbreak, the World Bank published the projected commodity prices for 2022-2024. Later in April 2022, with the outbreak of the conflict, the World Bank updated the projection estimates for the same period. Figure 1 below illustrates how these two forecasts are used to project the changes in global commodity prices between 2021 and 2022.

Figure 1: Projected Changes in Global Commodity Prices before and after the Onset of the Russia-Ukraine Conflict (%)



Source: World Bank, Commodity Markets Outlook. Retrieved in April 2022.

We conducted two types of simulations using 46 traded commodities, including food and agricultural items, metals, energy, and fertilizers. The World Bank’s estimates of commodity prices from 2022 to 2024, published in October 2021, provided the basis for the first simulation, dubbed the ‘Baseline scenario’. Based on the projections estimated before the crisis, we simulated effects on growth, employment, poverty, and food consumption levels. The second simulation, dubbed the ‘Ukraine scenario’ relies on commodity price projections for 2022–2024 that were released by the World Bank in April 2022. This price series reflects the fluctuations in the global market and we assessed their impacts on Nigeria’s economy over the next three years, especially in terms of job growth, poverty reduction, and food security. We deployed a Computable General Equilibrium (CGE) model and a Micro-Simulation (MS) model, linked in a top-down fashion to project the growth, employment, and poverty impacts for Nigeria under the two series of prices. We then compared the socioeconomic outcomes under the Ukraine crisis to those that were expected to occur in the absence of the crisis. The differences between the two scenarios are considered to be the result of the global market disruptions induced by the Russia-Ukraine crisis.

2. Country Exposure and Impacts on Commodity Trade

The economic effects of the Russia-Ukraine conflict on the world market are being transmitted through imported and exported goods. The relative price variations for each of the 46 internationally traded commodities and their weight in a country’s total import and export basket will determine the final effects of this crisis on different countries.

- *Country Trade Patterns*

Tables 1 and 2 show the percentage changes in Nigeria’s main exports and imports, as well as their prices under the Baseline and the Ukraine scenarios. Nigeria’s exports are dominated by petroleum products. Indeed, 86 percent of Nigeria’s total exports solely consist of petroleum oils (crude and non-crude), and petroleum gases. Changes in the prices of these commodities therefore have a significant impact on the country’s economy. Table 1 shows the sharp increase in the international prices of petroleum oil and gases following the onset of the crisis, relative to the baseline scenario. International prices of petroleum oils are expected to remain high in 2024 despite the relatively small price declines expected in 2023 and 2024.

Table 1 : Changes in International Prices of Nigeria’s Top Export Commodities (%)

Commodities	Share Total Exports	Baseline Scenario			Ukraine Scenario		
		2022	2023	2024	2022	2023	2024
Petroleum oils, crude	70.6	5.7	-12.2	0.6	42.0	-8.0	-13.0
Petroleum oils, non-crude	1.5	5.7	-12.2	0.6	42.0	-8.0	-13.0
Petroleum gases	13.7	5.7	-12.2	0.6	42.0	-8.0	-13.0
Cocoa beans	1.1	2.1	2.0	1.2	0.8	2.0	1.2

Source: Computations from Commodity Market Outlook (World Bank, 2022) and Africa Agriculture Trade Monitor – AATM (AKADEMIYA2063 and International Food Policy Research Institute (IFPRI), 2022).

In contrast to the export basket, four commodities represent less than 20 percent of Nigeria’s total imports (Table 2). Petroleum oils and wheat formed 12.6 and 4.0 percent, respectively, of total imports in 2020. The two commodities are likely to drive import prices higher in 2022. International prices of these two commodities are expected to remain high throughout 2024, as the price declines projected for 2023 and 2024 are relatively small.

Table 2: Changes in International Prices of Nigeria’s Top Import Commodities (%)

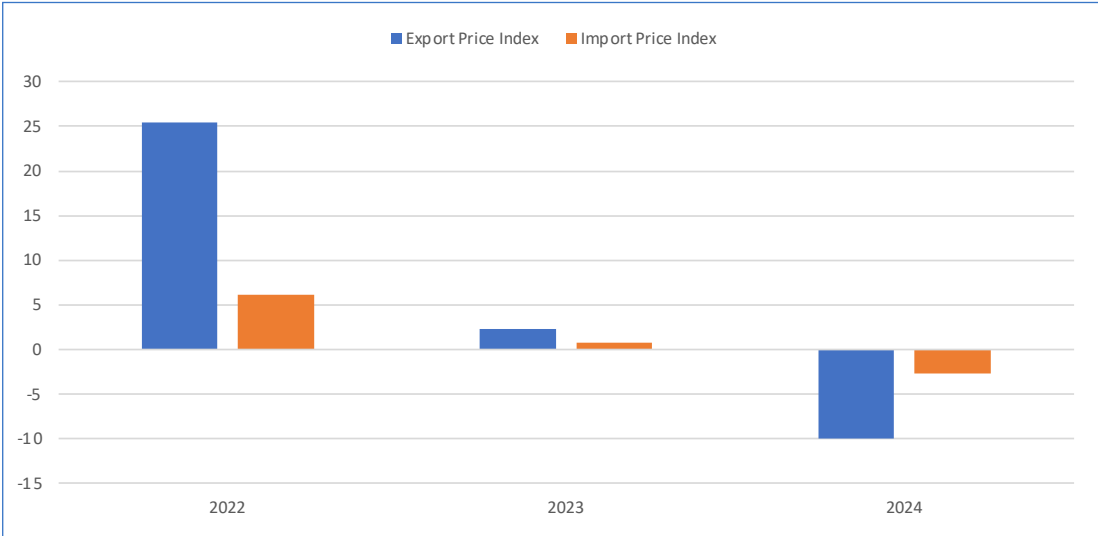
Commodities	Share Total Imports	Baseline Scenario			Ukraine Scenario		
		2022	2023	2024	2022	2023	2024
Petroleum oils, non-crude	12.6	5.7	-12.2	0.6	42.0	-8.0	-13.0
Wheat and meslin	4.0	-2.0	-2.0	0.8	42.9	-15.6	-2.6
Fish	1.5	7.1	-3.3	0.8	5.8	2.1	1.6
Cane or beet sugar	1.2	-5.1	2.7	0.8	0.0	-2.6	0.0

Source: Computations from Commodity Market Outlook (World Bank, 2022) and African Agricultural Trade Monitoring (A2063 and IFPRI, 2022).

- *Terms of Trade (ToT) Shocks*

Figure 2 shows Nigeria’s import and export price indices. Both import and export price indices increase in 2022 following the start of the Russia-Ukraine conflict, but the export price index increases more than the import price index. This indicates an improvement in the country’s Terms of Trade (ToT) which will continue to improve slightly in 2023 and then decline in 2024.

Figure 2: Import and Export Price Indices for Nigeria, Change in Percentage Points, Ukraine vs. Baseline Scenarios

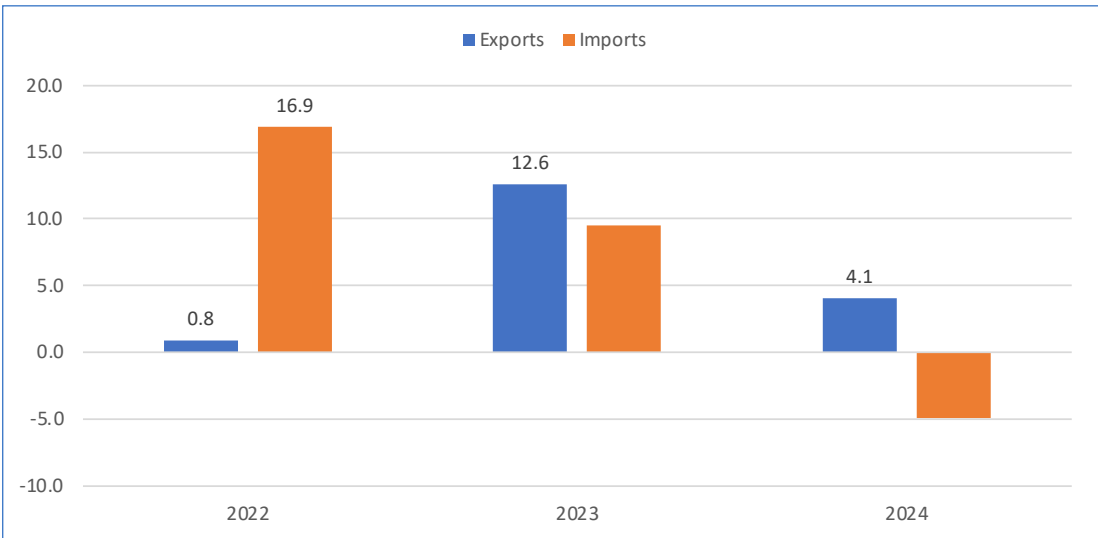


Source: Compilation from simulation results (2022).

- *Commodity Trade Effects*

Figure 3 shows the changes in import and export volumes. Imports are projected to increase significantly in 2022 because of the positive ToT effects. Despite the rising international prices of petroleum oils, exports are projected to increase slightly in 2022 because of the appreciating exchange rate and supply capacity constraints. Exports pick up in 2023 and 2024 with positive ToT and output adjustments. Import volumes continue to increase in 2023 before declining in 2024 because of negative ToT shocks.

Figure 3: Import and Export Volumes for Nigeria, Change in Percentage Points, Ukraine vs. Baseline Scenarios



Source: Compilation from simulation results (2022).

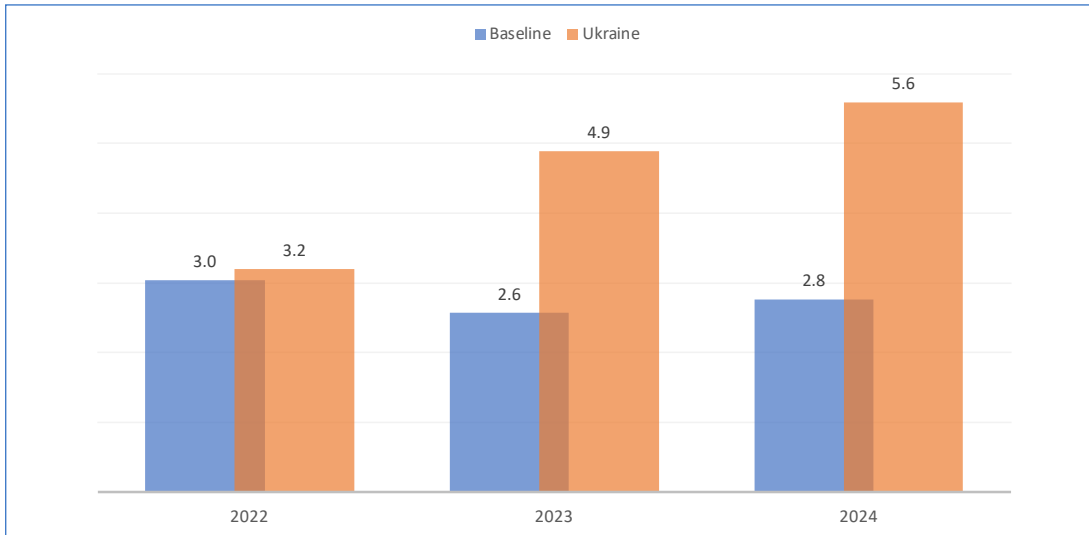
3. Growth and Employment Effects

Nigeria’s economy is impacted by changes in international trade prices and quantities. The impacts are dependent on the rise in import prices relative to export prices. Higher import prices in comparison to export prices imply negative effects on the economy.

- *Growth Effects*

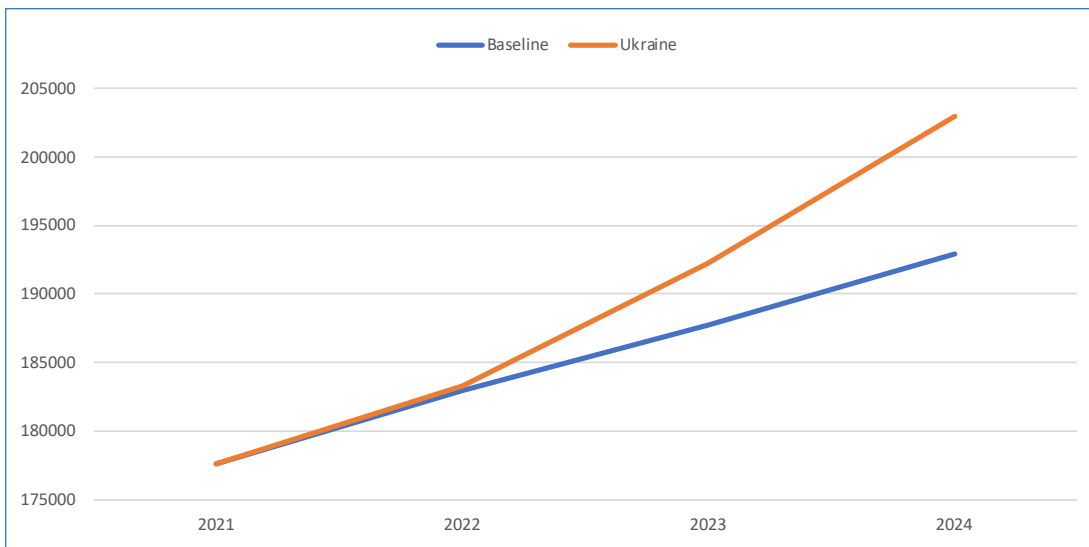
Nigeria's economy is projected to grow faster over the 2022-2024 period in comparison to the Baseline scenario, because of the positive ToT shock (Figure 4). Economic growth will accelerate into 2024 due to capital accumulation (Figure 5). The increase in the international price of petroleum oils, Nigeria's main export commodity, will have a positive impact on the economy.

Figure 4: Nigeria GDP, Annual Percentage Change



Source: Compilation from simulation results (2022).

Figure 5: Nigeria GDP Level, Billion Naira

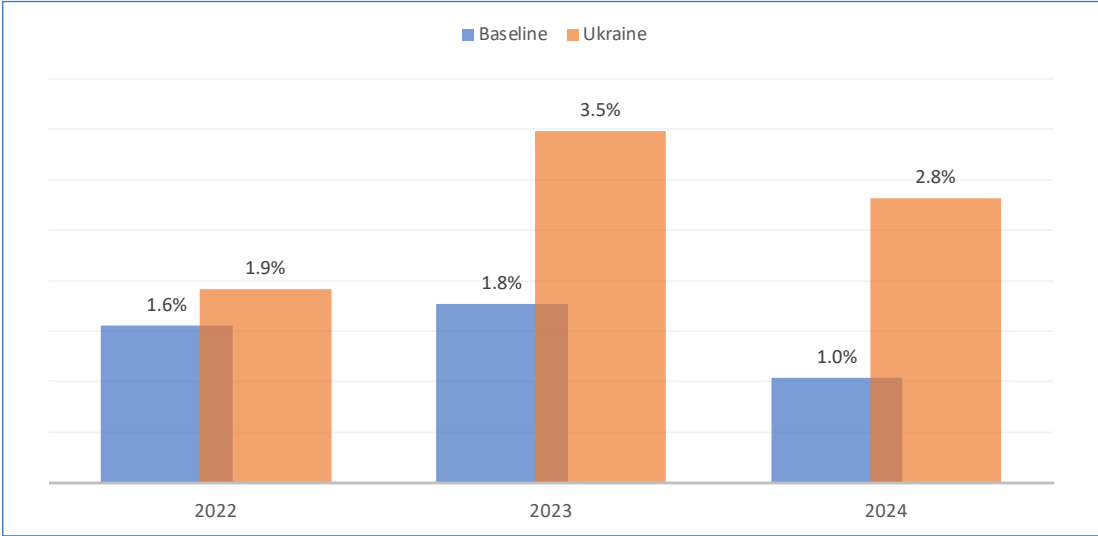


Source: Compilation from simulation results (2022).

- *Employment Effects*

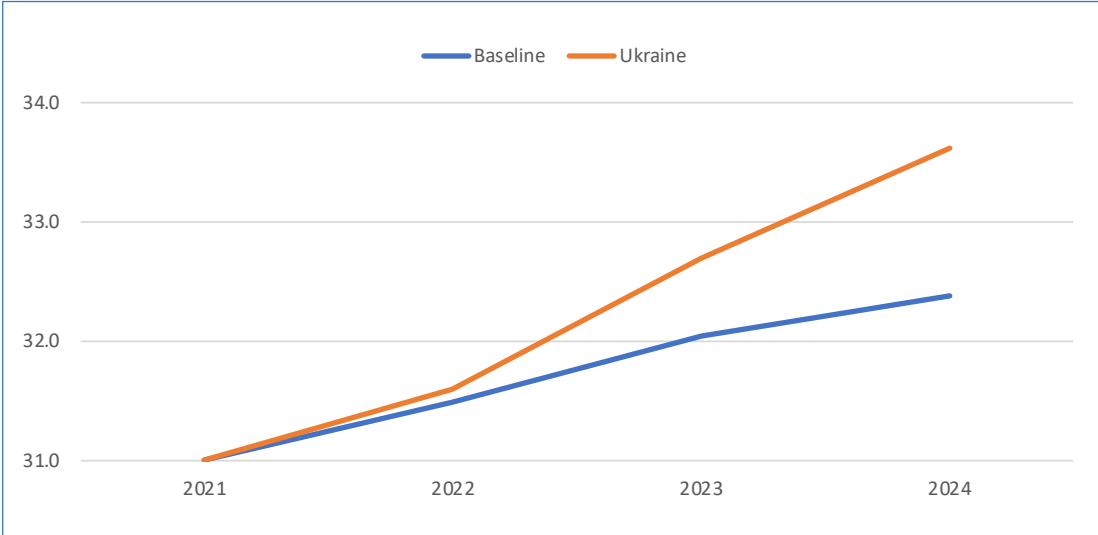
The accelerated GDP growth rate during the 2022-2024 period under the Ukraine scenario translates into a higher employment growth rate in comparison to the Baseline scenario (Figure 6). Employment creation is expected to increase by 1.7 percentage points in 2023 and 2024 under the Ukraine scenario. Employment will also expand faster in the Ukraine scenario than the initially projected growth trajectory (Figure 7).

Figure 6: Nigeria Employment, Annual Percentage Change



Source: Compilation from simulation results (2022).

Figure 7: Nigeria Employment Level, Millions of Individuals



Source: Compilation from simulation results (2022).

4. Poverty and Food Security Effects

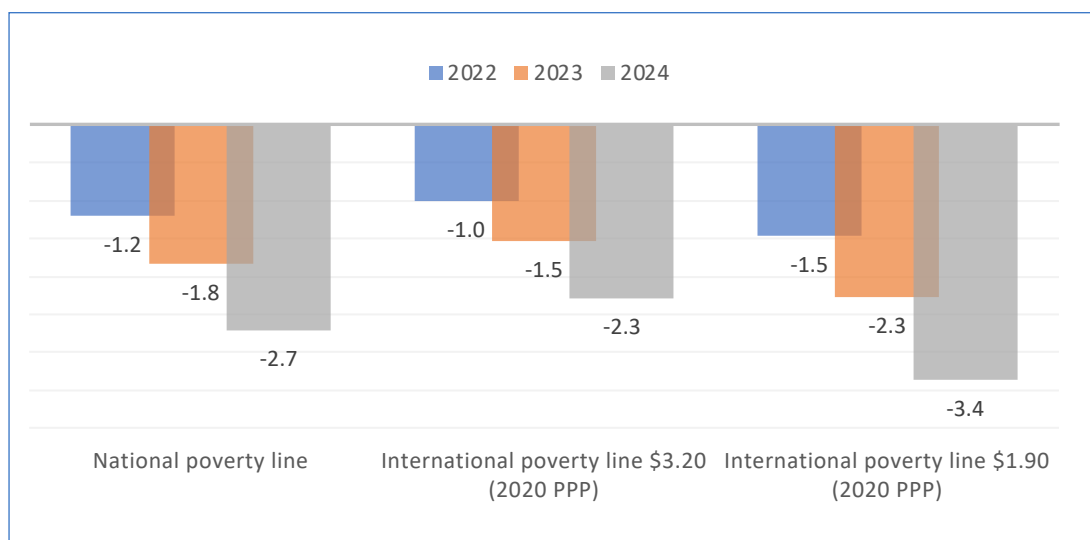
The analysis uses three different poverty lines to measure the effects on poverty: Nigeria’s national poverty line; and two international poverty lines at US\$ 3.20 daily and US\$ 1.90 daily, both estimated at 2020 purchasing power parity (PPP). As it uses the level of food consumption by households as a measurement, the food security outcome captures the availability and accessibility domains of food security. The increased employment and income brought on by the rising international commodity prices of Nigeria’s exports is countered by the rising cost of living which has a negative effect on the purchasing power of households. Food affordability is impacted by rising international prices along with local price increases.

- *Poverty Effects*

Figure 8 depicts the changes in the poverty headcount indices arising from the shocks to global commodity trade and markets. The increase in the international prices of petroleum products, Nigeria’s main commodity export, and the related economic and employment growth prospects are projected to reduce poverty in the country. Poverty is estimated to

decline faster under the Ukraine scenario compared to the Baseline scenario regardless of the poverty line used. The poverty headcount ratio declines between 1.0 and 1.5 percent in 2022. The decline accelerates in 2023 by 1.5 to 2.3 percent, and further in 2024 by 2.3 and 3.4 percent.

Figure 8: Change in Nigeria's Headcount Poverty Index, Ukraine vs. Baseline scenarios (%)



Source: Compilation from simulation results (2022).

- Inflation and Food Security Effects**

The increase in global commodity prices is one factor driving food and general inflation. The effects of this type of shock on an economy depend on the composition of its external trade and the structure of global price variations. Changes in food prices (Table 3) and variations in household income (Table 4) can be used to estimate the size of impacts (Table 5). Higher inflationary impacts are projected for food products over the 2022-2024 period. The effect is higher among households in rural areas than their urban counterparts. However, rising household income is estimated to be higher than rising prices for food and general items, contributing to increased purchasing power and consumption, i.e., of food and non-food products. While increased food consumption is projected for both urban and rural households, non-food consumption is expected to be more pronounced among urban households than those in rural areas.

Table 3: Consumer Price Index in Nigeria, Percentage Variation, Ukraine vs. Baseline Scenarios

	2022		2023		2024		Average 2022-24	
	All	Food	All	Food	All	Food	All	Food
All	-0.3	0.5	0.3	0.7	1.1	2.5	0.4	1.2
Rural	0.1	0.9	0.5	0.8	1.6	2.7	0.7	1.5
Urban	-0.7	-0.2	0.1	0.4	0.6	2.1	0.0	0.7

Source: Compilation from simulation results (2022).

Table 4: Household Income in Nigeria, Percentage Variation, Ukraine vs. Baseline Scenarios

	2022	2023	2024	Average 2022-24
All	1.4	3.2	6.2	3.6
Rural	1.6	3.6	6.1	3.8
Urban	1.2	2.7	6.2	3.4

Source: Compilation from simulation results (2022).

Table 5: Household Consumption in Nigeria, Percentage Variation, Ukraine vs. Baseline Scenarios

	2022		2023		2024		Average 2022-24	
	All	Food	All	Food	All	Food	All	Food
All	1.6	0.6	2.5	1.5	4.4	2.0	2.8	1.4
Rural	1.5	0.6	0.1	1.6	0.6	2.0	0.0	1.4
Urban	1.6	0.8	2.2	1.3	4.5	1.9	2.8	1.3

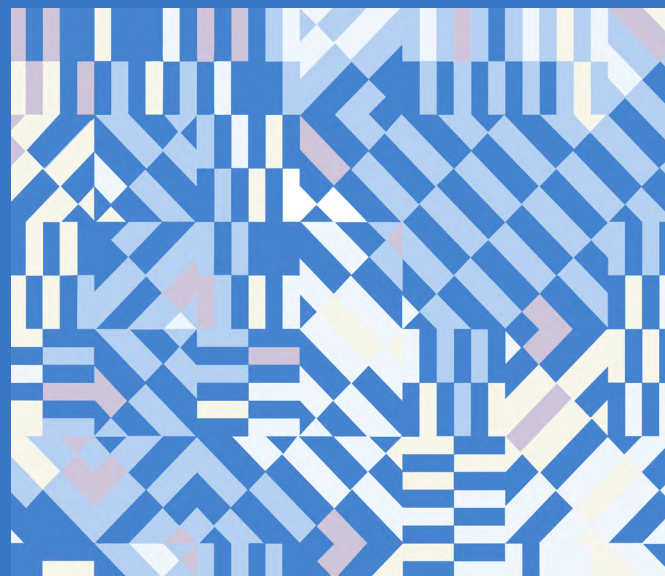
Source: Compilation from simulation results (2022)





6. Conclusion

The war between Russia and Ukraine is projected to bring about positive outcomes for Nigeria’s economy. The increase in the international price of petroleum oils (crude and non-crude), which are Nigeria’s main export commodity, accelerates economic growth and job creation compared to the Baseline scenario, i.e., in the absence of trade and market disruptions induced by the war. Food insecurity and poverty are lowered under the Ukraine scenario as economic growth and job creation accelerate. Households in both rural and urban areas are projected to benefit from the crisis.

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