



Quarterly Bulletin on Food Price Dynamics, Inflation, and the Food Security Situation in Sudan: 2021Q1- 2022Q4¹

Highlights:

- Average international prices of wheat, sorghum, rice, and sugar slightly increased in Q4 of 2022 compared to Q3. Import parity prices decreased during the same period because of the reduction in the freight cost to Port Sudan.
- Annual inflation² decreased from three-digit inflation (260.6 percent) in 2022Q1 to 92.6 percent in 2022Q4.
- Quarterly changes in the price of non-volatile commodities (core inflation)³ increased slightly in Q4 compared to Q3 of 2022 due to the increase in the housing rents, education, communication, and processed food prices.
- Retail prices of food commodities were relatively stable during the last two quarters of 2022 compared to the previous quarters of 2021 and 2022.
- Nominal wholesale prices of grains in Khartoum State increased gradually from 2021Q2 to reach a peak in 2022Q3, before dropping in real and nominal terms in 2022Q4.
- Although the national average of causal labor daily wage was increasing over time nominally (2021Q2–2022Q4), it was decreasing in real terms in 2022Q4.
- Poorer urban and rural households (bottom 40 percent) were more affected by the changes in the prices of food and beverage commodities during 2022Q4 than richer households (top 60 percent).
- Blue Nile, Darfur, and Eastern regions have the highest food insecure population classified in crisis or emergency.

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² Annual inflation rate for a quarter is the 4-quarter inflation rate ending in that quarter. For instance, annual inflation rate of Q1 of 2022, is the percentage change in the average CPI from Q1 of 2021 to Q1 of 2022.

³ Core inflation is the inflation rate after excluding volatile commodities such as non-processed food and fuel commodities from the headline inflation basket to filter out transitory movements in headline inflation (Ball et al., 2021).

Average international and import parity prices of wheat, sorghum, and rice slightly increased in 2022Q4 compared to 2022Q3. Although exchange rate devaluated by 1 percent, during the same period, import parity prices of wheat decreased in 2022Q4 compared to 2022Q3.

The US (Gulf) wheat increased by 5.4 percent in 2022Q4 compared to 2022Q3 (from 0.40 to 0.42 USD/kg), while sorghum US (Gulf) and broken Indian rice, increased by 9.7 and 7.4 percent, respectively (Figure 1A). Import parity price of wheat decreased by 8 percent, in 2022Q4 compared to 2022Q3 (from 168 to 155 SDG/kg). The reduction of import parity prices was mainly due to the decrease in the cost of shipping to Port Sudan by 9 percent. Data from the IGC Grains and Oilseeds Freight Index (GOFI) shows that the USA sub index of freight cost decreased from 138 percent, in 2022Q3 to 125 percent, in 2022Q4.

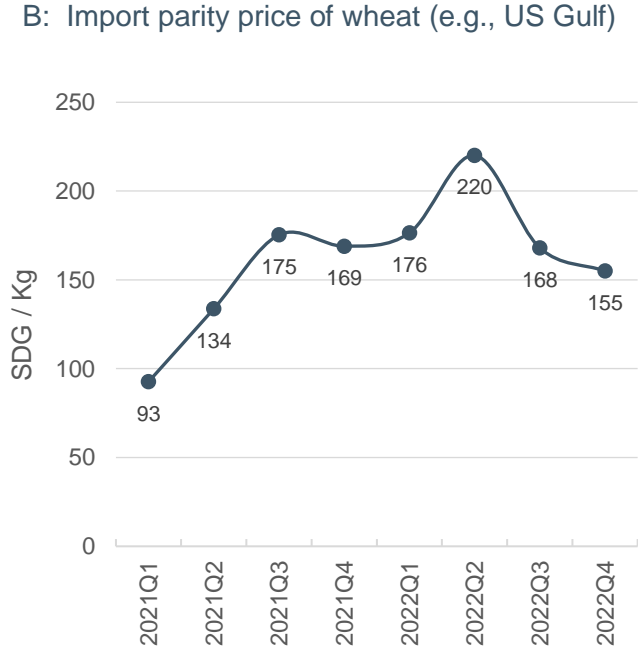
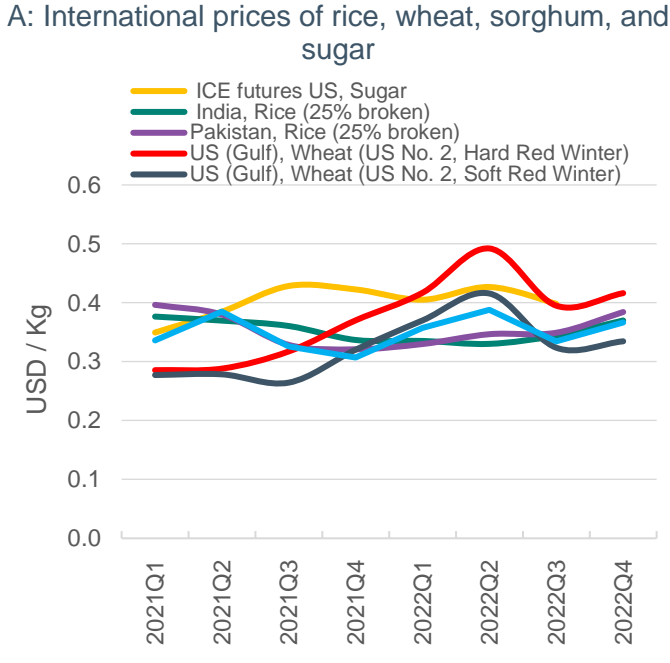


Figure 1.International and import parity price of selected commodities.

Note: Import parity price include the cost of US Gulf soft wheat in SGD, freight cost, and transport margins. However, there are other port logistical costs (ex: land rent fees) and states tax that are not included.

Source: FAO (2022A), CBoS (2022), and author's calculations.

Annual inflation decreased from three-digit inflation during Q1-Q3 of 2022 to 92.6 percent in Q4.

Average CPI increased at a declining rate from Q1 of 2021 to Q4 of 2022 (Figure 2B). Hence, annual, and quarterly inflations fell consistently during 2022. While annual inflation decreased from 116.1 to 92.6 percent in Q4 of 2022, quarterly inflation decreased from 14.5 to 10.2 percent during the same period. The declining pattern of the inflation rate during 2022 was accompanied by a relative stabilization in the exchange rate during the same period (Figure 2B).

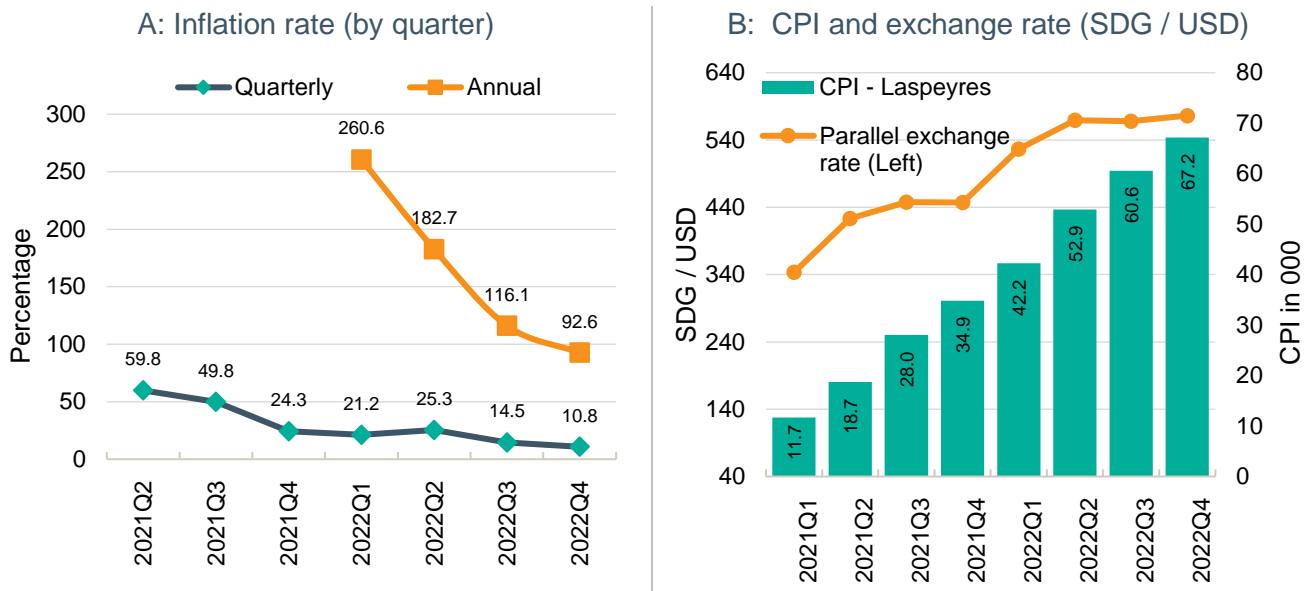


Figure 2. Quarterly inflation, CPI, and parallel exchange rate (SDG / USD)

Source: CBS (2022), CBoS (2022), and author's calculations.

Quarterly changes in prices of non-volatile commodities (core inflation) increased slightly in 2022Q4 compared to 2022Q3 due to the increase in housing rents, education, communication, and processed food prices.

CPI of education and utilities (housing, water, electricity, gas, and other fuels) increased by 90.6 and 72.9 percent, respectively in 2022Q4, compared to 2022Q3. The increase in the education and utilities costs was partially due to the increase in the international prices of fuels, especially gas in 2022Q4 because of the Russia and Ukraine war's ramifications (IEA, 2022). Moreover, the increase in taxes and public service fees by the government, especially after the implementation of a new wage structure for civil servants in April 2022 also contributed to that (Alyoumaltali Sudan News, 2022).

Quarterly inflation (headline) exceeded quarterly inflation of non-volatile commodities (core inflation) in all the quarters from 2021 to 2022 except for Q1 and Q2 of 2022 (Figure 3). This is explained by the lower contribution of the utilities group (housing, water, electricity, gas, and other fuel) to the quarterly inflation in these two quarters (Figure 4).

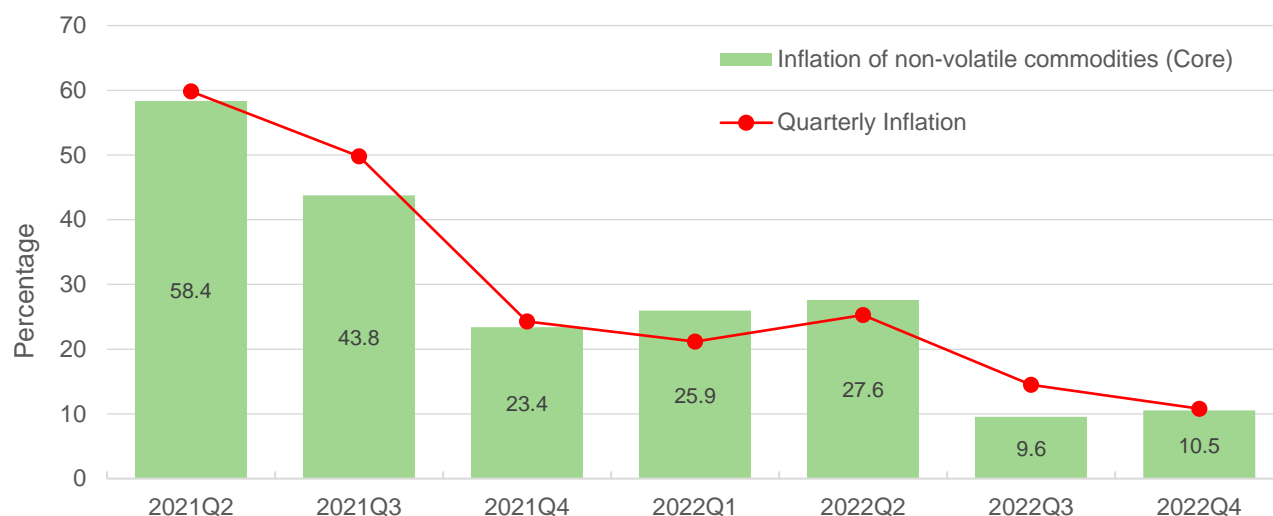


Figure 3. Quarterly inflation and inflation of non-volatile commodities (Core)⁴

Source: CBS (2022), CBoS (2022), and author's calculations.

Utilities contributed 53.5 percent to the overall quarterly inflation in 2022Q4, followed by the transport group (20.4 percent).

The contribution of the utilities group (housing, water, electricity, gas, and other fuel) to quarterly inflation increased from 23.8 in 2022Q3 to 53.5 percent in 2022Q4, while food and drinks contribution decreased from 34.3 to 12.3 percent (Figure 4).

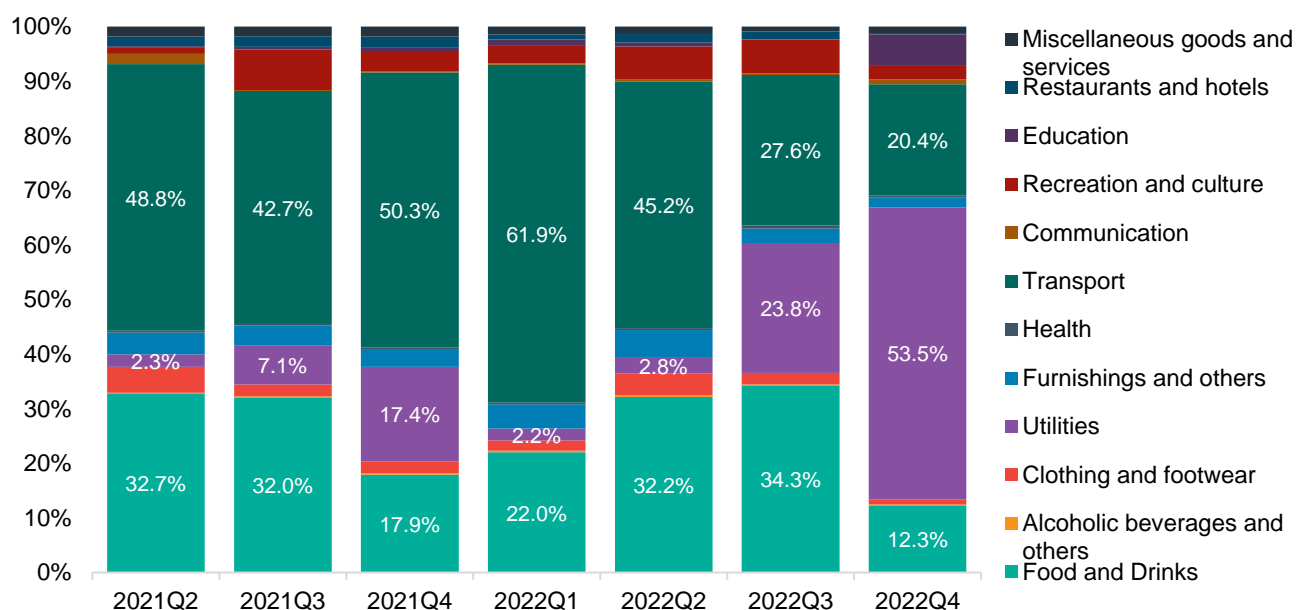


Figure 4. Relative contributions of commodity groups to quarterly inflation

Notes: Alcoholic beverages and others include alcoholic beverages, tobacco, and narcotics. Utilities include housing, water, electricity, gas, and other fuels. Furnishings and others include furnishings, household equipment and routine maintenance.

⁴ In calculating the inflation of non-volatile commodities (core inflation) we exclude the following groups from the CPI: Bread and cereals; Meat; Fish and seafood; Vegetables; Electricity, gas and other fuels and Operation of personal transport equipment.

Source: CBS (2022), CBoS (2022), and author's calculations.

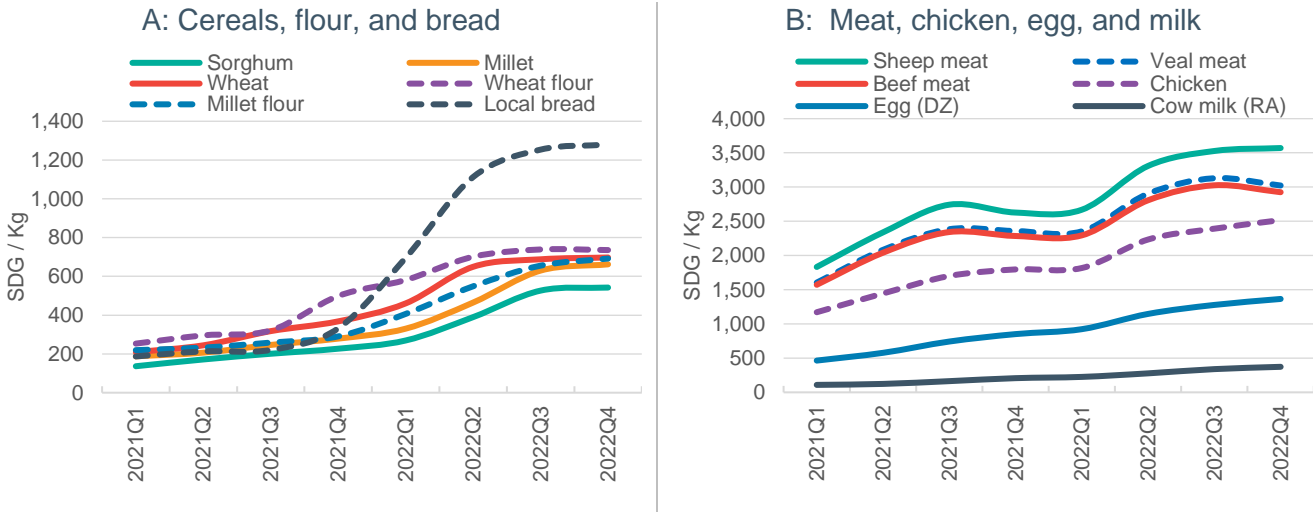
Retail prices⁵ of food commodities relatively stabilized during the last two quarters of 2022 compared to the previous quarters of 2021 and 2022.

The retail prices (national averages) of wheat, sorghum and millet increased slightly by 1.4, 3.0, and 5.1 percent, respectively in 2022Q4 compared to 2022Q3. Local bread prices increased dramatically by 468.3 percent from 220 SDGs/Kg in 2021Q3 to 1253.6 SDGs/Kg in 2022Q3 (Figure 5A). They also increased by 2.1 percent in 2022Q4 compared to 2022Q3. These increases in local bread prices were justified by the combined effects of increases in the prices of wheat flour and other production inputs such as cooking fuel. Consequently, higher bread prices were reflected in considerable bakery sales stagnation (Alnilin Sudan News, 2022).

While retail prices of beef and veal meat decreased, respectively, by 3.3 and 3.4 percent in 2022Q4 compared to 2022Q3, retail prices of chicken, egg and fresh milk increased by 5.2, 6.8, and 9.9 percent, respectively during the same period and sheep meet remained relatively stable (Figure 5B).

Although retail prices of vegetables show a clear seasonality, especially for tomatoes, onions, and cucumber compared to pulses (Figure 5C), annual and quarterly price changes were relatively significant in 2022Q4. While potato and cucumber retail prices decreased by 22.9 and 5.3 percent, respectively in 2022Q4 compared to 2022Q3, they increased by 26.0 and 108.3 percent, respectively in 2022Q4 compared to their past year levels. Increases in the prices of dry Egyptian beans and lentils were minor in 2022Q4 compared to 2022Q3 (Figure 5C).

Although retail prices of vegetable oils were increasing since the first quarter of 2021, especially for sesame (Figure 5D), their increases slowed down in 2022Q4 compared to 2022Q3 amounting only to 0.1, 0.7, 1.2, 2.3, and 3.4 percent for sunflower oil, cotton seed oil, soybean oil, dura oil, and sesame oil, respectively (Figure 5D).



⁵ National average retail prices are collected by the Central Bureau of Statistics (CBS) on monthly bases from different markets (located in urban and rural areas) in 15 out of 18 states.

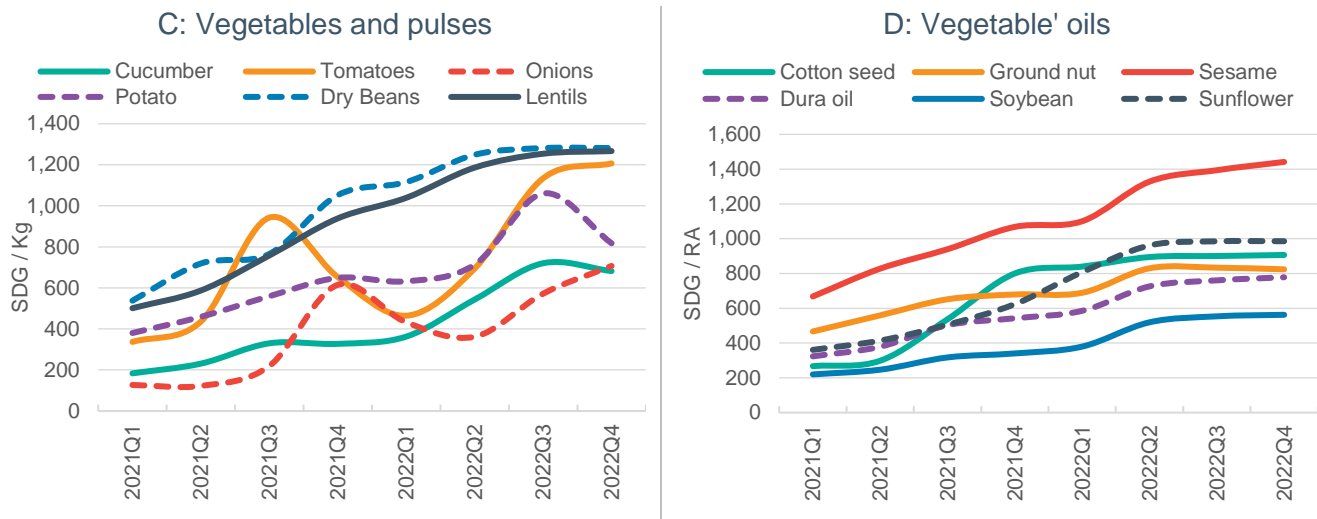


Figure 5. Retail prices of selected commodities (national average)

Note: RA= Pound = 0.4536 kg, DZ = Dozen,

Source: CBS (2022) and authors' calculations.

Nominal wholesale prices of grains (millet, wheat, and sorghum) in Khartoum were increasing from 2021Q2 to peak in 2022Q3 before they drop in 2022Q4.

Real and nominal wholesale prices of millet and sorghum were affected by their harvest seasons (Figure 6). Sorghum and millet decreased significantly in real and nominal terms after peaking before their harvest season (early November and continues until late December) in 2022Q3. Only the real prices of wheat are consistent with the seasonal changes as they decrease continuously after the harvest season, which annually starts in early March. Nominal prices of wheat, however, and affected by the overall price inflation.

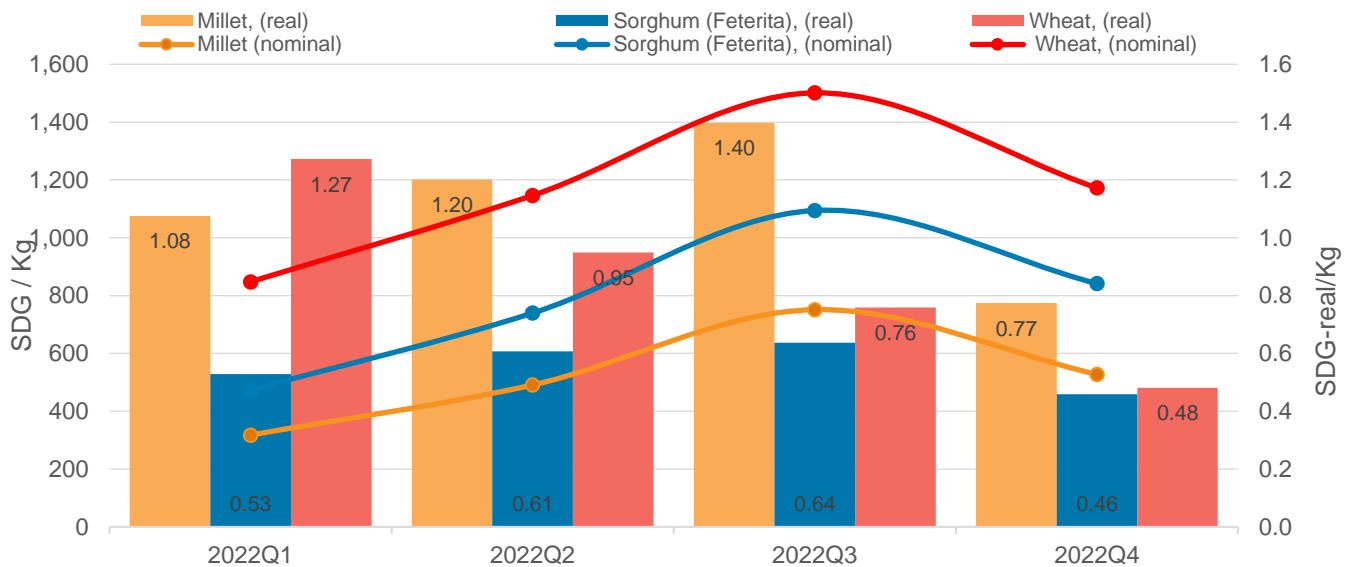


Figure 6. Wholesale prices (nominal and real) of major cereals (millet, wheat, and sorghum) in Khartoum.

Source: FAO (2022A) and authors' calculations.

During 2022Q3 and 2022Q4, inflation rates in relatively insecure states (Blue Nile, South Kordofan, and Red Sea) were higher than the national average.

Annual rural inflation⁶ decreased from 135.9 to 112.5 in Q4 compared to Q3, but it remained relatively higher than urban inflation in both quarters. The national average of urban inflation decreased from 121.2 in 2022Q3 to 112.5 in 2022Q4 (Figure 7).

Annual inflation rate (rural and urban) in relatively insecure states (Blue Nile, South Kordofan, and the Red Sea) decreased in 2022Q4 compared to 2022Q3. However, it was still higher than the national rural and urban averages in 2022Q4. The average inflation rate in rural South Kordofan and Blue Nile amounted to 310.5, and 228.0 percent, respectively in 2022Q4, while urban and rural Red Sea inflation amounted to 206.5 and 144.6 percent, respectively in 2022Q4.

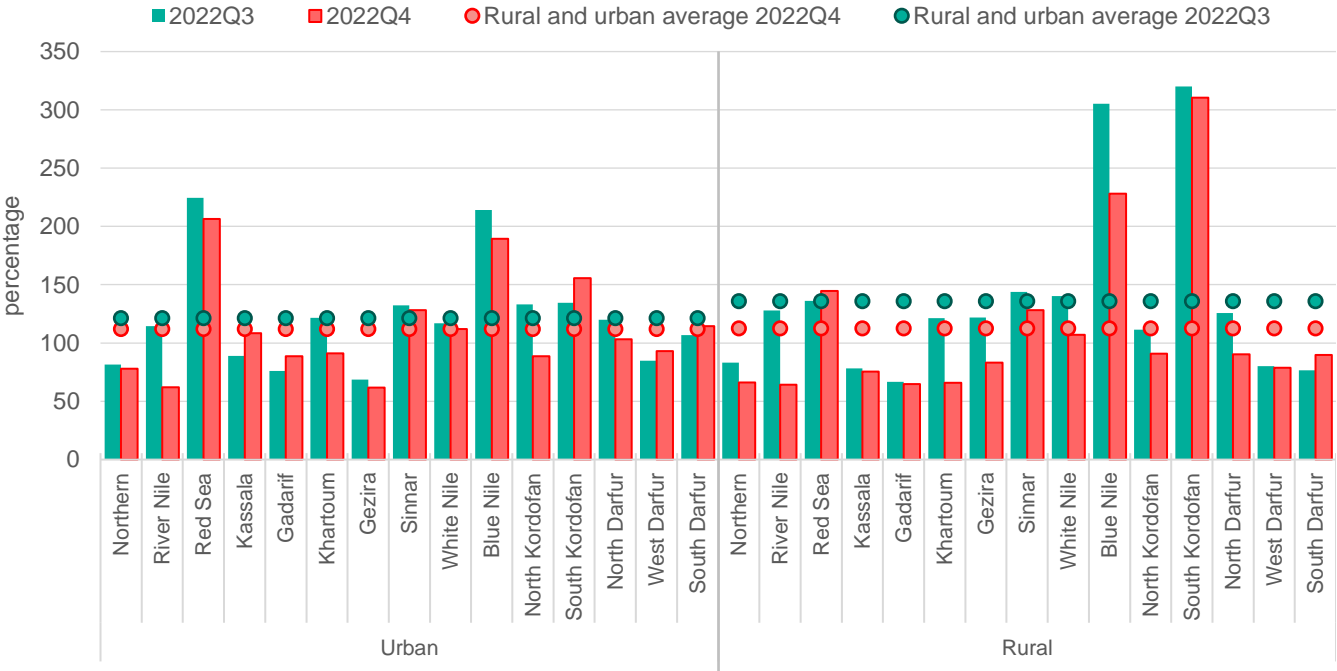


Figure 7. Inflation rate by state and area (rural and urban) and the national average (percentage)

Source: CBS (2022) and authors' calculations.

National average of casual labor daily wage was increasing over time (2021Q2–2022Q4) in nominal terms, however, it was declining in real term in 2022Q4.

The average national casual labor daily wage increased slightly from 3402 to 3487 SDG per day in 2022Q4 compared to 2022Q3. From 2022Q3 to 2022Q4, nominal casual labour daily wage increased by only 2.5 percent, while the overall prices increased by 10.8 percent, implying an overall negative welfare change for casual labor-led households (Figure 8).

The overall negative change in real terms in 2022Q4 (8.3), was relatively low compared to the negative real change of daily wage in 2021Q2 and 2021Q3, which amounted for 25.9 and 22.3 percent, respectively (Figure 8).

⁶ Rural (urban) area inflation is calculated based on the average prices of the markets located in rural (urban) areas of the different states.

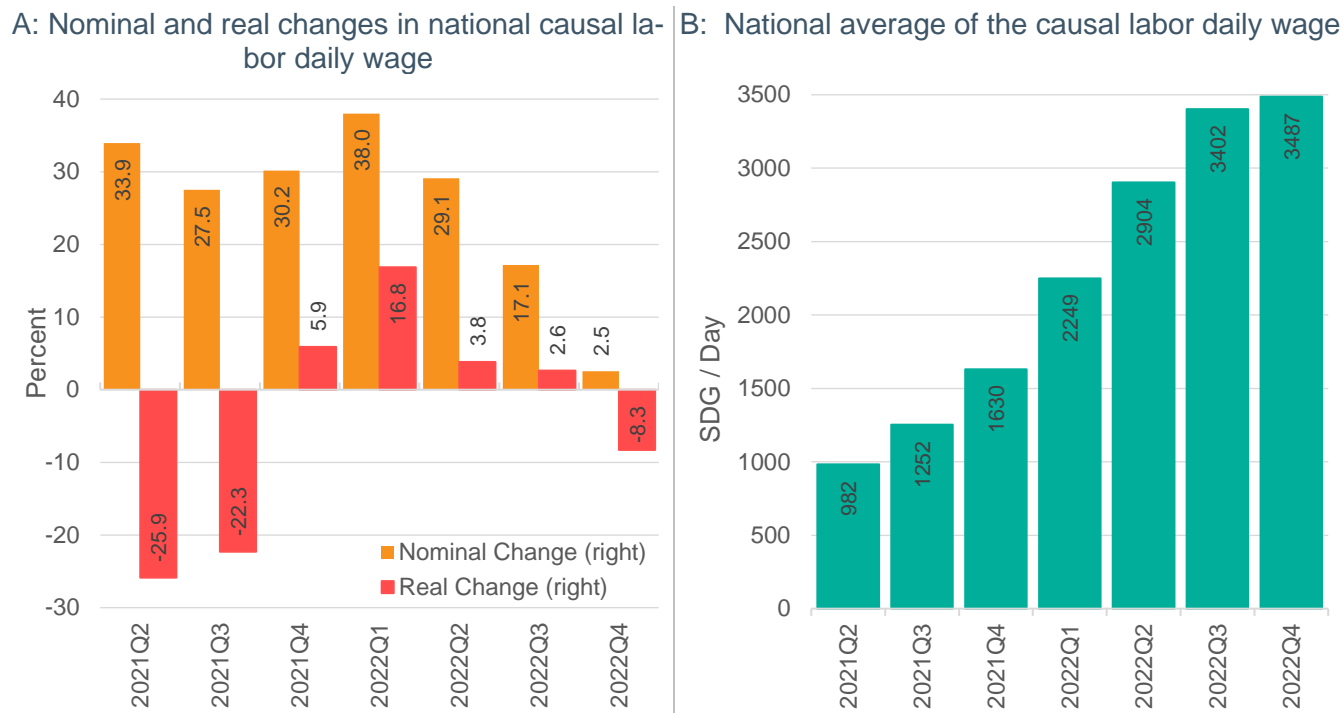


Figure 8. Causal labor daily wage national average, and real and nominal changes (percentage)

Source: WFP Market Monitor - Sudan Jan-Dec 2022, CBS 2022, and author's calculations.

While all household groups were negatively affected by the changes in food and beverage prices during 2022Q4, the poorest were the most affected.

The continuous reduction in food and beverages inflation since 2022Q1, contributed to reducing household welfare losses. However, the poorest 40 percent of the households both in rural and urban areas, continued to be the most negatively affected by prices changes as compared to the richest 60 percent (Figure 9).

Accumulative welfare losses of the poorest 40 percent of households due to food price change in rural and urban areas decreased from 2.50 and 3.10 percent in 2022Q3 to 0.19 and 0.24 percent of their incomes, respectively in 2022Q4. For the richest 60 percent of households in rural and urban areas, welfare losses due to food price change decreased from 2.10 percent in 2022Q3 to 0.16 of their income in 2022Q4 (Figure 9).

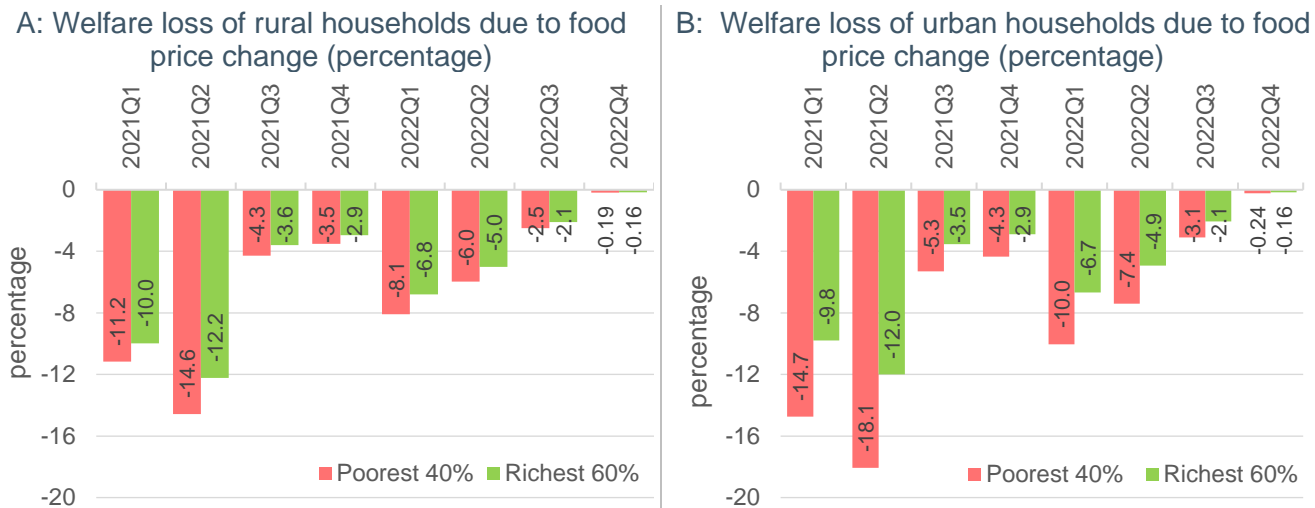


Figure 9. Accumulative welfare loss⁷ due to food price change by household income and area (percentage)

Source: IFPRI-SAM-2019, CBS (2022), and authors' calculations.

Blue Nile, Darfur, and Eastern regions have the highest percentage of food insecure populations classified in crisis or emergency.⁸

The most recent projections of acute food insecurity for the period Oct 2022 - Feb 2023 indicates that around 7.7 million people across Sudan are classified as in crisis or emergency, i.e., IPC Phase 3+ (FAO 2022B).

Central, Darfur and Eastern regions have the highest amount of population classified as highly food insecure. According to the FAO projections for the period Oct 2022 – Feb 2023, the amount of population classified as in crisis or emergency (Phase 3+) because of acute food insecurity amounts to 2.6, 2.2, and 1.3 million people in Central, Darfur, and Eastern regions, respectively. More specifically, 45 percent of the highly food insecure population in the Central region lives in Khartoum state (Figure 10).

⁷ Accumulative welfare change is calculated based on the assumptions that there is zero price elasticity, zero elasticity of substitution and no income changes. Under these assumptions, the food price change effect on household welfare is determined by their initial budget shares.

⁸ IPC is an international measure for classifying food insecurity and malnutrition situation in a country. It classifies the population in each country into five different severity phases, namely: 1. Minimal/None, 2. Stressed, 3. Crisis, 4. Emergency, 5. Catastrophe/Famine (IPC, 2021).

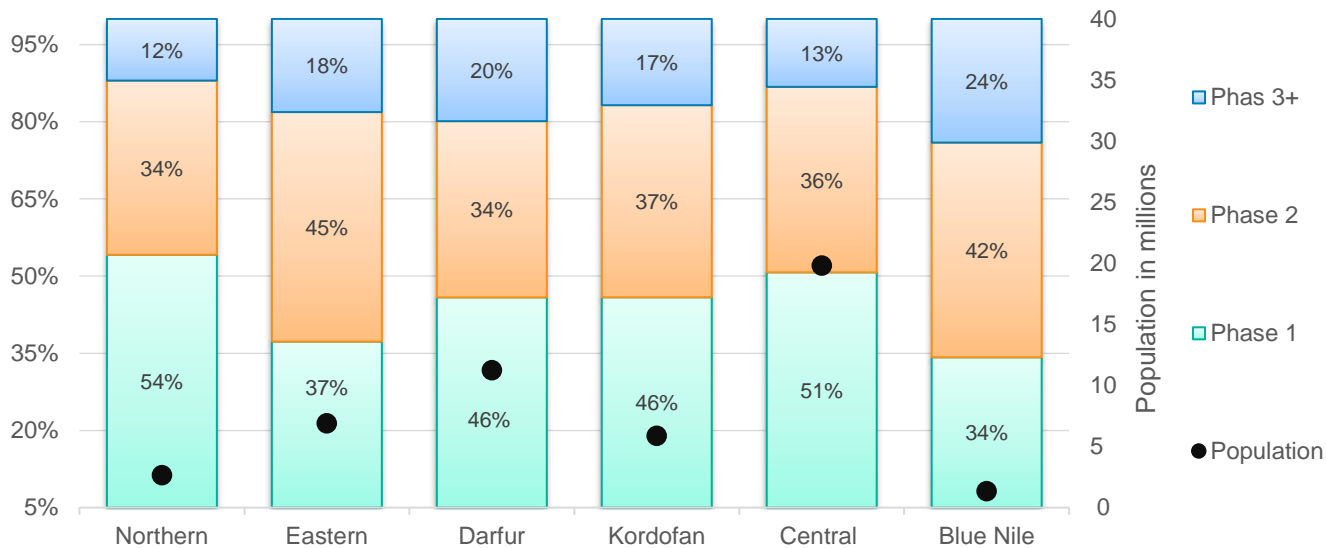


Figure 10. FAO projections of acute food insecurity population (percentage), and overall population in millions by regions

Source: FAO IPC Acute Food Insecurity Analysis April 2022 - February 2023- Sudan June 2022, and author's calculations

Note: Northern region includes Northern and River Nile state, Eastern region includes Red Sea, Gadarif, and Kassala states. Darfur region includes Central Darfur, North Darfur, East Darfur, South Darfur, and West Darfur states. The Kordofan region includes North Kordofan, South Kordofan, and West Kordofan states. Central region includes Khartoum, Sennar, and White Nile states, and Blue Nile region: includes only Blue Nile state.

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REFERENCES

- CBS (Central Bureau of Statistics). 2022. Unpublished data, Central Bureau of Statistics, Khartoum, Sudan.
- CBoS (Central Bank of Sudan). 2022A. Exchange prices, Central Bureau of Statistics, Khartoum, Sudan. Banks and Exchange prices | CBOS
- FAO (Food and Agriculture Organization of the United Nations). 2022. Food Price Monitoring and Analysis (FPMA) Tool. <https://fpma.fao.org/giews/fpmat4/#/dashboard/tool/international>
- FAO (Food and Agriculture Organization of the United Nations). 2013. FAO's Food Price Index Revisited. FO-Expanded-SF.pdf (fao.org)
- IEA (International Energy Agency). 2022. Gas Market Report, Q4-2022, IEA, Paris <https://www.iea.org/reports/gas-market-report-q4-2022>, License: CC BY 4.0
- IPC (Integrated Food Security Phase Classification) 2021. Technical Manual Version 3.1, evidence and standers for better Food Security and Nutrition Decisions. https://www.ipcinfo.org/fileadmin/user_upload/ipcinfo/manual/IPC_Technical_Manual_3_Final.pdf
- Ball, M. L., Leigh, D., Mishra, P., Spilimbergo, A. (2021). Measuring U.S. Core inflation: The Stress Test of COVID-19. Working Paper No. 2021/291. <https://www.imf.org/en/Publications/WP/Issues/2021/12/17/Measuring-U-S-511054>
- Alyoumaltali Sudan News. 2022. Media article. October 5, 2022. www.ayoumaltali.net - صحيفة الراكوبة - www.ayoumaltali.net : الهيكل الراتبى من المشكلات التي تۆرقنا - www.ayoumaltali.net "Ministry of Finance and Economic Planning in Sudan: The new salary structure is one of the serious problems we face" www.ayoumaltali.net - www.ayoumaltali.net اليوم التالي
- Alnilin Sudan News. 2022. Media article. February 19, 2023. www.alnilin.com - صحيفة الراكوبة - www.alnilin.com "High prices of bread takes it away from the majority of the Sudanese houses". www.alnilin.com - www.alnilin.com تحليق أسعار الخبز بيعده عن موائد السودانيين - النيلين
- WFP (World Food Program). January 2021- December 2022- WFP Market Monitor – Sudan The Market Monitor | World Food Programme (wfp.org)

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