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The Economy-wide Impact of Sudan's Ongoing Conflict

Implications on Economic Activity, Agrifood System and Poverty

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ABSTRACT

The armed conflict between the Sudanese Armed Forces (SAF) and Rapid Support Forces (RSF) in Sudan entered its sixth month since it erupted on April 15th, 2023, with no signs of ending soon. The war has caused severe humanitarian catastrophe, destroyed key infrastructure, and constrained trade and production activities. Moreover, it disrupted access to public utilities, financial services, and markets, hence, triggering considerable scarcity of goods and services. In this paper, we utilize a Social Accounting Matrix (SAM) Multiplier modeling framework to assess the economywide implications of these disruptions of economic activity, productive resources, and livelihoods. Results reveal that the economy would shrink to nearly half its size before the war, household incomes decline by more than 40 percent in urban and rural areas, and the number of poor people increase by 1.8 million if the war continues until the end of the year. The impact would have been two thirds less should the war have ended before July 2023 and would be one third less if it would end before October 2023. This study therefore calls for rapid interventions from all relevant parties to help reach an end to the fighting.

Key words: SAF, RSF, conflict, economic activities, SAM multiplier, economy-wide impact.

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2 BACKGROUND AND BROAD EFFECTS OF THE CONFLICT ON THE ECONOMY

The armed conflict that broke out in Khartoum on April 15th, 2023, between the Sudan Armed Forces (SAF) and the Rapid Support Forces (RSF) entered its sixth month and shows no sign of ending soon. It has disrupted economic activity in Khartoum and other states of the country, constrained access to public services, displaced over three million people and destroyed the livelihoods of many others. Access to health facilities, education and banking service is severely constrained and food supplies are scarce due to the violent conflict (UN-OCHA, 2023a). The scarcity of goods and public services, combined with reduced incomes, and increasing inflation have contributed and will continue contributing to economic contraction (Elamin, 2023; Abushama et al., 2023).

As of August 9th, 2023, 3 million people have been internally displaced (2.2 million of them have fled from Khartoum State), while at least 880,000 have crossed into neighboring countries, because of the ongoing fighting (ACLED 2023; UN-OCHA, 2023b). Most people who crossed the border went to Chad (348,000), followed by Egypt (279,000), South Sudan (201,000), Ethiopia (31,000), and Central African Republic (17,000). The numbers of internal and cross-border migrants are surging by the day (UN-OCHA, 2023b).

Historically, Sudan's political turbulence has led to food shortages, agricultural productivity decline, and lowered contributions to GDP growth (Alhelo et al., 2023). Conflicts also damaged infrastructure, including irrigation systems and power supply networks. They hindered transportation and access to markets and essential services (UNEP, 2007). Prior to the outbreak of the current conflict, estimates indicated that the cost of infrastructure damage caused by conflicts in Sudan has exceeded billions of dollars (World Bank, 2020a). Therefore, the infrastructure damage and losses due to the current conflict, mostly in the capital Khartoum is expected to largely amplify these estimates.

Figure 1 highlights the chronology of Sudan's political and fighting developments since April 15th until the end of July 2023. Clashes were intensified in Khartoum and North Kordofan, following the suspension of Jeddah negotiation on the first of June 2023, and the imposition of USA sanctions on some RSF and SAF companies. Soon after resuming Jeddah negotiations, a new ceasefire for 24 hours was signed on June 10th, however, violence continued. After the failure of attempts to reach an effective ceasefire agreement, African efforts, led by Intergovernmental Authority on Development (IGAD), forged ahead towards a permanent ceasefire agreement, but on the 13th of June, the SAF rejected the negotiations. During international and regional efforts to calm the situation in the country, the security and humanitarian situation in Darfur region deteriorated resulting in the declaration of Darfur as a disaster area (The Arab Weekly, 2023). On the 19th of June, after more than two months of destruction, deaths, and displacement, donors pledged about $1.5 billion to help alleviate the humanitarian crisis in Sudan and neighboring countries (UNHCR, 2023).

The renewed conflict is the first of its kind in Sudan's history to take place in the capital city (Khartoum), however, the consequences to food insecurity and livelihoods, albeit acute, do not seem different from the previous conflicts. Fighting is expected to continue, due to the non-compliance of negotiated truces indicating the need to find alternative binding mechanisms aimed at achieving a permanent ceasefire.

Figure 1: Chronology of fighting (left) and political events (right) between April 15 and July 31, 2023).

Fighting	Date	Date	Political events
Fighting between the SAF and RSF erupted.	15-Apr	17-Apr	SAF designates RSF as a rebel entity and orders its dissolution.
Tribal clashes involving RSF erupted in El Geneina. At least 90 killed.	24-27 April	27 April	Five armed signatories to the Juba Peace Agreement deploy fighters in El Fasher to protect civilians.
Clashed between Misseriya and Maaliya in Babanussa, West Kordofan. Dozens killed.	07-May	29 April	Central Reserve Police is deployed in the capital to maintain security.
Tribal clashes between Hausa and Nuba tribes in Kosti, White Nile. At least 28 people killed.	7-9 May	6-May	The SAF and RSF begin talks in Jeddah, Saudi Arabia, to discuss humanitarian issues and a ceasefire.
SAF kills about 100 RSF soldiers and destroys, 60 RSF military vehicles in Khartoum.	12-May	8-May	Minnawi-led faction withdraws forces from Khartoum to North Darfur.
Fighting intensifies in Al-Genaina. At least 565 killed.	12-15 May	11-May	Jeddah Declaration of Commitment to Protect the Civilians of Sudan signed.
345k people crossed into neighboring countries as of 26 May, to Egypt, South Sudan, Chad, CAR, and Ethiopia.	26-May	22-May	The tenth ceasefire negotiated in Jeddah; SA went into effect.
7 weeks of a war with at least 730 people killed, 5.5k injured and 1.4 million fled their homes.	29-May	29-May	An extension of the tenth ceasefire is signed. None has been effective.
Violent clashes between SAF and RSF south of Khartoum. Sudanese Red Crescent: 180 unidentified bodies buried.	03-Jun	02-Jun	The UN Security Council extended the work of the UN mission in Sudan, after the SAF calling for ending the mission of UN envoy Volker Perthes.
RSF besieged Al-obeyed from several directions for more than a week.	04-Jun	01-Jun	The Saudi and American mediators suspended Jeddah negotiations between the SAF and the RSF, and the US imposed sanctions on some of their companies.
40 people killed in Darfur, most of them civilians. The governor of Darfur declared the region a disaster area.	05-Jun	05-Jun	Khartoum Water Authority: RSF occupied Al-Muqrin and Soba water stations in Khartoum.
RSF shot down an army MiG fighter aircraft in Khartoum state.	06-Jun	07-Jun	The two parties resumed Jeddah negotiations.
19 doctors were killed during the fighting since mid-April.	07-Jun	10-Jun	Agreement on a 24-hour cease-fire in Sudan, under US-Saudi auspices.
With the continuation of the clashes, over 330 children were killed, and over 1,900 were injured.	08-Jun	13-Jun	Sudan Ministry of Foreign Affairs: Sudan declines Kenya's chairmanship of IGAD quartet committee.
The "Sudan People's Liberation Movement-North" forces occupied 4 of the SAF locations.	11-Jun	17-Jun	Property transfers were canceled in all of Sudan's states because of widespread looting.
West Darfur Governor is killed, RSF accused of it. The governor of the Darfur region indicated that more than a thousand are killed in Al-Genaina.	15-Jun	18-Jun	A 72-hour ceasefire agreement. Saudi-US threat to postpone the Jeddah negotiations in case of any breach of the ceasefire.
The army calls on citizens to leave houses adjacent to the RSF's locations.	17-Jun	23-Jun	Thousands of civilians demonstrated in Khartoum and other states supporting SAF and calling RSF to leave residential neighborhoods.
17 people were killed in an air strike in southern Khartoum.	18-Jun	26-Jun	The continued deterioration of the situation in Zalingei, with the control of the RSF over the Garsila garrison
Conflicts-related sexual violence against at least 53 women and girls.	20-Jun	27-Jun	SAF repelled an attack by Abdel Aziz Al-Hilu forces in the Blue Nile state. At least 5,000 citizens were displaced to Ethiopia.
Fighting intensifies in Khartoum and Al-Genaina. An additional 15k refugees arrived in Chad under gunfire.	21-24 June	28-June	SAF announced a ceasefire during the first day of Eid al-Adha.
An aerial bombardment destroyed the headquarters of the National Fund for Medical Supplies in Khartoum.	25-Jun	29-June	Gen. Abdulfattah Alburhan has called on the country's youth to join the ranks of the army.
RSF took control of 160 vehicles, 75 armored vehicles and 27 tanks during the control of the Central Reserve Presidency in Khartoum.	26-Jun	30-June	SAF requested Russia's help in stopping the war. The Chairman of the Sovereignty Council affirmed the acceptance of any Turkish initiative to stop the war.
Attempts by the RSF to take control of some army camps continue, and the army is responding through aerial bombardment.	02-Jul	2-4-Jul	The governor of Darfur declared that the region had become a "disaster area", with renewed clashes between the SAF and RSF. The security situation in El-Obeid is out of control.
Violent clashes in Omdurman and renewed clashes in Al-obeyed, the capital of North Kordofan, with the siege continuing for 40 days on the city.	3-7Jul	09-Jul	Washington calls for the formation of a civilian government in Sudan, and Amnesty International calls on Sudan's neighboring countries to provide safe passages for people fleeing the conflict.
Abdel Aziz al-Hilu forces took control of a new military garrison south of the city of Al-Dilling	15-Jul	11-Jul	With SAF sticking to its position on Kenya's presidency of IGAD, IGAD called for talks on the deployment of regional forces in Sudan.
In Khartoum, SAF claimed targeting the locations and supplies of RSF, and RSF claimed seizing 130 military vehicles from the SAF.	10-15 Jul	13-Jul	The Summit of Sudan's Neighboring Countries in Cairo affirmed full respect for Sudan's sovereignty and territorial integrity, non-interference in its affairs, and considering the conflict an internal matter. It called both parties to stop the war.
World Health Organization: the conflict in Sudan killed more than 1,000 people and injured more than 12,000.	17-Jul	19-Jul	6 million people have been internally displaced since the start of the conflict, 730k people have fled Sudan to neighboring countries and IDPs during the past week alone reached 200k.
The army prevented movement on Bara – Khartoum Road.	25-Jul	20-Jul	WFP holds both sides of the conflict responsible for not delivering food aid to those affected.
WHO verified 51 attacks on health facilities, resulting in 10 deaths and 24 injuries - and cutting off access to much-needed care.	29-Jul	26-Jul	SAF warns of any intervention of foreign forces in the country.
US representative to the UN Security Council expressed concern over Russian Wagner Group transferring man-portable air defense systems "MANPADS" to Sudan.	30-Jul	28-Jul	US State Department: there is no military solution to the conflict in Sudan and suggested additional sanctions on both sides to be imposed.

Source: Authors' compilation based on Abushama et al. (2023) and data from UN-OCHA (2023b) and the news.

3 OBSERVED CHANGES IN ECONOMIC ACTIVITY DUE TO CONFLICT

3.1 The effects at the macro-level

As the conflict continues, inflation is expected to continue rising (WFP, 2023a) and the economy will contract, triggered by the disruptions to production (mainly in industrial and gold mining), trade (mainly imports of food and exports of gold and livestock), job loss (mainly in Khartoum state but also in most of western and southern states), investments, and human capital loss due to displacement and migration. The war has already resulted in decreased availability of essential food items in local markets, causing a surge in food prices (Abushama et al., 2023; Kirui et al., 2023). Since April 15th, prices of basic commodities such as bottled water, food, and fuel have increased by 40-60 percent in conflict-affected areas (WFP 2023a). In May the WFP local food basket cost increased by 18 percent from the April level, followed by 8.7 percent increase in June (WFP, 2023b; WFP, 2023c).

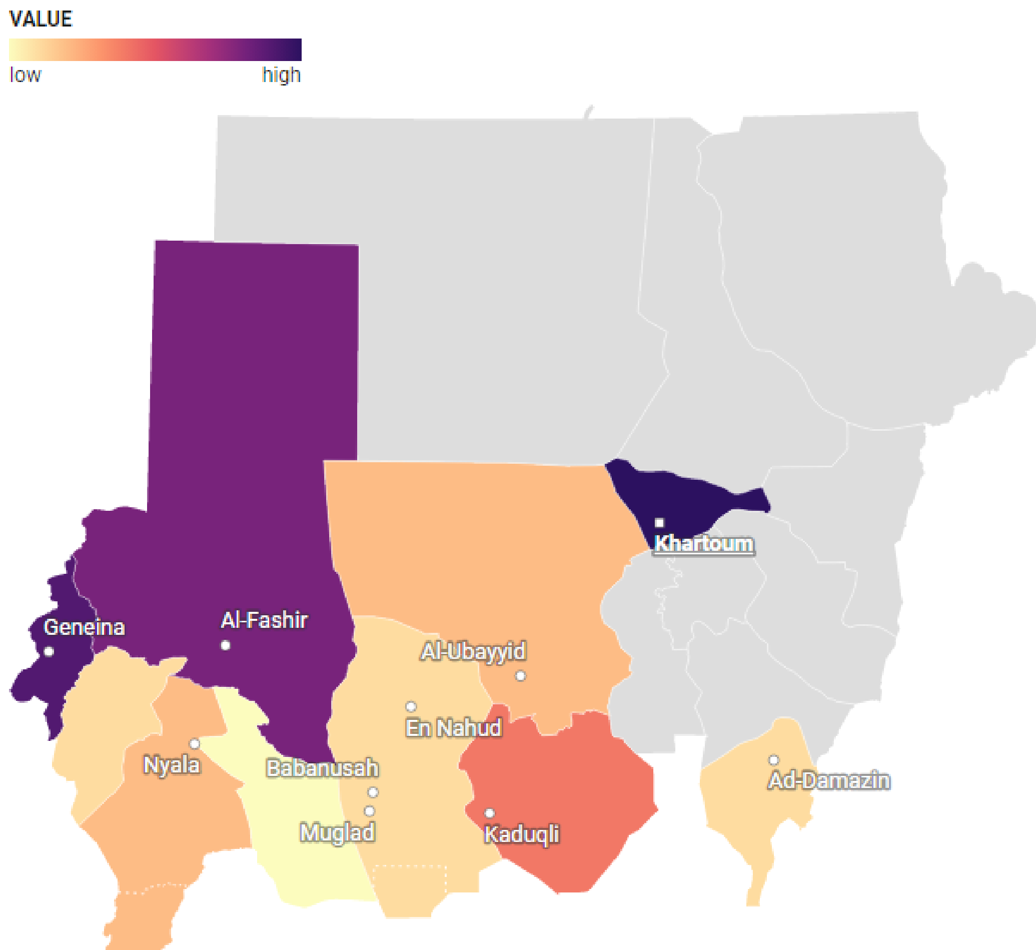
Domestic and international firms have been hit by the on-going conflict. The inability to deliver essential export commodities would largely increase Sudan's trade balance and overall budget deficit. The operation of many leading domestic company groups such as DAL, Hajjar and SAY (Salih Abdelrahman Yagoub) groups, has ended, especially in Khartoum. A recent rapid survey conducted by Kirui et al. (2023) within the food processing enterprises in Sudan indicates that 13 percent of the companies have permanently stopped operation while 53 percent temporarily stopped operation and 20 percent are operating at a reduced volume. In response to a question on the status of their employees, 47 percent of surveyed enterprises suggested that they sent their employees on unpaid leave while 20 percent of them laid off their employees and only 7 percent of the firms sent their employees on paid leave (Kirui et al., 2023).

The war between SAF and RSF will have another sizable impact on the fiscal sector. Military expenditure directed to the war in Darfur amounted to $US 1.7 billion per year during 2004-2009 (Ali, 2013). The current war is larger in its intensity, scope, and cost. The increase in military expenditure, given the predicted reduction in revenues during the war (due to the disruption in the trade and production) will crowd-out other government expenditure, including compensation of public sector employees which represented 30 percent of total expenditure in 2022. Wages and salaries haven't been paid for the fourth month since the start of the clashes in April 2023. Other development expenditure such as education and health are also expected to be affected significantly due to the weak fiscal space and the absence of alternative revenue mobilization plans. With the continuation of the war, the government is expected to monetize its deficit to meet its obligations, and this will potentially lead to unprecedented levels of inflation.

3.2 The effects at the micro-level

The estimation of the reductions in activities at the sectoral level is based on the extent to which the activity areas have been affected by the conflict under the different scenarios of conflict prolongation. In Figure 2, we map the scope of the conflict and its intensity, and we identify the main production areas (states) of the main products included in the SAM and its multiplier modeling framework.

Figure 2: Mapping of conflict and its intensity as of August 2023



Source: Authors estimations based on data from UN-OCHA (2023b) and different news agencies.

The shocks are estimated for each good under the different scenarios based on the extent to which the main states that produce the good fall under the scope of the conflict taking into consideration the level of intensity in each scenario. Shocks at the micro-level are designed to allow for variation in the magnitude of the shock, based on the degree of centralization of production and inputs of production as well as the degree of intensity of clashes in each state that produces the good. For instance, goods that are mainly produced in Khartoum state (a state with the highest degree of intensity of clashes), are assumed to face a higher magnitude of shock compared to goods that are grown/produced in other states. We also leverage on-ground developments, policies, or any efforts that have been taken by governmental or non-governmental actors as a mitigation measure at the sectoral level. Appendix tables A1 and A2 illustrate the magnitude of the shocks in the different sectors included in the SAM by aggregate and individual SAM accounts and impact channels.

Agricultural and industrial production is anticipated to be considerably affected by the war (Abushama et al. 2023; Kirui et al., 2023). The war has exacerbated the dilapidated infrastructure of production, marketing, storage, and inland logistics for agricultural and industrial production in all conflict-affected areas. Although some crops were not influenced as they have been harvested before the start of the clashes on April 15, 2023, the limited accessibility to markets, absence of security, and widespread looting have affected their storage and will potentially limit the production decisions of other goods.

The industrial sector, which is highly concentrated in Khartoum has been significantly affected by looting, indicating that resuming production is challenging due to the large losses of capital goods and production equipment even under the most optimistic scenario for ending the war.

The current scope of the conflict includes ten states, namely, Khartoum, North Kordofan, North Darfur, West Darfur, South Darfur, Central Darfur, East Darfur, South Kordofan, West Kordofan, and Blue Nile. The intensity of the conflict varies across the different states (Figure 2). However, production in all the states has been influenced by the security situation, widespread looting of properties, shortages in electricity, fuel, input materials of production, and finance.

To estimate the economywide effect of the conflict, we start by mapping the scale and spread of conflict guided by the development on the ground so far both on the fighting and political fronts as illustrated in Figure 2. Khartoum has been and continues to be in a state of violence and insecurity since the start of the war in April 2023. West Darfur and especially Al-Genaina city also witnessed extremely violent events in which 565 were killed and thousands were displaced. Other states in Darfur are also witnessing continuous clashes such as Niyala in South Darfur, El Fasher in North Darfur, and Zalingei in Central Darfur (Figure 2). East Darfur showed the lowest intensity of clashes in Darfur region because large part of RSF fighters roots hail from tribe from the state of East Darfur. Despite this, the state capital, Al-Deain, witnessed some intermittent violent incidents during the clashes between the RSF and SAF in the city (Sudan Akhbar 2023b).

The Kordofan region is also affected by the clashes; North Kordofan and particularly Al-obeyed have been subjected to a harsh siege by the RSF which greatly affected the lives of the residents. Moreover, South Kordofan witnessed massive clashes between the SAF and Sudan Liberation Movement Army (SLAM). Clashes are expected to continue in West Kordofan. On the other hand, West Kordofan witnessed the lowest intensity of clashes in Kordofan region though some clashes occurred between the RSF and SAF in Al-Foula the capital of the state. Moreover, Blue Nile has been affected by the conflict between SAF and SPLM. The Northern State witnessed the beginning of the conflict between RSF and SAF, but the clashes did not continue, as RSF withdrew all its forces from the state, hence, it has been dropped from our map.

4 THE SIMULATION MODELING APPROACH

4.1 Sudan's SAM and multiplier model

Despite concentration of the confrontations in some states of the country, the implication of the war affects the entire Sudanese economy through several distinct channels. In this section we discuss how we analyze the short-term economywide impacts of the war using a SAM multiplier model for Sudan.[1]

SAM-based models are particularly well-suited to measuring short-term direct and indirect impacts of unanticipated, rapid-onset economic shocks, such as those associated with the ongoing war in Sudan. The models provide a strong mechanism that helps in estimating the impact of the changes in the final demand of goods and services. This modelling tool helps in estimating both the direct and indirect

[1] Additional details on the methodology are provided in Thurlow (2020).

effects of such a shock on national and sectoral production, household incomes, and changes in the level of employment. By capturing multiple rounds of effects, model results estimate the direct impact on the production that is induced by the change in final demand. Moreover, it also captures the indirect impact via multiple channels such as the changes in the demand of intermediate inputs, as well as changes in the level of employment that induces other rounds of changes in household consumption (Thurlow, 2020).

Impact channels include both internal and external shocks. External shocks refer to the expected changes in Sudan exports and imports. In addition, changes in remittances that are part of household income are also captured by the model. Domestic shocks are implemented as reductions in the output of relevant sectors such as a loss in the output of agriculture, livestock, and manufacturing. However, positive shocks were implemented in specific sectors that have benefited from the ongoing crisis, such as transportation and accommodation services.

We use the 2019 SAM for Sudan that captures resource flows associated with economic transactions taking place in the economy, showing the interlinkages and relationships between all economic actors (i.e., productive activities, households, firms, government, and the rest of the world) in terms of how they interact and affect each other. The SAM is further scaled up in the simulation analysis to represent the economy in 2021 or a predicted no-conflict economy as a base for comparison.

The data used to build the SAM are drawn from domestic sources, such as the Central Bureau of Statistic (CBS) for household and enterprise data and the Ministry of Finance and Economic Planning (MoFEP) as well as the Central Bank of Sudan (CBoS) for national accounts and government accounts. Additional data were also obtained from international institutions, including the International Labor Organization (ILO), the International Monetary Fund (IMF) and the Food and Agriculture Organization of the United Nations (FAO) (Randriamamonjy et al., 2023).[2]

The Sudan SAM includes 77 production sectors and 79 commodity types. The production sectors employ six types of labor classified by residence (rural or urban) and skill levels and combines them with a single land account and a single capital account. Factor incomes are distributed to 10 representative household types classified by residence and income quintiles. Households spend their incomes on consumption, transfers to other households, paying taxes, and saving the balance. The government receives taxes and makes expenditures, including transfers to households. There are also several tax accounts as well as a rest of the world account in the SAM.

The SAM multiplier model is a simulation tool for ex ante analysis, which we use to simulate the economywide impacts of the ongoing conflict in Sudan on highly detailed economic activities that are then aggregated to the national or to aggregate sector levels, including for total and sectoral measures on GDP, employment, and incomes of different household groups. In other words, the SAM multiplier model takes a bottom-up approach with the economic shocks associated with the war in model simulations being imposed at detailed sector levels, taking into consideration their economywide interactions and linkages. In the model, prices are assumed to be fixed, and changes caused by the shocks in the simulations are all reported in real terms without a price effect. Such price-fixed approaches are common in assessing short-term shocks in which the shock inhibits the ability of markets to adjust to a new equilibrium through endogenous price adjustment processes. This and other assumptions related to the lack of behavioral relationships could be seen as limitations of the SAM

[2] For more details on developing the SAM, refer to Randriamamonjy et al., (2023).

multiplier models. These models assume constant technical input-output relationships, output choices of producers, and consumption patterns of households in response to simulated shocks (Amewu et al., 2020; Thurlow, 2020).

4.2 Simulating the conflict: data and assumptions

We simulate the economic shocks caused by the ongoing conflict through different channels in the model. These can be broadly categorized to supply, demand, and income shocks. The supply shocks (1) affect the production of goods and services or delivering them to consumers, and (2) change the supply of imported goods and services in the domestic market due to the interruption of the operation of seaports in Sudan and/or the difficulty of delivering the products to end users. The demand shocks include a reduction in export demand, resulting from the disruption of the operation of ports in Sudan, the difficulty of transporting the products to the port or any other related challenges such as the lack of or limited access to financial services. The income side shock is related to foreign remittance inflows, resulting from increases/reductions in the money transferred from Sudanese working abroad that ultimately affect final demand. A detailed description of how we introduce the shocks in the model by each account and impact channel are provided in appendix tables A1 and A2.

The external shocks modeled on the supply/demand side will lower the supply of goods and services produced in the affected sectors directly. Many of Sudan's economic sectors and activities are hit hard by such direct effects. These effects are further amplified by the input-output linkages among economic sectors, as almost all economic sectors require intermediate inputs produced by other sectors. The input-output linkages generate indirect effects that can be rather large, particularly for those sectors whose production or services are mainly used as intermediate inputs.

The different shocks are implemented in the model considering seasonal differences, especially in relation to the agricultural sector. To incorporate the seasonal dimension in the shocks, we divided the annual GDP in the base year by quarter, i.e., a crop that is produced in the winter season only does not show a GDP contribution in the rest of the year and a crop that is produced in the summer season only, would not show an output in the winter quarters of the year. These features allow us to capture the different phases of the conflict and its impact on the economy. Therefore, the three different simulations we consider in the study are directly associated with the timespan in which the conflict is assumed to continue as follows:

1) **Swift normalization (April-June)**: this scenario estimates the economywide effects of the conflict as of June 30th, 2023, hence from here on, we refer to this scenario as the "April-June" scenario. Despite the continuation of the conflict at varying degrees of intensity as we write this study, we focus on the damage made to the economic activity already as if the conflict stopped at the end of June.
2) **Prolongation of conflicts (April-September)**: under this scenario, we assume that conflict continues with intermittent ceasefires for humanitarian purposes. Public and private sector employees would only be able to return to work towards the end of September 2023. Hence, this scenario is referred to as the "April-September" scenario.
3) **Escalation of conflicts (April-December)**: under this scenario, we assume that the conflict extends, and other parties (internal/external) may become involved leading to state failure. Hence, public and private sector employees are unable to return to work until the end of 2023.It is most likely that all states will be affected by the conflict. Clashes may also be intensified in

states with social diversity, bordering states, and states strategically important in terms of military supplies compared to the rest of the country. This scenario is referred to as the “April-December” scenario.

4.3 From observed to simulated reductions in economic activity

4.3.1 Impact on Production

The agricultural sector is facing significant production shocks because of the war. There are two main seasons in Sudan, summer, and winter. Some crops were harvested before the start of the clashes on April 15, 2023 (e.g., Wheat is usually harvested during March). However, under the most optimistic scenario, even if the war ends immediately, the impact of the war on the summer season will be considerable. The shortage in electricity, fuel, improved seeds, fertilizers, and finance is expected to last at least for a while after the end of the war given the expected limited fiscal space. Therefore, agricultural crops that are to be cultivated in the summer season will be affected significantly even if the situation normalizes before the end of the year. In some states, such as North Kordofan, the impact of the clashes was greater in more productive areas e.g., West and South Al-obeyed have been affected more compared to less productive areas in North Al-obeyed[3].

With the unprecedented conditions in the country and growing fears that the summer agricultural season will be affected by the war in Sudan. Efforts have been made by the authorities (State governments, Ministry of Finance and Economic Planning, Central Bank of Sudan, Ministry of Agriculture and Forests, and Ministry of Mineral Resources), United Nations organizations (FAO), development banks, and commercial banks (Agricultural Bank of Sudan, Nile Bank) to address the impact of the war on the agricultural season (July-October 2023), by providing seeds, fuel, farming equipment, and finance. According to the Federal Ministry of Agriculture and Forests, the total area designated for this year’s summer season is 63 million acres. Four million acres will be cultivated with sorghum, groundnut, sesame, cotton, and sunflower crops in the irrigated sector and 59 million acres in the rain-fed sector (SUNA, 2023a). Available data are scarce on the cultivated areas so far, but given the challenges that the sector currently faces, it is predicted that actual cultivated area in the summer season will be less than the 63 million acres declared by the Federal Ministry of Agriculture.

The Food and Agriculture Organization of the United Nations (FAO) has started seed distribution campaigns for farmers with a plan to reach more than one million vulnerable farmers with 10,000 tons of sorghum, millet, groundnut, and sesame seeds for planting across 17 states. By July 17th, 2023, actual distribution amounted to 3,300 tons of seeds to Blue Nile, Gedaref, Kassala, Sennar, White Nile, Red Sea, South Kordofan, and North Kordofan states (UN-NEWS, 2023). On the other hand, the Central Bank of Sudan (CBoS, 2023a) issued temporary controls for granting bank financing to facilitate the summer agricultural season that includes the following:

1) Permission to exceed the financing concentration ratios in coordination with the executive management of the bank.

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[3] Some farmers in west and south Alobeyyid have been forced to leave their holdings and some were prevented from entering it.

2) Obliging the customer requesting financing, in the event of a previous default or delay in payment, to attach a letter from the agricultural association or organization to which they are affiliated stating their membership.

It is also expected that the reverse migration from urban to rural and displacement of people from Khartoum will result in labor (and family worker) abundance in the agricultural sector. One of the rural agricultural sector challenges was migration of young males to urban areas to work in the services sector (Ahmed et al., 2022).

The agro-industrial sector is currently led by sugar and milling of cereals, with low processing of other agricultural commodities like meat and oilseeds (World Bank, 2022b). Moreover, large-scale manufacturing is highly concentrated in Khartoum state, with relatively smaller-scale manufacturing activities in River Nile and White Nile states. On the other hand, crude oil, natural gas, metal ores, and other types of mining are spread out in different states. Therefore, these sectors are relatively less affected compared to the centralized agro-processing industries and other manufacturing sectors which are concentrated in Khartoum state such as meat processing, fish and seafood processing, and fruit and vegetables processing. However, with the continuation of the conflict and difficulties of securing stable electricity supplies, production equipment, and spare parts manufacturing in other secure states will also be affected significantly.

Sudan's industrial sector contributed 21 percent to GDP in 2022 making it relatively small compared to agricultural and services (MoFEP, 2023). The manufacturing subsector's contribution to the industrial sector is even smaller compared to oil and gold mining. Oil and large-scale gold mining are dominated by State owned enterprises (SOEs) and military firms in Sudan (Ahmed et al., 2022). With the ongoing conflict and both RSF and SAF mobilizing their internal and external resources to finance their military operations, investments in the mining sector will likely decrease, potentially reducing production. The production of small-scale companies is expected to be less resistant to the complex security situation and the state of emergency enacted by authorities under which it is forbidden to transport fuel outside the borders of the states (often in gold-producing areas). Even before the war, small firms were comparatively less able to protect their production from looting, which makes the situation more complicated under war conditions.

Production of petroleum products is expected to decrease significantly with the continuation of the war. The RSF have been occupying Al-Jeili Refinery located in Khartoum since the first month of the war. Al-Jeili Refinery is considered one of the largest oil refineries in Sudan with a capacity of 100,000 barrels of oil per day (MoFEP, 2020).

Some service subsectors, especially transportation, and hotels & restaurants have boomed with the start of the war because of the large-scale displacement and evacuation operations of the inhabitants from the conflict zones. However, public services such as electricity, gas and steam, water and sewage, education, health, and social work diminished significantly.

Bank branches in Khartoum and other states in Darfur and Kordofan regions have been significantly affected by looting. This will potentially affect trust in the banking system and increase the ratio of money out of the banking sector (STPT, 2023). In addition to the looting, clashes have disrupted some branches of the Central Bank of Sudan (CBoS) in Khartoum, resulting in the disruption of different services such as electronic clearing and transfers during the first two months impacting external and domestic trade. The CBoS adopted different mitigation measures to cope with the disruption to facilitate financing of agricultural farmers, exports, and imports, as well as to facilitate the sales and exportation of gold.

4.3.2 Impact on Imports

During the first and second months of the war imports witnessed notable reductions, especially imports through Port-Sudan. Several container shipping companies (e.g., Moller – Maersk Group) discontinued taking new shipping reservations for goods exported to Sudan (Alsharq Al-Awsat, 2023). Due to the closure of several factories in Khartoum, especially agro-processing, the country shifted to imports from neighboring countries such as Egypt and Ethiopia.

Khartoum, with an estimated population of 10 million people, was not only the largest market for imports but also operates 43 percent of the bank branches in the country (MoFEP, 2020), which plays a key role in financing imports and exports. On June 14th, 2023, the CBoS announced control and regulation through a paper system for imports to avoid food commodity scarcity (CBoS, 2023b).

In response to the challenges imposed by the war, the government announced some encouraging policies for the industrial sector including the abolition of all state fees on the sector, which was enacted before the war. Yet, this is not expected to significantly contribute to encouraging new investments capable of covering the production gap associated with the loss of factories in Khartoum State.

Imports of food products and beverages such as wheat, beverages, and other food are expected to increase. Moreover, imports of strategically important commodities (such as petroleum products) which have decreased domestically are expected to increase. On the other hand, imports of other luxury goods and services are expected to decline significantly given the reduction in the demand side because of the economic slowdown caused by the war.

4.3.3 Impact on Exports

Immediately after the eruption of the conflict, exports through the Port-Sudan were suspended (Fresh Plaza, 2023). Although some goods have been exported through land borders (especially to Egypt), exports to other bordering trade partners in the South, East, and West of the country were affected due to the difficulty of transporting goods from or through the conflict zones. Neighboring countries, such as Chad and South Sudan were significantly affected by reduced Sudanese exports (VOA Africa, 2023). The reductions in exports are estimated based on reduced production and the availability of secure transportation of goods to trading partners in bordering countries.

On May 22nd, CBoS replaced the electronic exportation system with a paper-based system to allow exports to resume through Port-Sudan (CBoS, 2023c). In June, CBoS canceled the mandate that gold refining take place in Sudan allowing banks to export gold ore export for concessionaires and small mining companies (CBoS, 2023d: Sudan Akhbar, 2023c). These measures have facilitated some exportation and especially that of gold.

One important challenge for exports is the secure transportation of goods from the production areas to the onshore or offshore export sites because of the conflict. On August 13, 2023, the government also closed the Khartoum-Bara exportation road, which is one of the main roads that link the western regions with Khartoum and Port-Sudan.

4.3.4 Impact on Household Remittances

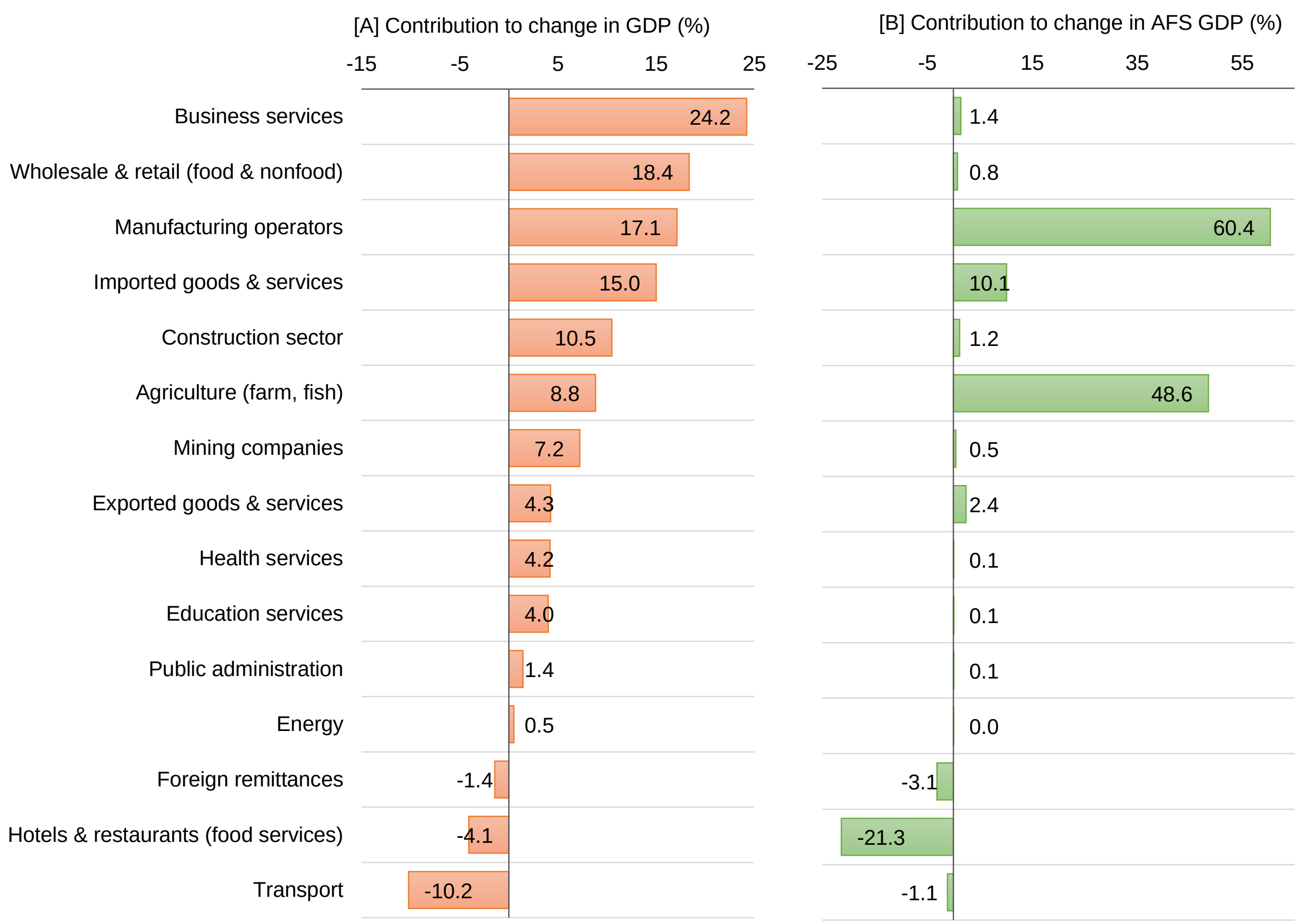
Household remittances are increasing significantly during the conflict. With 55 percent of the population living in areas that have been affected by the conflict, a significant portion of them have lost their jobs and became dependent on their savings and remittances as the main sources of income. Remittances are expected to further increase as the conflict continues.

5 ECONOMIC IMPACT OF THE ONGOING CONFLICTS

5.1 The contribution of the different impact channels to the overall outcome

The different simulations are implemented using 15 impact channels representing sectors/commodities groups to influence their demand as well as their imports and exports.[4] In addition, changes in foreign remittances to households are also implemented. In Figure 3, we show the contribution of each impact channel to the changes in GDP as well as agrifood system GDP. The contribution of the channels to GDP (panel A) are ordered from the largest to smallest contribution with business services making the highest contribution, followed by wholesale and retail services, and manufacturing operations. Because the manufacturing sector, particularly food processing, is centered in and around Khartoum state where the conflict is focused, Panel B shows how this impacts agrifood system (AFS) GDP. The disruption to agriculture also has a large AFS GDP impact, which provides material inputs to the agro-processing sector.

Figure 3: Contributions of the impact channels to changes in GDP and AFS GDP (%)



[4] A list of the 15 impact channels together with the average changes applied to each impact channels and aggregated SAM accounts are provided in appendix Table A2.

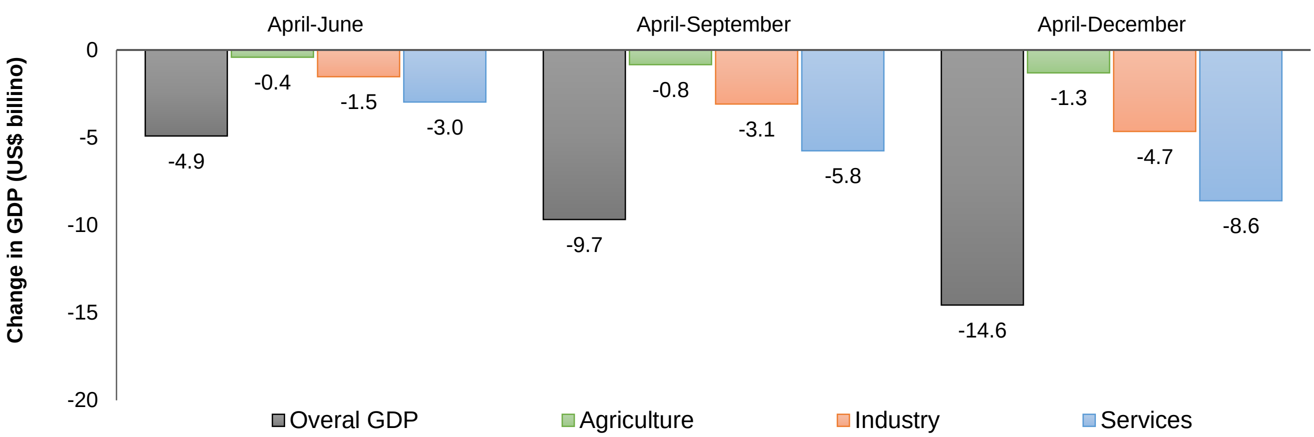
Source: Authors' compilation based on Sudan's SAM Multiplier model.

As shown Figure 3, there are sectors that benefited from the disruption caused by the conflict such as hotels and restaurants and the transportation sectors. Their contributions are captured in negative numbers indicating that these sectors together with the increasing flow of foreign remittances have contributed to reducing the overall shock on the economy. The smaller role of the trade and transport sectors for AFS GDP compared to the change in GDP confirms the findings of Diao et al. (2023) that the agrifood system in Sudan is more domestically oriented.

5.2 Impacts on GDP and employment by sector

Results of the SAM multiplier model on changes in GDP as well as the GDP by major sectors, namely, agriculture, industry, and services in US$ billions are reported in Figure 4. They suggest that Sudan has already lost about US$ 5 billion as of the end of June. This loss is expected to reach US$10 billion if the war ends in September and US$15 billion if the war continues until the end of 2023. This will represent a decline of 48 percent in GDP if the war continues until the end of the year. At the sectoral level the losses will be 21 percent, 70 percent, and 49 percent in agriculture, industry, and services, respectively. Results indicate that the industry sector is the most affected by the war under the different scenarios. This is explained by the fact that most of the industrial facilities in Sudan are concentrated in and around the urban areas of the Khartoum state, where most of the conflicts are taking place.

Figure 4: Change in GDP by major sectors under the three conflict scenarios (US$ billions)



Source: Authors' compilation based on Sudan's SAM Multiplier model.

For a deeper dive into the consequences of the conflict at the sectoral level, we focus on the April-December scenario and provide additional sectoral breakdown presented in Table 1. The second column of the table presents the percentage share of each subsector of the economy in the total GDP, the third the fourth columns of the table present changes under the April-December scenario on GDP in percentage and in US$ billions, while the fifth column presents the contribution of each subsector to the overall change in the GDP. For example, the economy is expected to shrink by 48 percent compared to its 2021 level, equivalent to US$ 15 billion decline in the overall GDP. Primary agriculture, which contributes 20.2 percent to GDP (Randriamamonjy et al., 2023), will decline by 21.4 percent if the war continues until the end of the year equivalent to US$1.3 billion. Agriculture contributes 9 percentage points to the overall decline in the economy. These results are comparable to findings by Elbadawi's (2023) and Althibah et al. (2019) estimation of the impact of the Syria and Yemen wars during their first years as well as estimates of the damage caused by the current conflict in Sudan.

Within agriculture, crops and livestock are affected similarly and they also generate a similar impact on the overall GDP. However, the forestry sector, which includes gum Arabic, an important forestry export commodity, would decline by 37 percent. This has implications for those in Kordofan and Darfur regions where gum Arabic is produced as well as potential global implications given Sudan's contribution to the global supply.

Within industry, the impact on the mining sector (particularly gold) is apparent. It records a loss of US$ 2 billion and contributes 15 percent to the overall impact on the GDP. Other subsectors within industry are dramatically affected including manufacturing of textiles, clothing and leather, wood and paper products and the utilities including electricity, water, and construction.

Despite the challenges facing the hotels and food services sectors within the Khartoum state, they are the only subsectors in the economy to record positive changes due to the conflict. Hotels and accommodation services in states other than Khartoum, particularly in the Red Sea state (the de facto capital of Sudan), the Northern state and the River Nile state have witnessed increasing demands and sharp increases in prices. This explains their increase of 33 percent, generating an additional US$ 0.3 billion and reducing the overall loss in the economy by 2.2 percent.

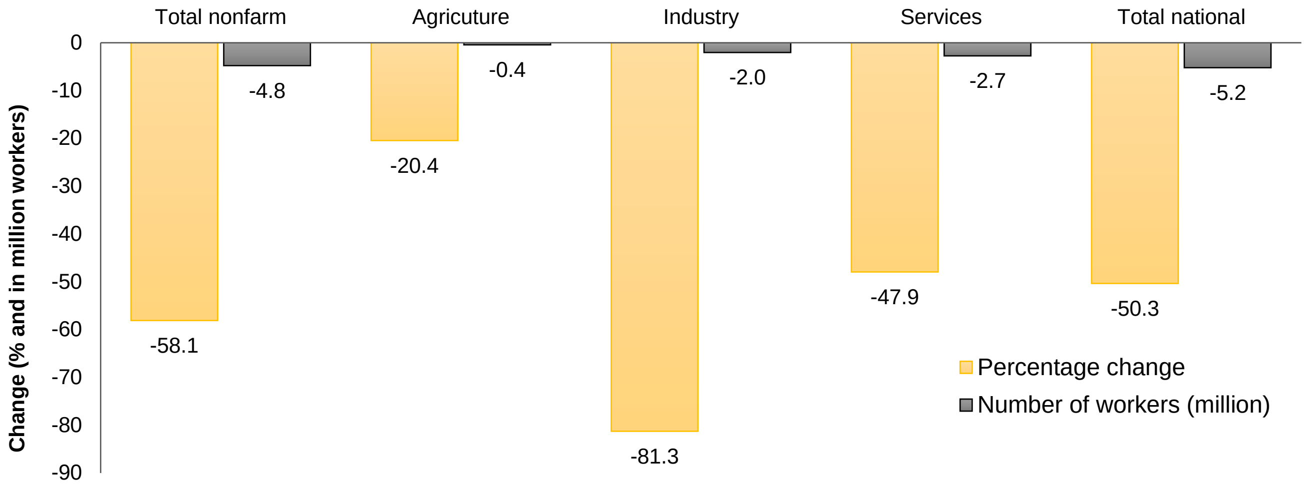
Table 1: Change in GDP by subsector due to the war under the April-December scenario

Sectors	Percentage share (%)	Percentage change (%)	Dollar change (US$ billion)	Contribution to change (%)
Total economy	**100.0**	**-48.3**	**-14.6**	**100.0**
Agriculture	**20.2**	**-21.4**	**-1.3**	**9.0**
Crops	10.4	-21.0	-0.7	4.5
Livestock	9.1	-21.7	-0.6	4.1
Forestry	0.5	-36.8	-0.1	0.4
Fishing	0.2	-0.1	0.0	0.0
Industry	**21.8**	**-70.8**	**-4.7**	**31.9**
Mining	7.9	-93.6	-2.2	15.2
Manufacturing	9.9	-47.2	-1.4	9.7
Food processing	4.2	-52.1	-0.7	4.5
Beverages & tobacco	0.0	-51.0	0.0	0.0
Textiles, clothing & leather	0.0	-88.6	0.0	0.0
Wood & paper products	0.1	-93.5	0.0	0.2
Chemicals & petroleum	2.2	-45.8	-0.3	2.1
Machinery, equipment & vehicles	1.8	-33.3	-0.2	1.3
Furniture & other manufacturing	1.6	-49.5	-0.2	1.6
Electricity & water	0.5	-52.1	-0.1	0.5
Construction	3.6	-88.3	-1.0	6.5
Services	**58.0**	**-49.2**	**-8.6**	**59.1**
Whole & retail trade	15.3	-91.0	-4.2	28.9
Transport & communication	9.7	-2.1	-0.1	0.4
Hotels & food services	3.2	33.1	0.3	-2.2
Finance & business services	14.4	-62.5	-2.7	18.6
Public admin., health & education	9.7	-62.0	-1.8	12.5
Other services	5.7	-7.9	-0.1	0.9

Source: Authors' compilation based on Sudan's SAM Multiplier model.

The resulting reduction in employment by aggregate sectors caused by shrinking output are shown in Figure 5. At the national level and compared to sectoral employment in 2021, half of workers are expected to lose their jobs (about 5.2 million). The aggregate service sector which is the dominant employer within the economy is expected to lose about 2.7 million jobs with employment within the sector declining by 47.9% relative to its level of employment in 2021. The agricultural sector would lose up to 0.4 million jobs constituting a reduction of 20.4 percent and the industry sector would lose about 2 million jobs, which is equivalent to 81.3%.

Figure 5: Job losses by aggregate sectors under the April-December conflict scenario



Source: Authors' compilation based on Sudan's SAM Multiplier model.

A recent survey investigating the impact of the conflict on the agro-processing enterprises in Sudan confirms that the employment effect on the agro-processing workers so far is considerable (Kirui et al., 2023). Their findings suggest that only 7 percent of the workers in the agro-processing sector of Sudan are working normally after the conflict. Their results further suggest that 20 percent of the workers in the sector were laid off due to the conflict, while another 47 percent were sent on unpaid leave and 7 percent sent on paid leave (Kirui et al., 2023).

5.3 Impacts on the agrifood system

A country's agrifood system is a network of actors, connected by their differing roles in supplying and using agrifood products and in the governance of those activities (Diao et al., 2023)[5]. The agrifood system conceptual framework referred to here, measures the agrifood system from a supply-side perspective using national accounts and employment statistics and allows measuring, tracking, or simulating growth and employment changes over time.

Table 2 subdivides the economy into two major subsectors, namely, the agrifood system and non-agrifood system. As shown in the table, the agrifood system component constitutes 33.6 percent of the overall economy in Sudan while the non-agrifood system constitutes the remaining 66.4 percent. Results show that all the subcomponents of the agrifood system decline except the hotel and food service component, which grows by up to 33 percent if the conflict continues until the end of the year, generating gains of about US$ 0.3 billion relative to its level in 2021. Overall, the agrifood system losses would be US$ 2.2 billion if the conflict does not stop before the end of the year (22 percent lower than its level in 2021). The agro-processing component is the most affected, declining by 52 percent.

[5] Refer to Diao et al. (2023) on the conceptual aspect of the agrifood system framework as well as agrifood system diagnostics covering structure and drivers of transformation in Sudan.

Table 2: Change in agri-food system GDP due to the conflict under the three scenarios

Sectors	Percentage share (%)	Percentage change (%)			Dollar change (US$ billion)		
		Apr-Jun	Apr-Sep	Apr-Dec	Apr-Jun	Apr-Sep	Apr-Dec
Total economy	**100.0**	**-16.3**	**-32.1**	**-48.3**	**-4.9**	**-9.7**	**-14.6**
Agrifood system	**33.6**	**-6.8**	**-13.7**	**-21.6**	**-0.7**	**-1.4**	**-2.2**
Agriculture	20.2	-6.8	-13.7	-21.4	-0.4	-0.8	-1.3
Agro-processing	4.2	-17.7	-35.2	-52.1	-0.2	-0.4	-0.7
Trade and transport	5.9	-10.0	-20.0	-30.6	-0.2	-0.4	-0.5
Hotel and food services	3.2	12.9	25.6	33.1	0.1	0.3	0.3
Outside agrifood system	66.4	-21.1	-41.4	-61.8	-4.2	-8.3	-12.4

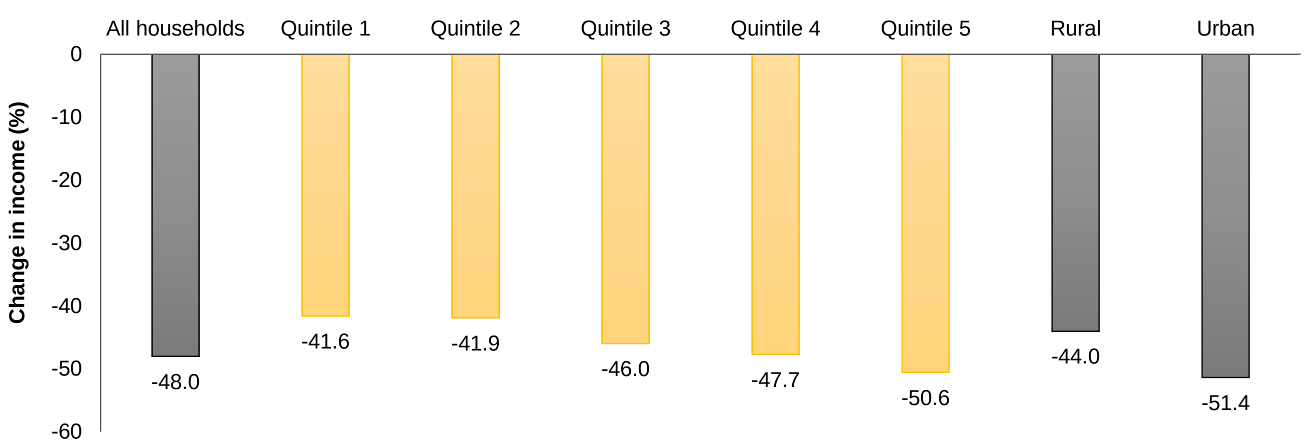
Source: Authors' compilation based on Sudan's SAM Multiplier model.

The contraction of the agrifood system reduces employment by 0.6 million workers (23 percent lower than 2021 level of employment) if the war continues until the end of the year. The corresponding reduction in employment outside the agrifood system would be 4.6 million workers (59 percent less than 2021 level of employment). Agriculture, which is the dominant employer within the agrifood system would lose up to 20.4 percent of its workers (0.4 million workers less than those employed in 2021), followed by the processing and trade and transport sectors, each losing about 0.1 million workers compared to their employment in 2021.

5.4 Impacts on household incomes and poverty

Figure 6 classifies households according to location (rural and urban) and according to five income quantiles (quantile 1 being the poorest and quintile 5 being the richest). At the national level, households would lose nearly half of their income (compared to 2021 levels) due to the conflict if it continues until the end of the year. It is no surprise that the losses in urban areas are higher than those in rural areas driven by the fact that Khartoum state is at the center of the conflict. It is also no surprise that higher income quintiles are affected more than lower income quintiles due to the losses in housing and the industrial jobs in cities, particularly in the capital state.

Figure 6: Change in households' income due to the war under the April-December scenario

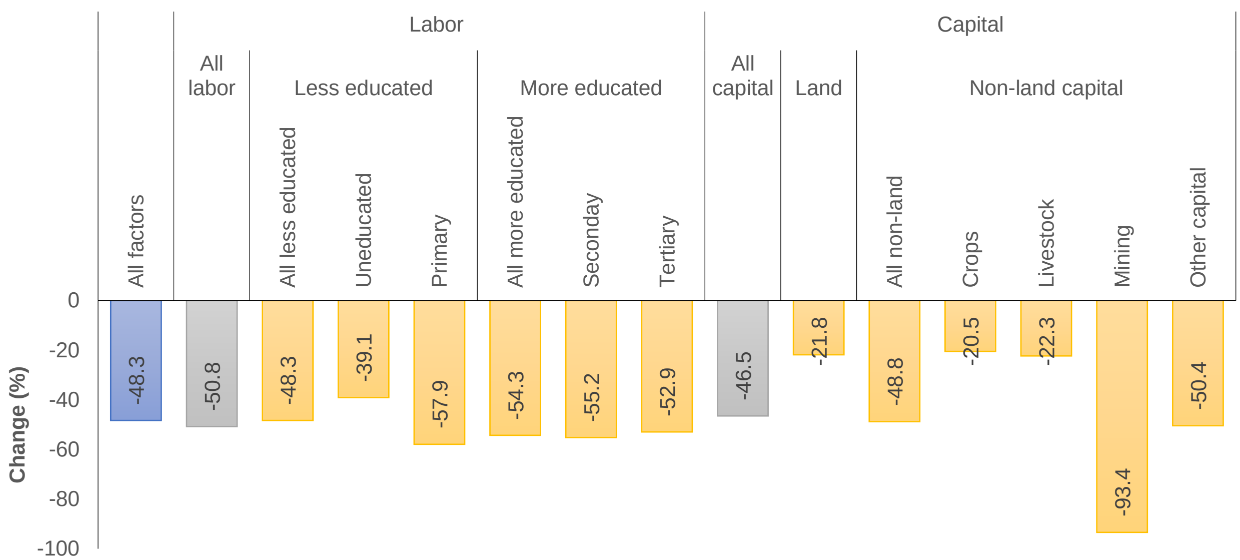


Source: Authors' compilation based on Sudan's SAM Multiplier model.

Production factors are a major source of income to household groups and are affected by the conflict under the April-December scenario as depicted in Figure 7. Income to all production factors will decline by at least 48.3 percent compared their levels of 2021. Within the aggregate production factors, labor income would decline by 50.8 percent, while capital income would decline by 46.5 percent relative to their levels in 2021. The reduction in the income of employees would be the highest for primary educated workers, while the types of capital that would suffer the most are those used in the mining sector, declining by 93.4 percent.

The impact of these reductions in income to production factors are transmitted to the different household groups based on their ownership of these factors. For instance, households supplying predominantly primary educated workers to the job market would face higher reductions in their income from production than those predominantly supplying other category of workers (Figure 7).

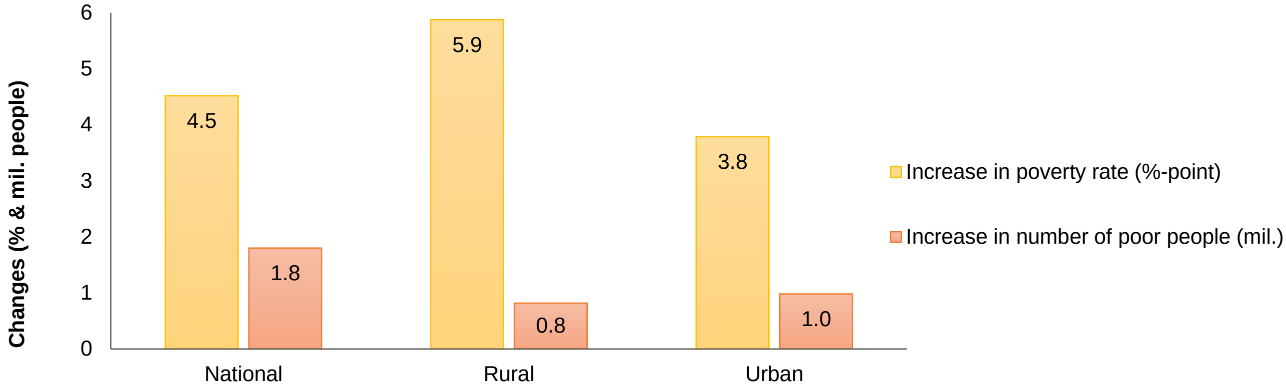
Figure 7: Change in income to production factors in the April-December scenario (%)



Source: Authors' compilation based on Sudan's SAM Multiplier model.

The reductions in income to households combined with the increases in prices of goods and services and the damage to household assets and infrastructure lead to changes in poverty depending on households' ability to mobilize resources and their flexibility to substitute consumption items. Considering the April-December scenario, the poverty rate at the national level is expected to increase by 4.5 percentage points relative to its levels in 2021, leading to another 1.8 million people in poverty. Rural Sudan is expected to witness a higher increase in the poverty rate (5.9 percentage points) compared to urban Sudan (3.8 percentage points). An additional one million people in urban areas would be pushed into poverty while 0.8 million people would be pushed in poverty in rural areas due to the conflict (Figure 8).

Figure 8: Change in poverty rate and number of poor people under the April-December scenario



Source: Authors' compilation based on Sudan's SAM Multiplier model.

Reaching a deal between SAF and RSF sooner would reduce these numbers significantly. The modeling framework results suggest the increase in poverty rate at the national level to be by 1.7 percentage points relative to its levels in 2021 if the war ends in June or 3.2 percentage points if in September. This means that the people who would be pushed into poverty can be reduced from 1.8 million people to 0.7 million or 1.3 million should the war end in June or in September, respectively.

6 CONCLUTIONS AND POLICY IMPOLICATIONS

Using a 2019 SAM multiplier modeling framework for Sudan connected to national account statistics from the Central Bank of Sudan for 2021 and other country data including population and poverty, this study assesses sectoral and economywide implication of the conflict in Sudan. The conflict has exacerbated the economic and political crisis in Sudan and, because of its centralized location in Khartoum, government and public services, agro-processing companies, and factories have been most affected.

We identified 15 different impact channels through which the conflict affects the economy. This includes reductions in production, exports, and imports of different commodities within agriculture (on and off farm), industry (including mining and construction) and services (public and private). In addition, changes in foreign remittances to households are also considered given the role they are playing during this crisis.

The shocks are introduced in the modelling framework under three conflict prolongation and escalation scenarios. In the first scenario the conflict is assumed to have stopped at the end of June 2023, which is an attempt to depict the actual damage so far. The second scenario assumes that the conflict continues until the end of September 2023, while the third scenario assumes that the conflict continues until the end of 2023. While implementing the shocks in the modelling framework, we considered the seasonal impact, which is especially important in the agricultural sector.

Because the conflict is escalating and extending beyond Khartoum, the three scenarios show that the damage and impact on the economy would increase as the conflict continues because of the expansion of the areas affected by the war. At the national level, the conflict is expected to shrink the economy by half leading to about US$ 14.6 billion in losses if it runs through December 2023. Most of the losses come from the services subsector (the largest in the economy) but in percentage terms, the industrial sector loses the most, shrinking by about two thirds by the end of 2023.

The fall in production in most sectors would cause job losses all over the country. The industrial sector, which is mainly around and inside the capital state of Khartoum, is where most of the job losses occur. More than 80 percent of the jobs within industry would be lost accounting for about half of the total jobs overall if the conflict continues until the end of 2023. Those losing their jobs are not necessarily uneducated; rather the industrial sector draws from those with primary, secondary, and tertiary education. Both rural and urban households are affected, though urban households are affected slightly more due to the concentration of people and industry in Khartoum. The conflict will increase the number of poor people in the country by nearly 1.8 million and the poverty rate by nearly 5 percentage points if it continues until the end of 2023.

Reaching a deal between SAF and RSF sooner would reduce these numbers significantly. The modeling framework results suggest the increase in poverty rate at the national level would be by only 1.7 percentage points relative to its levels in 2021 if the war ended in June or by 3.2 percentage points if it concludes in September. This means that the people who would be pushed into poverty can be reduced from 1.8 million people to 0.7 million or 1.3 million should the war ended in June or ends in September, respectively. This study therefore calls for rapid interventions from all relevant parties to help reach an end to the fighting.

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APPENDIX

Table A1: The implemented shocks by disaggregated SAM accounts and impact channel (percent)

Account	i_agri	i_mine	i_manu	i_elec	i_cons	i_trad	i_tran	i_hotl	i_bsrv	i_padm	i_educ	i_heal	i_expt	i_frem	i_impt
csorg	-15														
cwhea															15
cpuls	-10														
cgnut	-18												-20		
coils	-10												-20		
croot	-10														
cleaf	-10														
cvege	-10												-20		-45
ccott	-15												-20		
cnuts															-40
cbana	-10														
cfrui	-10														-40
cocrp	-10														
ccatt	-15												-20		
cmilk	-15														
cpoul	-20														-40
ceggs	-20														-40
csmlr	-15												-20		
coliv	-10												-20		
cfore	-10														
ccoil		-20											-25		
comin		-20											-20		
cmeat			-49										-40		-40
cfsea			-49												-40
cdair			-42												-40
cfveg			-49												-40
cfoil			-42										-40		-40
cmmll			-42												-40
csmll			-39												
crmll			-42												-40
cwmll			-40												15
cgmll															-40
csref			-20												-32
cpcof															-54
cptea			-49												15
cfood															15
cfeed			-35												-63
cbeve			-49												15
cptob															15
cyarn													-20		
ctext															-40
cclth															-40
cleat			-49												-40
cwood			-49												-40
cpapr			-49												-40
cpetr			-42												42
cfert															-40
cchem															-40
cnmet															-40
cmach															-40
cequi															-40
cvehi															-40
coman			-49												-40
celec				-35											
cwatr				-40											
ccons					-49										
ctrad						-40									
ctran							25								
chotl								25							
crest								25							
ccomm									-20						

Account	i_agri	i_mine	i_manu	i_elec	i_cons	i_trad	i_tran	i_hotl	i_bsrv	i_padm	i_educ	i_heal	i_expt	i_frem	i_impt
cfsrv									-30						
creal									-30						
cbsrv									-30						
cpadm										-30					
ceduc											-45				
cheal												-45			
hhd-f1														0	
hhd-f2														1	
hhd-f3														0	
hhd-f4														0	
hhd-f5														1	
hhd-u1														0	
hhd-u2														0	
hhd-u3														0	
hhd-u4														0	
hhd-u5														1	

Table A2: The 15 impact channels used to depict the impact of the conflict on the economy and applied changes by aggregate SAM accounts (percent)

No.	Code	Full name of impact channels	Agriculture	Industry	Services	Households
All	i_comb	All active channels combined				
1	i_agri	Agriculture (farm, fish)	-11.74			
2	i_mine	Mining companies		-1.21		
3	i_manu	Manufacturing operators		-23.77		
4	i_elec	Energy			-5.36	
5	i_cons	Construction sector			-3.50	
6	i_trad	Wholesale & retail (food & nonfood)			-2.86	
7	i_tran	Transport			1.79	
8	i_hotl	Hotels & restaurants (food services)			3.57	
9	i_bsrv	Business services			-7.86	
10	i_padm	Public administration			-2.14	
11	i_educ	Education services			-3.21	
12	i_heal	Health services			-3.21	
13	i_expt	Exported goods & services	-7.37	-4.39		
14	i_frem	Foreign remittances				0.41
15	i_impt	Imported goods & services	-10.00	-25.21		

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