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Exposure to Global Commodity Trade and Market Disruptions: Impacts on Growth, Poverty, and Food Security in Ghana

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1. Introduction

Trade and markets have been disrupted by the Russia-Ukraine conflict, but the extent of disruption in a specific country's economy depends on its international trading habits. This report summarizes the impact of the commodity price shock caused by the Ukraine crisis on the Ghanaian economy between 2022 and 2024.

The national economy of a given country can be impacted by the global market in a number of ways, including the rate of economic growth, the creation of jobs, the poverty rate, the availability of food, etc.

International trade prices, or the export and import prices of commodities, are the first channel through which the global market disruption is transmitted to the national economy. The weight of the commodity in the export or import basket determines the shock's intensity. The difference between export and import prices, or the Terms of Trade (ToT), is used to gauge the magnitude of impact. When import prices increase relative to export prices, the capacity of the national economy to recover the cost of its imports decreases; i.e., its ToT deteriorates. On the other hand, a higher export price-to-import price ratio enhances ToT, causes adjustments to the balance of payments, and disrupts the exchange rate.

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The real exchange rate, which measures the discrepancy between export and import commodity prices, serves as a second channel of transmission. This discrepancy has an effect on domestic demand for raw materials and labor for manufacturing processes. As a result, output can increase or decrease, affecting growth, poverty reduction, income generation, and food security.

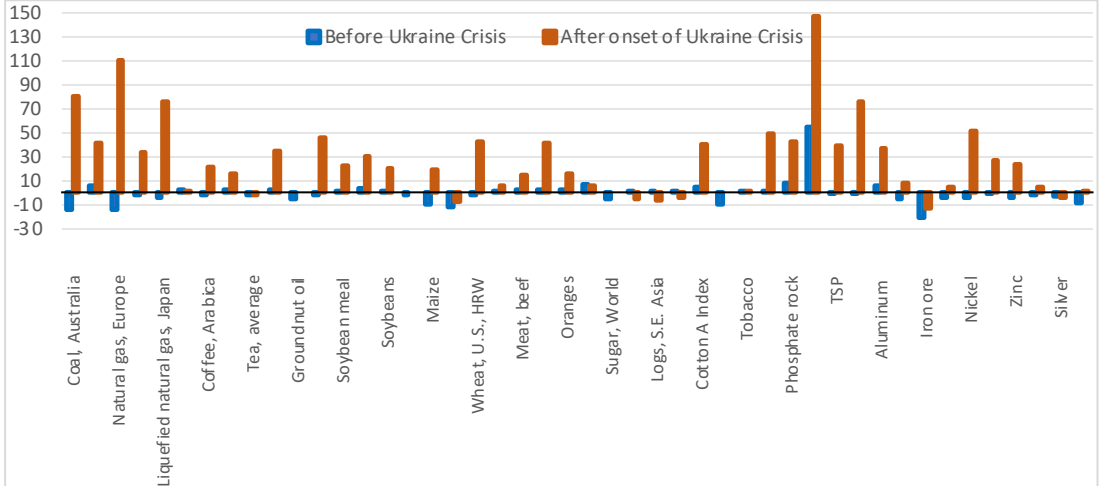
Another way that global market disruption can affect a country’s economy is by changing the domestic prices of domestic goods such as fertilizers, wheat products, oilseeds, and vegetable oils. Although the Ukraine crisis has a smaller impact through this channel than through the previous two, there is still an impact on specific economic actors, such as rural households.

The difference between the rate of growth, poverty, and food insecurity during the war (2022) and before the beginning of the war is used here to measure the impact of the Russia-Ukraine war on trade and markets in Ghana.

2. Global commodity price shocks under the Ukraine crisis

Figure 1 below shows changes in price estimates for commodities in 2022 before the war (October 2021) and after the start of the war (April 2022).

Figure 1: Projected changes in global commodity prices before and after the onset of the Ukraine crisis (%)



Source: World Bank, Commodity Markets Outlook. Retrieved in April 2022.
Note: World Bank forecasts released in October 2021 and April 2022 (in percent).

Guided by the above price changes (shocks), in this study, we conduct two simulations: one representing business as usual and the other representing the “Ukraine crisis” scenario. The situation in the business-as-usual scenario is one without a crisis, and the change in the trajectory of the Ghanaian economy is based on the assumption of the World Bank’s projection of commodity prices for 2022–2024, which was released in October 2021. The Ukraine crisis scenario simulates market and trade disruptions caused by the Russia-Ukraine conflict and their effects on Ghana’s economy. Both scenarios evaluate the simulation’s effects on poverty, food security, employment, and economic growth. Relevant food and agriculture, metals, energy, and fertilizer commodities are the subjects of the simulations using a Computable General Equilibrium (CGE) model.

3. Country exposure and impacts on commodity trade

The main channel through which the Ukraine crisis affects the Ghanaian national economy is through international trade, including imports and exports. The relative price changes of the 46 commodities and the proportion of each commodity in the total imports or exports of the nation determine the size of the impact on an economy.

- *Country trading patterns and Terms of Trade shocks*

Tables 1 and 2 show the weight of the main commodities imported and exported, as well as changes in the exchange rates. Similar to the majority of other African nations south of the Sahara, Ghana primarily exports mineral and agricultural goods. Additionally, only three commodities – gold, petroleum oil, and cocoa – account for 80 percent of all exports. With the exception of gold, whose price has fallen compared to the baseline or business-as-usual scenario, global commodity prices increased at the onset of the Russia-Ukraine crisis. However, gold – which was Ghana’s main export commodity in 2020 – did not record the same level of price increase as petroleum oil in 2022. Furthermore, gold prices are projected to decline in 2023 and 2024, while petroleum prices remain high despite the small decline projected for 2023 and 2024.

Table 1: International Prices of Top Export Commodities of Ghana (Percentage Annual Changes)

Commodities	Share Total Exports	Baseline Scenario			Ukraine Scenario		
		2022	2023	2024	2022	2023	2024
Petroleum oils, crude	21.8	5.7	-12.2	0.6	42.0	-8.0	-13.0
Cocoa beans	9.8	2.1	2.0	1.2	0.8	2.0	1.2
Cocoa paste	3.1	2.1	2.0	1.2	0.8	2.0	1.2
Cocoa butter	2.4	2.1	2.0	1.2	0.8	2.0	1.2
Gold	43.3	-2.5	-1.1	-0.6	4.4	-9.6	-2.9

Source: World Bank, Commodity Markets Outlook. AKADEMIYA2063 and IFPRI, Africa Agriculture Trade Monitor Database. Retrieved in April 2022.

In contrast, the nine main imported primary commodities account for at least 10 percent of total imports (Table 2); with the exception of rice and iron products, prices of primary commodities increase. The increase is significant for petroleum oil, palm oil, wheat, and poultry meat. Import prices are projected to decline in 2023 and 2024.

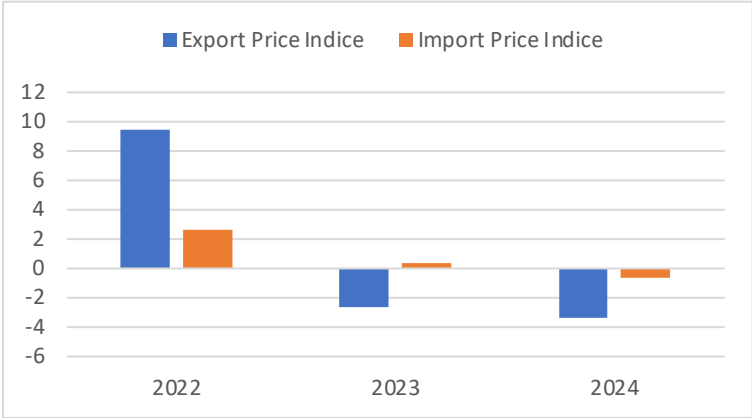
Table 2: International Prices of Top Import Commodities of Ghana (Percentage Annual Changes)

Commodities	Share Total Imports	Baseline Scenario			Ukraine Scenario		
		2022	2023	2024	2022	2023	2024
Petroleum oils, not crude	4.1	5.7	-12.2	0.6	42.0	-8.0	-13.0
Palm oil	1.2	-2.3	-2.3	0.4	45.9	-15.2	-2.0
Rice	2.4	-12.1	2.5	2.0	-7.2	-2.4	1.9
Wheat and meslin	1.2	-2.0	-2.0	0.8	42.9	-15.6	-2.6
Meat and edible offal of poultry	1.6	2.3	-2.2	0.7	41.6	-6.3	-0.7
Fish, frozen	1.1	7.1	-3.3	0.8	5.8	2.1	1.6
Iron or non-alloy steel	1.7	-21.2	-7.7	-16.7	-13.6	-25.0	-14.3

Source: World Bank, Commodity Markets Outlook. AKADEMIYA2063 and IFPRI, Africa Agricultural Trade Monitoring Database. Retrieved in April 2022.

The projected values for export and import prices are shown in Figure 2. In 2022, it is anticipated that export prices will rise by 9 percent while import prices rise by 2 percent. The terms of trade (ToT) are anticipated to improve for 2022 as a result of the projected increase in export prices exceeding the projected increase in import prices. However, the ToT will worsen in 2023 and 2024 as a result of export prices falling more than import prices. The collapse of the ToT is driven by the decline in the price of gold and petroleum.

Figure 2: Import and Export Price Indices of Ghana, Percentage Point Changes between Ukraine and Baseline Scenarios

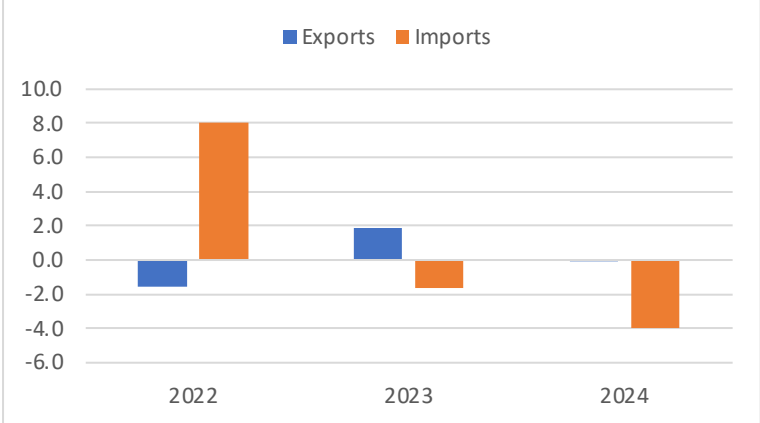


Source: World Bank, Commodity Markets Outlook. AKADEMIYA2063 and IFPRI, Africa Agriculture Trade Monitor Database. Retrieved in April 2022.

- *Commodity trade effects*

Ghana’s economy is projected to grow in 2022 with increased export revenues. However, the inflationary effect is expected to lower local production and supply, and thus exports, in 2022. Exports are projected to increase in 2023 because of the delayed growth effects of export revenue increases in 2022. In addition to the decline in export prices and revenues in 2023 and 2024, local production and supply will substitute for more expensive imports, contributing to reduced imports in 2023 and 2024.

Figure 3: Import and Export Volumes for Ghana, Percentage Point Change between Ukraine and Baseline Scenarios

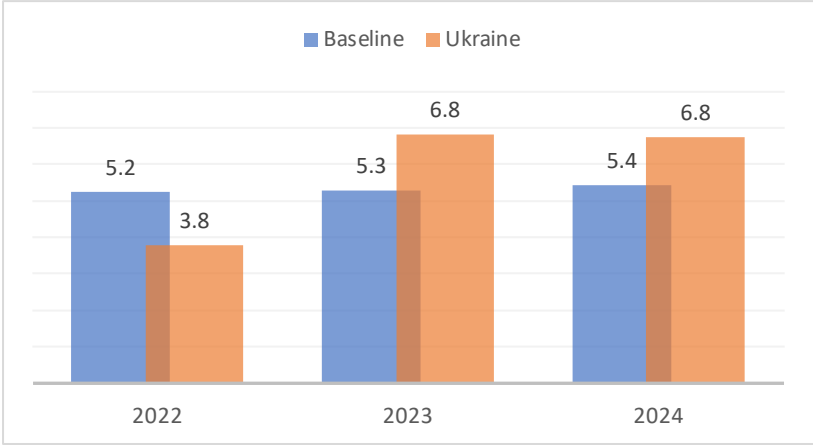


Source: Compilation from simulation results. Retrieved in April 2022.

4. Growth and employment effects

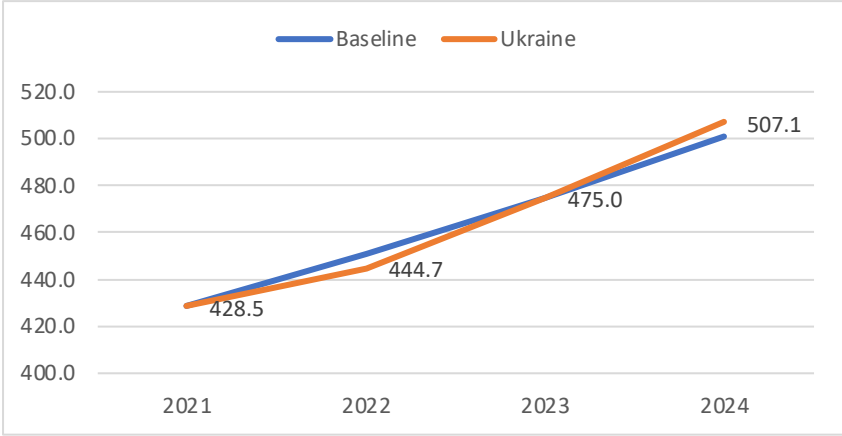
Figure 4 shows the annual change of the Ghanaian GDP in baseline and Ukraine scenarios. The Russia-Ukraine war will accelerate growth compared to the baseline scenario in 2023 and 2024. In 2022, GDP growth decelerates in comparison to the baseline because of the inflationary pressure. However, the increase in export prices and revenues in 2022 increase investment and growth in 2023 and 2024. Thus, Ghana is projected to enjoy a delayed positive impact of the Russia-Ukraine crisis.

Figure 4: GDP Growth for Ghana, Percentage Annual Changes



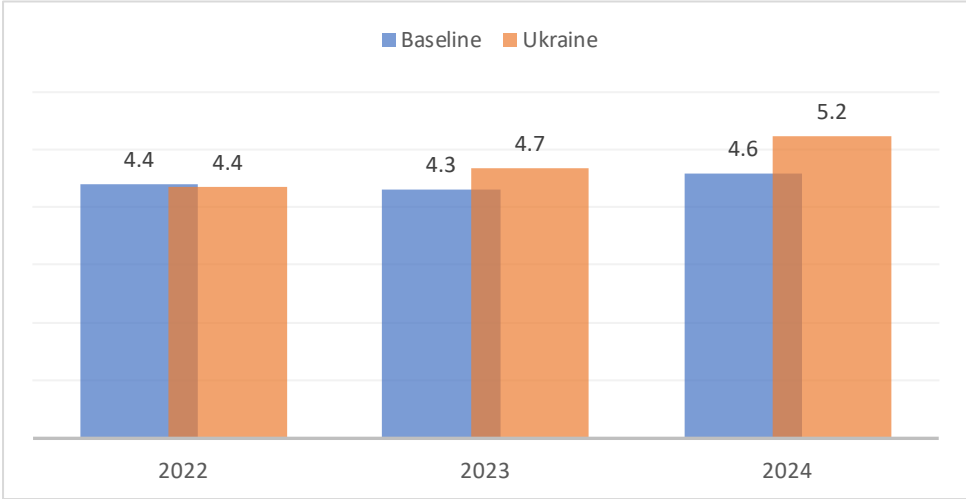
As shown in Figure 5, GDP in 2024 is anticipated to increase to 507.1 billion Cedi compared to 500.6 billion Cedi under the baseline scenario, following a higher growth trajectory than the baseline case. Consequently, it is anticipated that the Ghanaian economy will benefit more from the Russia-Ukraine crisis as an additional 6.5 billion Cedi is added to the economy between 2022 and 2024.

Figure 5: GDP levels in Ghana in billion Cedi



A higher employment growth rate compared to the baseline is anticipated in 2023 and 2024 (Figure 6). Employment levels are anticipated to increase between 2023 and 2024.

Figure 6: Employment Growth Rate in Ghana, Percentage Annual Changes



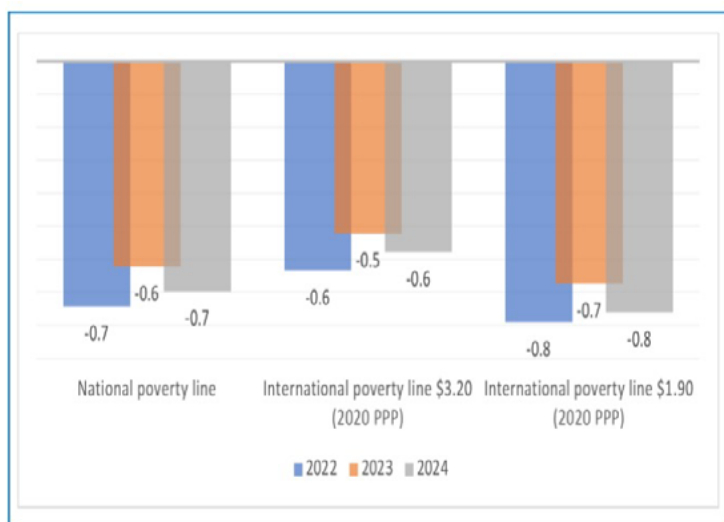
5. Poverty and inequality effects

The Russia-Ukraine war has caused global commodity and market disruption, which has had an impact on employment and growth and, in turn, on income levels, income distribution, and the overall cost of living. These effects will have impacts on household consumption and demand, which in turn affects poverty levels and food security. This section examines the effects of poverty through changes in the poverty headcount index using three different poverty thresholds: the nation's own national poverty threshold and two international poverty thresholds of US\$ 3.20 and US\$ 1.90 per day, respectively, both measured at 2020 purchasing power parity (PPP). The availability and accessibility domain of food security uses the level of food consumption by households as a measurement, and this allows it to measure the outcome of food security. These micro-level effects are captured using a microsimulation model linked to the CGE model in a top-down fashion.

- *Income and poverty effects*

From 2022 to 2024, it is anticipated that the market's response to the Ukraine crisis will result in lower poverty rates (Figure 7). Of the three poverty lines, the US\$ 1.90 line has the greatest impact on the number of people living in poverty. This is the outcome of the ToT improving in 2022 and the related GDP and employment expansion in 2023 and 2024.

Figure 7: Change in Headcount Poverty Index Compared to baseline for Ghana (Percent)



- *Inflation and food security effects*

The increase in inflation rate and the price of food. The composition of the external trade commodity mix and the structure of global price changes both influence how severe this impact will be. Changes in household income, the food price index, and, ultimately, the price of food all have an impact on food security.

Ghana is anticipated to experience moderate inflation from 2022 to 2024 across the board, with a particularly high impact on food products (Table 3). In fact, a slight deflation of all products is predicted for the Ghanaian economy in 2022, followed by a slight increase in inflation in 2023 and 2024. However, it is anticipated that the price index for food products will increase by 2.3 percentage points in comparison to the baseline, with a higher level in urban areas (2.5 percentage points).

It is anticipated that household consumption will remain stable while remaining different in rural and urban areas (Table 5). Compared to urban areas, household consumption in rural areas is expected to decline by -0.9 percentage points in 2022. In 2024, it would have increased gradually by 0.3 percentage points in rural areas and 0.2 percentage points in urban areas.

All households benefit from the increase in export prices and the positive impact on employment, particularly urban households. Rural income declined by 0.9 percentage points in 2022 because high import prices imply a higher cost for fertilizers and other agricultural inputs. A higher cost of agricultural inputs reduces agricultural activities and has a negative impact on the income of rural households (Table 4). However, beginning in 2023, economic growth and the related output price effects contribute to increased rural income, gradually reaching 2.3 percentage points in 2024. Rural income increases throughout 2022 and 2024.

Household consumption increases for all products, particularly in urban areas. However, the effect on food consumption is limited because of the inflationary pressure on food products.

Table 3: Consumer Price Index in Ghana, Percentage Variation between Ukraine and Baseline Scenarios

	2022		2023		2024		Average 2022-24	
	All	Food	All	Food	All	Food	All	Food
All	-0.5	2.3	0.3	1.9	1.2	2.7	0.3	2.3
Rural	-0.1	2.1	0.5	1.6	1.4	2.5	0.6	2.1
Urban	-0.8	2.5	0.3	2.1	1.1	2.8	0.2	2.5

Table 4: Household Revenue in Ghana, Percentage Variation between Ukraine and Baseline Scenarios

	2022	2023	2024	Average 2022-24
All	0.8	1.6	2.3	1.6
Rural	-0.9	0.9	2.3	0.9
Urban	1.5	1.9	2.3	1.9

Table 5: Household Consumption in Ghana, Percentage Variation between Ukraine and Baseline Scenarios

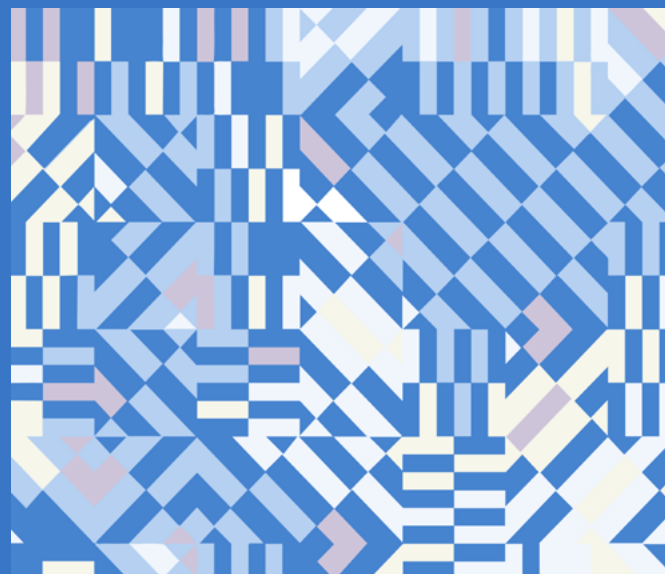
	2022		2023		2024		Average 2022-24	
	All	Food	All	Food	All	Food	All	Food
All	1.4	-0.4	1.1	0.0	1.2	0.2	1.2	0.0
Rural	0.0	-0.9	0.3	0.0	1.1	0.3	0.2	-0.2
Urban	2.1	-0.1	1.3	0.1	1.2	0.2	1.5	0.1





6. Conclusion

The Russia-Ukraine war is anticipated to cause Ghana's ToT to improve substantially in 2022. Inflationary pressure reduces the GDP growth perspective in 2022, but increases in export prices enable the economy to gradually accelerate and surpass the baseline trajectory in 2023 and 2024. The economic growth anticipated for 2023 and 2024 will generate higher employment compared to the baseline. Poverty declines throughout 2022 to 2024 but the food security effect is limited.

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