## ERF WORKING PAPERS SERIES

# Sudan's Future between Catastrophic Conflict and Peaceful Renaissance Growth Trajectories: Long-term Growth Model Simulations

Ibrahim Elbadawi and Federico Fiuratti



Working Paper No. 1708 June 2024

## SUDAN'S FUTURE BETWEEN CATASTROPHIC CONFLICT AND PEACEFUL RENAISSANCE GROWTH TRAJECTORIES: LONG-TERM GROWTH MODEL SIMULATIONS

Ibrahim Elbadawi and Federico Fiuratti<sup>1</sup>

Working Paper No. 1708

June 2024

This paper is sponsored by the Economic Research Forum (ERF) and the Finance for Development Lab (FDL) project on "stabilization and adjustment in MENA", and generously supported by IDRC. The findings, interpretations and conclusions expressed in this publication are entirely those of the author(s) and should not be attributed to the ERF, FDL, or members of their Boards or donors. Ibrahim Elbadawi would like to acknowledge the able research support by Sara Ragab.

Send correspondence to: Ibrahim Elbadawi Economic Research Forum iaelbadawi@erf.org.eg

<sup>&</sup>lt;sup>1</sup> The World Bank

First published in 2024 by The Economic Research Forum (ERF) 21 Al-Sad Al-Aaly Street Dokki, Giza Egypt www.erf.org.eg

Copyright © The Economic Research Forum, 2024

All rights reserved. No part of this publication may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without permission in writing from the publisher.

The findings, interpretations and conclusions expressed in this publication are entirely those of the author(s) and should not be attributed to the Economic Research Forum, members of its Board of Trustees, or its donors.

#### Abstract

Unfortunately, the worst is still to come should it escalate into a large scale long-duration ethnic war. We show in this paper that this is a distinct possibility in view of the country's highly fractionalized society. Using a Long-term Growth Model for Sudan, we find that the country could lose more than \$2.2 trillion relative to a modest counterfactual peacetime scenario with a 4% annual growth rate. Realization of the conflict scenario could very well pose an existential threat for the country and its territorial integrity. Ending this war before it scales up and building sustainable peace is an absolute imperative for Sudan that requires a robust political settlement, leading to a transformative civil-democratic transition. Given the war-ravaged social capital and diminished domestic capabilities, sustainable peacebuilding requires a multi-dimensional UN-Regional peacekeeping operation for Sudan, guided by a broad civilian democratic coalition. While UN missions could help improve the "quality" of peace building, longer-term sustainability requires sustained, transformative, broad-based economic growth. The emerging political order, therefore, should be accountable for achieving development and prosperity, not just majorities in the electoral competition. Under such developmental democratic civil peace, we predict "miracle" growth for Sudan. In an era of relocalization and concerns about food security, the vast Sudanese agricultural resource base provides a magnet for inward FDI flows that will help deliver the envisaged growth.

**Keywords:** Sudan, military warfare, ethnic civil war, peacebuilding, civil democratic peace, long-term growth, catastrophic economic cost, transformational "renaissance" growth, agricultural potential

JEL Classifications: P5, O1, F4

#### ملخص

يشهد السودان صراعاً عسكرياً فصائلياً شديد الوطأة منذ أكثر من عام. ولسوء الحظ، لا يزال الأسوأ قادماً في حال تصاعدت الأمور إلى حرب إثنية واسعة النطاق وطويلة الأمد. نبين في هذه الورقة البحثية أن هذا يظل احتمالاً مرجحاً، بالنظر إلى الانشطارات المجتمعية الهوياتية التي تطبع المجتمع السوداني والاستقطاب السياسي الماثل. وباستخدام نموذج نمو طويل الأجل للسودان، نجد أن البلاد يمكن أن تخسر أكثر من 2.2 تريليون دولار أمريكي مقارنةً بسيناريو متواضع في زمن السلم بمعدل نمو سنوي يبلغ 4%، مما يشكل تهديداً وجودياً للبلاد وسلامة أراضيها. إن إنهاء هذه الحرب قبل توسع نطاقها وبناء سلام مستدام هو ضرورة حتمية للسودان، تتطلب تسوية سياسية متينة، تؤدي إلى انتقال مدني ديمقراطي تحويلي. وبالنظر إلى تهتك رأس المال الاجتماعي الذي دمرته الحرب وتراجع القدرات المحلية، فإن بناء السلام المستدام يتطلب عملية أممية متعددة الأبعاد من الأمم المتحدة لحفظ السلام في السودان، بتوجيه من تحالف مدني ديمقراطي يحظى بإجماع شعبي واسع. وفي حين أن بعثات الأمم المتحدة لحفظ السلام في السودان، بتوجيه السلام، إلا أن الاستدامة على المدى الطويل تتطلب عملية أممية متعددة الأبعاد من الأمم المتحدة لحفظ السلام في السودان، بتوجيه السلام، إلا أن الاستدامة على المدى الطويل تتطلب نمواً اقتصادياً مستداماً وتحويلياً عريض القاعدة. ومن ثم، ينبغي أن يكون النظام السلام، إلا أن الاستدامة على المدى الطويل تتطلب نمواً اقتصادياً مستداماً وتحويلياً عريض القاعدة. ومن ثم، ينبغي أن يكون النظام السياسي الناشئ مسؤولاً عن تحقيق المدى الطويل تتطلب نمواً اقتصادياً مستداماً وتحويلياً عريض القاعدة. ومن ثم، ينبغي أن يكون النظام السياسي الناشئ مسؤولاً عن تحقيق المدى الطويل تتطلب نمواً اقتصادياً مستداماً وتحويلياً عريض القاعدة. ومن ثم، ينبغي أن يكون النظام المياسي الناشئ مسؤولاً عن تحقيق المدى القاردهار، وليس فقط تحقيق الأغلبيات في المنافسة الانتخابية. في ظل هذا السلام المدني المياسي الناشئ مسؤولاً عن تحقيق المدى المواز الميودان. وفي حقيق الأغلبيات في المنافسة الانتخابية. ون ظلمان المدني المياري الديمقراطي النهض وي، نتوقع تحقيق الم والم وليس فقط تحقيق الأغلبيات وي الماوف بشأن الأمن الغذائي، توفر قاعدة الموارد الرراعية السودانية الشاسعة نقطة جذب لتدفقات الاستثمار الأجنبي الماشر والتي ساعد بوروا ول المان ال

### 1. Introduction

Sudan has been devastated by a high intensity factional military conflict since April, 2023, pitting the Sudanese Armed Forces (SAF) against the paramilitary Rapid Support Force (RSF).<sup>2</sup> This war is a tragic legacy of the long-reigning kleptocratic "Ingaz"<sup>3</sup> regime of General Omer al-Bashir, which ruled the country for some thirty years since June1989 until it was deposed by the leadership of the two armies in April 2019, following a massive popular uprising in December 2018. As discussed in the literature, the presence of a divided military institution in Sudan could be attributed to the "coup-proofing" strategy of "coup-fearing" autocrats, willing to undermine the military effectiveness of the state when making an effort to extend their own tenure (Powell, 2014). Indeed, the creation of RSF was the strategy of choice for al-Bashir to contain the risk of coups from within his armed forces as well as to retain a vanguard combat force against rebel groups opposing his regime.

Despite their inherently competitive, even conflictive, relationship in their pursuit of power, influence and rents under a kleptocratic regime - realizing that the Ingaz regime could not be rehabilitated in the light of the massive popular uprising - the leaders of SAF and RSF colluded to topple the regime and to jointly install a ruling "Transitional Military Council" (TMC). The leadership of both armies were also accused of complicity in a massacre on June 3d, 2019, which triggered a new massive wave of popular protests. Under intense popular pressure and international condemnation, they were forced to dissolve the TMC and negotiate a political settlement that led to the formation of a power-sharing transitional military-civilian government with the Forces of Freedom and Change (FFC) – a broad-based civilian coalition that led the protest against al-Bashir regime. The country seemed to be on course to a promising democratic, developmental future but the hopes of millions, aspiring Sudanese youth, who carried out the "glorious" revolution, were dashed by yet another coup in October 2021. In view of the entrenched economic interests and the desire to continue to wield political influence, the military leadership of both factions reneged on their commitment to the constitutional transition to civilian democratic rule, squandering the economic gains and the popular political legitimacy associated with the revolution. Therefore, again, the leadership of the two armies also seemed to have worked in tandem in carrying this coup.<sup>4</sup>

However, mounting popular protests, renewed international isolation and deepening economic woes forced the military leadership to agree to an even more elaborate "framework agreement", brokered by the UN and the African Union. The agreement calls for a "purely" civilian transitional authority and for the army to exit politics and business and be transformed into an a-political, unified professional institution. The ramifications of the security sector reform provisions, especially with regard to the pace of the integration of the RSF into SAF and issues associated with the structure and accountability in the new chain of command, led to a major rift between the

<sup>&</sup>lt;sup>2</sup> The Sudanese armed forces (SAF) is led by Gen Abdel Fattah al-Burhan, while the paramilitaries of the Rapid Support Forces (RSF) is led by Gen Mohamed Hamdan Dagalo, known as Hemedti.

<sup>&</sup>lt;sup>3</sup> "Ingaz" is an Arabic word for "Salvation".

<sup>&</sup>lt;sup>4</sup> See Elbadawi and Alhelo (2023) and the literature cited therein, for a detailed analysis of the economics and political aspects of the post-December 2018 transition in Sudan.

leaders of the two military institutions, which culminated into the eruption of the tragic war.<sup>5,6</sup>

As an internal war, this conflict has been unprecedented in terms of the intensity of violence and the scale of death and destruction associated with it, not to mention its immense humanitarian crisis. According to the Armed Conflict Location and Event Data Project (ACLED) - an organization that collects conflict and crisis-related data, by early January, in just nine months since the outbreak of the conflict, more than 13,100 people had been killed.<sup>7</sup> At the same time, over 10.7 million people have been displaced across Sudan's 18 states, 1.7 million of whom have sought refuge in neighboring countries, making Sudan the largest displacement crisis in the world.<sup>8</sup>

Moreover, in view of the fact that, unlike traditional insurgencies, this war has been fought in the capital and other major cities, it has also substantially damaged the country's industrial base, education, and health facilities. Therefore, it has exacted humongous economic cost.<sup>9</sup> The war also led to the collapse of critical services - including commerce, financial, and information and communications technology services - and the erosion of state capacity, with detrimental impacts on food security and livelihood. Among other chilling data, the United Nations Office for the Coordination of Humanitarian Affairs (OCHA, 2024) reported that the "devastating conflict and organized violence, coupled with the continued economic decline, have driven about 17.7 million people across Sudan (37 per cent of the population) into high levels of acute food insecurity".

Peace efforts were mounted by several regional and international actors since the early phases of the conflict, including those of the African Union, the Intergovernmental Authority on Development (IGAD)<sup>10</sup> and the Jeddah Forum.<sup>11</sup> However, these initiatives were met with limited success so far. Unfortunately, despite its unimaginable humanitarian crisis and tremendous economic cost in just ten months, in the absence of a credible peace process for ending this war in a few months, while a decisive win by either of the two armies remains a very remote possibility, the worse is yet to come. This is because the risk of this high intensity violence morphing into large-scale, long-duration ethnic/regional war is very high.

In what follows we show that the heightened concern about the 'ethnicization and regionalization' of this, so far, largely intra-military war is justified. The highly fractionalized Sudanese society, which is further hardened and radicalized by the ongoing war, will likely facilitate recruitment along ethnic and regional lines. Indeed, as some early evidence suggests, this is already happening

<sup>&</sup>lt;sup>5</sup> It is widely believed that the so called "Islamic Front" and its associated cells in the army and other parallel militias were responsible for igniting this war and subsequently implicating SAF and RSF in it: https://orientxxi.info/magazine/war-in-sudan-the-shadow-of-the-islamists,6484.

<sup>&</sup>lt;sup>6</sup> See the Sudan Conflict Monitor #3 on the increasing role of the "Islamists" in the war:

https://sudantransparency.org/wp-content/uploads/2023/06/SCM\_3.pdf

<sup>&</sup>lt;sup>7</sup> <u>https://acleddata.com/conflict-watchlist-2024/sudan/</u>.

<sup>&</sup>lt;sup>8</sup> https://www.iom.int/news/dire-plight-more-10-million-now-displaced-conflicts-sudan-must-not-be-ignored

<sup>&</sup>lt;sup>9</sup>For example, Elbadawi et al (2023) estimate that more than 10 percent of the country's capital stock has been destroyed by the end of 2023. The International Monetary Fund (IMF) projects that Sudan's real Gross Domestic Product (GDP) is likely to reduce by 18.3 per cent in 2024. According to the World Bank, the economy contracted by 12 per cent in 2023 as the conflict has halted production and destroyed human capital and state capacity.

<sup>&</sup>lt;sup>10</sup> IGAD is regional block of eight-countries from the Horn of Africa, Nile Valley and the African Great Lakes. In addition to Sudan, it includes Eretria, Ethiopia, Kenya, Somalia, South Sudan, Uganda, and Djibouti (the host country). <sup>11</sup> The Jeddah Forum was convened by Saudi Arabia and the US governments to broker peace talks between the two warring factions of the Sudanese Army. The 1<sup>st</sup> round of talks was held in May 2023 and in the 2<sup>nd</sup> round the Intergovernmental Authority on Development (IGAD), and the African Union joined the effort as well.

and by both sides. For example, in a recent paper on the impact of the current war on the diverse tribal Blue Nile region in the south-western part of Sudan, Almak (2024: p.10), provides detailed evidence on how, "the war has fuelled ethnic polarization, drawn in its population as cannon fodder and intensified competition among the belligerents over the region's resources. It has also intensified the militarization and narrowing of civil society space." Unfortunately, as this war continues to evolve, the situation in the Blue Nile is mirrored in many regions in Sudan, not to mention the tragic cycle of communal violence in Darfur that predates the war and is now threatening to engulf the entire region as some rebel movements abandoned their earlier neutrality pledge and decided to join the war.<sup>12</sup>

The economic cost and associated humanitarian crisis, even an existential risk for Sudan, of a drawn-out ethnic war could not be fully appreciated without contrasting it with the economic and welfare gains for this richly-endowed country that could be had under sustainable, civil democratic peace. This paper demonstrates this, showing that embarking on a credible, transformational peacebuilding process should be the single most important national agenda for the people of Sudan. Moreover, we must stress that just stopping the war and securing the so called "negative peace", much less achieving sustainable "participatory peace", would require broad-based civilian coalition coalescing around a credible social contract for peace and national renewal, supported and facilitated by the UN and other relevant regional peacebuilding institutions. In the same vein, in a study of post-Arab Spring, Makdisi et al (2024) argue that the foundations of sustainable peace, especially in socially polarized post-Arab Spring societies, are imbedded in the enforcement of a new social contract that embodies democratic governance accompanied by the adoption of economic policies that can nurture investment and provide for sustainable growth, as well as successfully counteract shocks or cyclical downturns to which countries emerging from civil wars are prone.

Section two discusses the role of social characteristics as a determinant of domestic conflict escalation from lower order conflicts- in terms of intensity or scope- to large scale civil wars, and presents simulations of such risk for the case of Sudan, based on probabilistic regression models of the hazard of civil war escalation, conditional on past incidences of riots/popular uprisings or coups/military warfare. Section three assesses the challenges of peace-building for Sudan by analyzing the size of the so called "peace triangle" of Doyle and Sambanis, given the country's attributes.<sup>13</sup> We show that the war-ravaged social capital and depleted domestic capabilities - the two domestic sides of the triangle - requires a multi-dimensional, transformational UN/Regional peace keeping operation (UN PKO) - the third side of the peace triangle. We are hastened to stress, however, that for such external support to gain sufficient legitimacy and, hence, effectiveness, it must be demanded, indeed owned and guided by a broad-based civilian democratic alliance.

In section four, we simulate and analyze the economic cost should the current military warfare spiral into a long-term ethnic civil war, using the World Bank's Long-term Growth Model (LTGM),<sup>14</sup> and accounting for key indicators and informed assumptions pertaining to the economy of Sudan in 2022, the base year prior to the onset of the war. Conversely, in section five we consider the peaceful transformative scenario, which is premised on peacebuilding success that

<sup>&</sup>lt;sup>12</sup> https://mcusercontent.com/b3101ea3866029414729ab5e5/files/48cb57f3-5545-c6e8-403c-427f8de04e68/ElFasherEN.pdf

<sup>&</sup>lt;sup>13</sup> See Doyle and Sambanis (2000) and Sambanis (2008).

<sup>&</sup>lt;sup>14</sup> See Loayza and Pennings (2022).

would contain this war within the military institution and eventually end it during 2024 through a robust political settlement, leading to a resumption of the constitutional path to civilian democratic rule. Under this scenario, the economy is simulated to achieve fast and stable growth, fueled by investment, TFP growth and other growth drivers. We also derive the investment requirements associated with an assumed "growth miracle". The "miracle" growth scenario is justified by appealing to the consensus professional view about the tremendous growth potential of Sudanese agriculture<sup>15</sup>. Finally, section six concludes by outlining a two-pronged, political – economic, social contract for securing "civil democratic peace" and the associated "transformative renaissance growth miracle".

### 2. The Risks of Large-Scale Ethnic War in Sudan

Notwithstanding the lofty nationalist propaganda by the two camps, evidence suggests that both sides have already started preparing for a large-scale ethnic war, drawing recruits from their respective regional and ethnic popular bases. As early as August 2023, just five months since the outbreak of the factional military war, OCHA, the UN Office referred to above, warned that, "Tribal and ethno-religious loyalties are fueling recruitment and support for both sides, and this is only likely to increase if – as seems likely – the conflict continues. This in turn risks sparking a more general tribal/ethnic conflict, particularly in the Darfur region," and went on to argue that "The conflict between the Rapid Support Forces and the Sudan Armed Forces, which started on 15 April, could see cross-border tribal clashes are now fighting each other."<sup>16</sup> In the same vein, Suliman Baldo, the editor of *Sudan Transparency and Policy Tracker* describes how the war is gradually turning into an ethnically driven clusters of local conflicts, "the belligerents and their domestic and foreign allies are far from attaining their objective of imposing unilateral control over Sudan's power and resources. Instead, the conflict has developed into multiple localized ethnically driven clashes beyond either party's control." (Baldo, 2024: p. 1).<sup>17</sup>

Moreover, in terms of the scale of death and destruction, this war looks like an interstate war fought by two opposing armies within the borders of one country. For example, the number of casualties in April 2023, which saw the outbreak of the conflict, topped 700 and rose steadily reaching a peak of more than 2200 in August and, despite sporadically declining thereafter, it remained high at an average monthly number of more than 600 between September and end of February 2024. The extent of intensity of this violence could be better appreciated by noting that the average monthly level of casualties since this conflict began accounts for more than 30 times the monthly number of war-related deaths in the median country experiencing a civil war in the recent past.<sup>18</sup> The dynamics of casualties was mirrored by the spread and expansion of violent events, which rose from more than 200 in April to almost 440 in August, devastating the capital city and spreading to many major cities in the relatively densely populated central and western regions of the country (Figure 1).

<sup>&</sup>lt;sup>15</sup> See for example, World Bank (2020) and Elbadawi et al (2023).

 <sup>&</sup>lt;sup>16</sup> UN Office for the Coordination of Humanitarian Assistance (2023)." Sudan Situation Report Analysis Conflict Parties in the Current Crisis.": https://reliefweb.int/report/sudan/sudan-situation-report-analysis-conflict-parties-current-crisis-august-2023.
 <sup>17</sup> See also Elmedni, Bakry (2023): https://sudantransparency.org/.

<sup>&</sup>lt;sup>18</sup> For example, the median monthly number of battle-related death was 13 in 2022 and 27 in 1989. (Battle-related deaths indicator: https://data.worldbank.org/indicator/VC.BTL.DETH.)



Figure 1. Conflict watch list 2024 - Sudan setting the stage for a long war

Source: Armed Conflict Location & Event Data Project (ACLED), at <u>www.acleddata.com</u>. Note: The figure displays the number of fatalities resulting from battle events in Sudan in addition to the number of battles that occurred within the timeframe starting from April, 2023 through February, 2024.

Therefore, the current cycle of violence, especially if allowed to deteriorate into a full-blown civil war, will undoubtedly cause much direr humanitarian, economic and political crises for the country than it had ever endured throughout its long, tragic history of conflicts and political instability. Indeed, a high-intensity, drawn-out ethnic war could very well pose an *existential* threat for the country and its territorial integrity.

Against this backdrop, we ask three fundamental questions:

- Firstly, how serious the risk involved, since there are country experiences of many violent coups and intra-military conflicts that did not lead to large-scale ethnic wars?
- Secondly, what are the likely drivers of such risk for Sudan, especially the role of social fractionalization and exclusion?
- Thirdly, why should a Sudanese ethnic war be a long-drawn conflict rather than a short, high intensity war akin to the experiences of some civil wars that broke out in the aftermath of popular uprisings?

The received literature provides a useful framework for analysing the recent dynamics of conflicts in Sudan, where the one-sided violence by the Ingaz regime in response to the peaceful popular uprising of December 2018, turned into a tragic massacre under the TMC short rule and continued in the aftermath of the coup on 25 October 2021, leading into the current violent factional military warfare. Specifically, to address the above pivotal questions, we focus on the strand of the literature that analyses civil war as part of a continuum of conflicts within the borders of the state. In this framework, civil wars happen as an escalatory outcome in terms of intensity or scope of violence from coups and other lower intensity conflicts, such as popular uprisings or protests (Bodea and

Elbadawi, 2007).<sup>19</sup> These authors analyzed the risk of manifestations of violence in a multinomial logit empirical specification.

The main findings of this literature that are broadly relevant to this paper are fourfold. Firstly, the combination of low income and authoritarian or factional polity, leading to exclusion of large groups of population form power, are likely to be associated with high probability of violence, regardless of the social characteristics of a society and for all types of political violence. Secondly, history is an important determinant of the amount and type of conflict we observe. For example, coups are associated with future coups and future escalation of conflicts into wars. Thirdly, social fractionalization will most likely be associated with civil wars, as it contributes to resolving the collective action problem; hence, facilitating large scale recruitments along existing lines of identity and contestation. Fourthly, the high risks associated with democratic transitions in poor countries, including post-conflict low-income countries, is not because their democracies are partial or nascent but because they tend to be factional, where institutional openness and political participation are channeled through networks rooted in traditional, ethnic identities; or because the political system is unstable and anocratic.<sup>20</sup>

However, the now classic literature that uses the ethnolinguistic fractionalization index (ELF) to explore a possible causal connection between ethnicity and conflicts has been criticized on the account that it "implicitly postulate unrealistic, individualist interaction topologies. Moreover, ELF-based studies fail to articulate explicit causal mechanisms of collective action." (Cedermanm and Girardin, 2007: p.1). Therefore, rather than continuing to debate the question as to whether highly diverse societies are likely to be more conflictive than homogenous ones, the scholarship community has increasingly focused on whether "states characterized by certain ethnopolitical configurations of power are more likely to experience violent conflict" (Wimmer, Cederman and Min, 2009: p. 1). Testing these alternative hypotheses, they argue, required building the new "Ethnic Power Relations Dataset: EPR".<sup>21</sup>

Subscribing to this critique, we construct indexes of social fractionalization and polarization, based on the shares of politically-relevant social groups of the Ethnic Power Relations (EPR) database, and re-estimated the multinomial model of the earlier literature. Our results broadly corroborate the earlier finding of Bodea and Elbadawi, who used the "basic" ethnic fractionalization and ethnic polarization indexes to account for social characteristics. We also, replicate the main findings of Bodea, Elbadawi and Houle (2017), who use EPR social groups data to analyze the role of excluded groups as a driver of ethnic wars.

In view of its low level of development, as measured by GDP per capita and mostly autocratic or unstable anocratic polity (Figures 2 & 3), it is not surprising that Sudan has fallen prey to all of the three types of violence.<sup>22</sup> The country's post-independence political history is dominated by a

<sup>&</sup>lt;sup>19</sup> See also Bodea, Elbadawi and Houle (2017), who broadly confirm the earlier findings, using the Ethnic Power Relations (EPR) data (Wimmer et al., 2009) instead of the crude ELF index of the earlier paper by Bodea and Elbadawi.

<sup>&</sup>lt;sup>20</sup> Relative to the excluded "full autocracy", partial and full democracy as well as partial autocracy were not found to be significant in the civil war onset equations.

<sup>&</sup>lt;sup>21</sup> The most updated version of which is contained in the Ethnic Power Relations (EPR) Dataset Family 2021 (https://icr.ethz.ch/data/epr/).

<sup>&</sup>lt;sup>22</sup> The popular uprisings that have been the upshot of political mobilization in Sudan were all peaceful but were responded to by one-sided violence against peaceful protesters by the then authoritarian military regimes.

syndrome of fragile, short-lived democracies; military coups, leading to long-reigning autocracies; massive popular uprisings, weakening and eventually deposing the authoritarian regimes and paving the way for free elections and yet another fragile democracy ripe for a new coup, and so on.<sup>23</sup> So far, until 2021, the country experienced countless number of attempted coups, including three successful ones that managed to establish three long-reigning, dysfunctional autocratic military regimes that ruled the country for more than fifty years out of the 68 years of independent Sudan. In turn these regimes were deposed by three popular uprisings (in 1964, 1986 and 2018). The first two led to short-lived democracies, while, as before, the demise of the last autocratic regime led to the formation of a transitional government, which was tasked with the hefty agenda of addressing the pressing security and economic crises associated with the former regime as well as preparing the country for free and open elections three years later. As discussed, unfortunately, the current transition has been derailed by a "creeping coup" that eventually took the fateful stage of deposing the country on course to the onset of the ongoing tragic war less than two years later.

Across all these regimes, the country was reeling under extended episodes of civil wars, some broke out as direct escalation from coups and uprisings. Throughout its some 70 years of independence, the country enjoyed just a little more than 10 years of peace (1972-1982) with no residual violence anywhere in the country. Indeed, the country's relatively highly fractionalized society and its large size of excluded ethnic groups (red bars in Figure 4 below) cohere with its experiences with escalatory violence from popular uprisings and coups to large scale civil wars. The figure also shows that countries that did not experience civil war escalation from riots/uprising or coups tend to have low ethnic fractionalization and small excluded population (the horizontal lines in the figure).



### Figure 2. Sudan's GDP per capita since 1973

Source: World Development Indicators (WDI)

https://data.worldbank.org/indicator/NY.GDP.PCAP.CD?end=2022&locations=SD-XO&start=1960.

Note: The graph displays the GDP per capita measured in current US dollars in Sudan and in Low- and Middle-income countries over the time frame (1973-2022).

<sup>&</sup>lt;sup>23</sup> See Elbadawi and Alhelo (2023) for an extensive discussion of the "Sudanese Syndrome" as a phenomenon dominating the country's post-independence discourse.



Figure 3. Sudan's long-reigning autocracies and aborted short-term democracies

Source: Polity 5 – processed by Our World in Data Links: <u>https://www.systemicpeace.org/polityproject.html</u> Notes: Based on the assessments and index by Polity 5 (2021). The Democracy index combines information on the extent to which open, multi-party, and competitive elections choose a chief executive who faces comprehensive institutional constraints, and political participation is competitive. It ranges from -10 to 10 (fully democratic). It matches the variable polity 2 in Polity 5 (2021).



Figure 4. Ethnic fractionalization and excluded groups in countries experiencing civil war escalations

Notes: The Ethnic Fractionalization index is computed using Ethnic power relations' (EPR) definition of politically relevant groups. The right-hand side graphs display the mean of the Ethnic Fractionalization variable for all countries that experienced a civil war (onset) which was preceded by a coup as well as countries that experienced a civil war (onset) preceded by a riot. The red line represents the median average of ethnic fractionalization for countries that did not experience an escalation. Similarly, the graphs on the left display the average of the size of the excluded population in countries that experienced a civil war (onset) which was preceded by a coup as well as countries that experienced a civil war (onset) receded by a riot. The red line represents the median of the size of the excluded population for countries that experienced by a riot. The red line represents the median of the size of the excluded population for countries that did not experience riots/ uprising and the countries that did not experience coups followed by a civil war.

To simulate the risk of civil war escalation for countries that have experienced riots/uprisings or coups, we construct a sample of all countries that experienced these two types of violence and simulate the hazard of civil war escalation in a random probit and logit models. The parsimonious versions of the two regressions are contained in Table 1, while the full regression results and description of data is contained in Annex I. Both regressions corroborate the results from the received literature. However, the importance of our results for the research problem at hand is the

significant non-monotonic effect of social fractionalization of the politically relevant groups on the risks of civil war escalation in countries that had experienced lower order types of violence, such as riots, uprisings and coups. Another interesting result is the negative impact of social polarization, which was shown in the received literature to be a factor in violent contests at the center of the political power, such as coups, rather than for the case of civil wars. Finally, low income, political instability and factional partial democracies were found to be robustly associated with high risks of civil war escalation; thus, corroborating the evidence in the received literature, in that these determinants are important for all types of violence, including civil war escalation.

We use the parsimonious logit regression model to simulate the risk of civil war across a continuous range of social fractionalization and assumed level of development (GDP per capita) and political regime type (transitional and interregnum regimes, partial and full democracy).<sup>24</sup> All other variables are held constant at their medians for each sub-sample in question. We simulate the probability of escalation, given the attributes of Sudan, and contrast it to four scenarios. Firstly, we contrast the risk for Sudan against the median country in the sample (Figure 5.A); secondly, against the subsample of full democracies (Figure 5.B); thirdly, against the subsample of advanced economies - those in the top decile of per capita income (Figure 5.C); and fourthly, against the subsample of advanced countries that are also ruled by full democracies (Figure 5.D).

Given the profile of Sudan and its specific social characteristics, the risk of civil war escalation of the current military warfare is simulated at close to 70%. In view of the fact that large-scale civil wars were very rare events, such a probability is very high indeed. To appreciate this, we note that the simulated risk for Sudan accounts for about 17 times the probability score for the median country affected by uprisings or military coups (Figure 5.A); 27 times the probability for countries with full democracies (Figure 5.B), 34 times for developed economies (Figure 5.C), and 68 times for advanced countries with full democracies (Figure 5.D).

<sup>&</sup>lt;sup>24</sup> Using the parsimonious conditional logic regression yield similar simulations.

	Parsimonious	Parsimonious
Evaluation: Variables	Probit Model	Logit Model
Explanatory variables	Civil War Onset	Civil War Onset
	Coef/se	Coef/se
Ethnic Fractionalization index	4.698***	10.624***
	(1.723)	(3.997)
Ethnic Fractionalization index squared	-3.471**	-7.935**
	(1.447)	(3.389)
Polarization	-1.162**	-2.500**
	(0.556)	(1.242)
Log GDP pc (-1)	-0.133**	-0.278**
	(0.058)	(0.134)
Log population (-1)	0.167***	0.365***
	(0.032)	(0.068)
Oil dummy	0.279***	$0.595^{***}$
	(0.092)	(0.200)
Transitional and interregnum regime (-1)	0.334**	$0.655^{*}$
	(0.164)	(0.343)
Full democracy (-1)	-0.160	-0.432
	(0.190)	(0.476)
Partial autocracy (-1)	0.009	0.062
	(0.128)	(0.282)
Factional Partial Democracy (-1)	0.218**	$0.455^{**}$
	(0.106)	(0.227)
Non-Factional Partial Democracy (-1)	-0.060	-0.127
	(0.120)	(0.259)
1990s	0.289***	0.653***
	(0.086)	(0.183)
Constant	-4.306***	-9.026***
	(0.672)	(1.506)
Observations	6618.000	6618.000
log likelihood ratio	-791.52525	-791.00891

## Table 1. The risk of escalation to civil wars, conditional on past incidences of protests/uprisings and coups

Notes: Ethnic fractionalization index ranges from 0 (ethnically homogeneous society) to 1 (highly diverse society). Definitions and sources of variables are provided in Annex I. \*\*\*; \*\*; \* refers to statistical significance at 1, 5 and 10% levels, respectively



Figure 5.A. Simulated risk of escalation from protests and coups to civil wars - Sudan vs the median country

Notes: Probability of escalation to full-scale civil war in Sudan: 68%. Likelihood of escalation to full-scale civil war in the sample medium: 4%. Ethnic fragmentation index based on politically influential groups: 0.64 (vertical red line)







Figure 5.C. Simulated risk of escalation from protests and coups to civil wars - Sudan vs advanced economies

Figure 5.D. Simulated risk of escalation from protests and coups to civil wars - Sudan vs advanced economies with full democracies



It is also clear from Figure 5.B that the probability of civil war at a high level of democracy (i.e., full democracy) is only 3%, suggesting that political freedom is highly effective in managing polarized societies. This finding is particularly important for Sudan, suggesting that systems of political representation should be designed to neutralize the explosion of political competition between polarized ethnic groups and maximize opportunities for positive interaction between them. Figure 5.C also shows that the risk of civil war (at 2%) is even lower for high-income societies, because the economic opportunity cost of peace is very high. Finally, Figure 5.D simulates the combined effect of expanding political rights and raising income levels. Here we see that the risk of civil war is just 1%, regardless of the nature of societal divisions. Since countries that achieve high levels of income in most cases also have the best performing democracies, these countries are the least likely to experience civil wars.

Having shown that the risk of escalation of the current Sudanese factional military conflict into an even larger scale ethnic/regional civil war is, indeed, very high, especially in view of the fractionalization that characterizes the Sudanese society, we have so far addressed the first two fundamental questions we asked in this section: how serious the risk involved? and, what are the likely drivers of such risk for Sudan, especially the role of social fractionalization and exclusion?

This leaves the last question as to why should a Sudanese ethnic war be a long-drawn conflict rather than a short, high intensity war akin to the experiences of some civil wars that broke out in the aftermath of popular uprisings in East Europe, for example? To consider this question, we draw on another strand of the literature and the salient context of the current war. In a classic paper, Fearon (2004) builds a game theoretic model to explain why civil wars originating from coups or popular uprisings tended to be short, as opposed to the case of peripheral insurgencies that usually takes longer time to resolve. He argues that the "technology for taking state power turns on the success or failure of a rapid tipping process – hoped for defections within the security apparatus. Peripheral insurgencies, by contrast, succeed or fail either by military victory or by gaining a favorable negotiated settlement," (p. 32). Instead, the median duration of civil wars will likely exceed 15 years or more when they involve struggle over land, the so called "sons of the soil" wars; or when rebel force can extract more from a region during the course of a war by looting natural resources or generating incomes from coercive predatory measures on economic activities in the regions under their controls.

In another influential paper Collier and research associates argue that the duration of civil wars is positively, though non-monotonically related to the level of ethnic fractionalization of the warring society (Collier, Hoeffler, and Soderbom, 2004). The implication is that polarized societies would generate longer civil wars because the cost of coordinating a rebellion for a long enough period could be prohibitively high in very diverse societies. However, Elbadawi (1999) and Elbadawi and Sambanis (2000) elaborated a dynamic model of duration and find that in the presence of external interventions social polarization is not necessary for longer-lasting civil wars, which was the principal finding of Collier et al. Rather, external intervention could reduce the cost of coordinating a rebellion for a given level of ethnic fractionalization, thereby increasing the ease of mounting a rebellion leading to longer-lasting wars. External interventions, they argue, exert an upward shift in the hazard function of war for any given level of ethnic fractionalization, therefore, socially diverse and previously "safe" societies could become vulnerable to a higher incidence of longer civil wars.

All of the above factors apply for the case of Sudan. For example, it is well documented that both RSF and SAF have maintained substantial economic interests in the Sudanese gold sector well before the outbreak of the current war. It is also widely documented in the Sudanese economic and political literature that both sides have used their control of the state to shield their economic assets and commercial activities from the oversight and control of the Ministry of Finance during the Ingaz regime, where these activities were the centerpiece of the regime's survival strategy, as part of the rent distribution in the "political marketplace". Furthermore, exploiting its leadership role in the post-December 2018 transitional government, the military establishment was also able to continue maintaining its grip on the economy<sup>25</sup>. Moreover, both sides have actively sought to forge external regional and international alliances in support of their war efforts.

### 3. Ending the war and achieving democratic civil peace in Sudan

In as much as Sudan has had more than its fair share of conflicts, it has also been the treatment case par excellence on peacebuilding initiatives, which included four power-sharing agreements (PSAs), supported by the international and regional communities. Unfortunately, all failed to achieve sustainable peace and some actually led to disastrous outcomes.

The first PSA, the so-called Addis Ababa Peace Agreement, was signed in 1972 between the first Southern Sudanese insurgency and the government of General Numeri, which ended the first episode of the civil war that started shortly before the country's independence in 1956 and continue to shape its future ever since. Though the fighting stopped for more than a decade (1972-1983), a deadlier and more destructive war erupted again for more than 20 years. The signing of the so-called "Comprehensive Peace Agreement: CPA" in 2005 between Dr. John Garang's "Sudan People Liberation Movement" (SPLM) and the Ingaz regime of Gen. Omer Al-Bashir ended the second Southern Sudanese insurgency, but it eventually led to the partitioning of the country and the creation of the state of South Sudan in 2011. Moreover, while the agreement was being negotiated, a new phase of civil war erupted in Darfur region in 2003, marking the first armed political conflict in the northern part of the country since independence.

In view of the sheer scale of deaths and human sufferings associated with the Darfur conflict, and the concern that it might risk derailing the then ongoing peace negotiations of the CPA, the Darfur Peace Agreement (DPA) was signed in 2006 under the auspices of Nigeria and the African Union, and support by the UN, USA and other regional and international actors. Modelled after the CPA, the DPA is based on wealth/power-sharing agreements between the Darfur rebels and the central government and is guaranteed by the African Union and the International community. However, unlike the CPA, which involves a dominant rebel organization, under largely undisputed leadership, the Darfur rebels are divided into several factions. It is not surprising, therefore, that the violent conflicts continued, as the military balance shifted in favor of the non-signatory rebel groups. Indeed, the DPA did not gain enough credibility among the rebels and was eventually abandoned when the signatory rebel movement re-joined the insurgency.

The most recent PSA was the Juba peace agreement, signed in October 2020 in Juba, the capital city of the Republic of South Sudan. This agreement came in a little more than a year after the outbreak of the December 2018 Revolution. The government was represented by the transitional

<sup>&</sup>lt;sup>25</sup> See, for example, De Waal (2019) and Elbadawi and Alhelo (2023).

civilian-military authority. The other signatories are several rebel movements that have been locked on low-intensity insurgencies with the former regime. The Juba Peace Accord led to the dissolution of the technocratic government and the formation of a largely political quota government, dominated by the Forces of Freedom and Change (FFC) and the armed movements that signed the Accord.<sup>26</sup>

Unfortunately, like its predecessors, the Juba PSA was not a broad-based peace process that would also empower the civil society from the conflict-affected regions of the country. Instead, it facilitated a counterrevolutionary side deal between the military and the main rebel movements of the Juba Accord. Therefore, once joining the new government, some of these movements quickly sided with the military component, which became increasingly hostile to their civilian partners' efforts to move forward with the vital transitional agenda on security reforms and the dismantling of the kleptocratic economic empires of the former regime, most notably those associated with the military and security establishment. The most influential Juba rebel groups did not only support the palace coup of October 2021 by SAF and RSF leadership, which toppled the civilian led government and ended the constitutional path to democratic rule, but they also continued to participate in the post-coup regime. These disastrous turns of events, which arguably ultimately created the conditions for the ongoing factional military war, should not be surprising in view of the fact that the Sudanese armed resistance movements have a history of cutting deals with authoritarian military regimes, well before the Juba Peace Accord and the October 2021 coup (Ibrahim, 2021).

As extensively discussed in the Sudanese literature on conflicts and peacebuilding<sup>27</sup>, the fact that the first two peace deals, anchored around power-sharing arrangements, were achieved under personalistic authoritarian rule explains why the first one could not be sustained, while the second led to the partitioning of the country and the flaring up of the Darfur insurgency and the concomitant communal violence. In view of the fractious insurgency in Darfur, the DPA had even much less chances of survival under the kleptocracy of Omer Al-Bashir regime. Even in the more open and transparent political environment in the aftermath of the December Revolution, the failure of the FFC to ensure a broad-based PSA, the Juba Accord that was largely confined to the military protagonists enabled a side counterrevolutionary deal between the leaderships of SAF-RSF on one hand and some of the rebel groups that signed the agreement.

In addition to lending support to the various Sudanese PSAs, the international and regional communities also founded three major PKO s in support of the peacebuilding efforts. The first one was the African Union Mission in Sudan (AMIS), which commenced its operations in 2004, with a force of 150 troops and by mid-2005, its numbers were increased to about 7,000 peace-keepers and observers deployed across the region to monitor the DPA agreement. In this sense, the AMIS had been a minimalist "monitoring and observer" mission. Three years later, a new United Nations-African Union Mission in Darfur (UNAMID) was founded in December 2007. This mission was aimed at replacing the ill-equipped and undermanned African Union Mission in Sudan (AMIS) with a larger and better equipped hybrid force of about 19,555 military personnel; 6,432 police; and a significant civilian component. Instead, the UNAMID will be tasked with an expanded security mandate of deterring, and ensuring the end of violence. Moreover, it is

<sup>&</sup>lt;sup>26</sup> For a detailed review and analysis of the Juba PSA, see Elbadawi and Bormann (2021) and Craze and Khair (2023).

<sup>&</sup>lt;sup>27</sup> See Elbadawi and Alhelo (2023) for an extensive review and analysis.

envisaged to provide overall support to the peace process; help with the building of institutions in the crucial areas of rule of law, governance, and human rights; and facilitate humanitarian assistance.<sup>28</sup>

Following the December 2018 Revolution and the establishment of the transitional government, the United Nations Security Council adopted resolution 2524 (2020), establishing the UN Integrated Transition Assistance Mission in Sudan (UNITAMS) in June 2020. This was a special political mission, to provide support to Sudan for an initial 12-month period during its political transition to democratic rule. Headquartered in Khartoum, UNITAMS will support Sudan through a range of political, peacebuilding and development initiatives, including assisting the nation to achieve the goals of the Constitutional Declaration of August 2019, and carrying out its National Plan for Civilian Protection. The Mission's specific strategic objectives were claimed to be underpinned by the Sustainable Development Goals (SDGs).<sup>29</sup>

At the request of the civilian transitional government, the UN Security Council also decided to end the mandate of UNAMID, six months after the founding of UNITAMS. This decision appears to be motivated by the desire to provide space to the civilian transitional government to undertake the key tasks that were hitherto assigned to UNAMID. These were vital projects, including supporting the peace process, protection of civilians, facilitation of delivery of humanitarian assistance and supporting the mediation of intercommunal conflicts. However, the dissolution of UNAMID was an ill-advised move by the transitional government and the UN, because the security vacuum could not be filled by the Sudanese military authorities, who were not fully trusted by some of the displaced Darfurian communities in the camps that used to be protected by UNAMID. Moreover, following the coup in 2021, UNITAMS became dysfunctional due to lack of cooperation by the military establishment, which has been opposed to the initiative from the beginning. And, finally after the eruption of the war in March 2023, the UN Security Council decided not to renew its mandate.

The disappointing outcome of the Sudanese PSAs and the associated UN operations in Sudan is consistent with predictions from the peace-building literature, which suggests that peace agreements confined to the military protagonists in the civil war, such as the Sudanese PSAs, are not likely to lead to inclusive post-conflict democratic transitions. Instead, even at the expense of complexity, civilian stakeholders, such as political parties, civil society and local communities should have a seat in the table (Elbadawi, 2008).

## 3.1 Toward "participatory" sustainable peace in Sudan

The UN Security Council adopts the concept of "sustainable peace", which is defined as, "an attempt after peace has been negotiated or imposed, to address the sources of present hostility and build local capacities for conflict resolution." This concept of peace hinges on the "capacity of a sovereign state to resolve the natural conflicts to which all societies are prone by means other than war," (Doyle and Sambanis, 2000: p. 3). Therefore, this comprehensive definition encompasses the need to build the economic, political, and social institutions and attitudes which will ensure the peaceful settlement of conflicts i.e. prevention of future conflicts escalating into a war. The

<sup>&</sup>lt;sup>28</sup> For the full mandate of UNAMID see <u>http://www.un.org/Depts/dpko/missions/unamid/mandate.html</u>.

<sup>&</sup>lt;sup>29</sup> For a detailed account of UNITAMS mandate see <u>https://unitams.unmissions.org/en/mandate</u>.

empirical articulation of this concept is what Doyle and Sambanis (2006) call "participatory peace", which involves an end to war, no significant residual violence, undivided sovereignty, and a minimum level of political openness. Their benchmark model for analysing the prospects for peace is the "peace-building triangle".

According to this model, the probability of peace-building success is proportional to the area of the peace-building triangle - the three sides of which are the level of hostility prevalent at the start of the peace process; local capacities for post-war recovery and development; and international capacities in support of peace-building. The main idea behind the peace-building triangle model is that the international competency element can ameliorate the negative impacts of the high hostility level and low local capacity. In particular, the role of an adequately mandated and fully equipped multi-dimensional UN peace-building operation would be critical. It is pertinent to stress that, unlike unilateral, non-neutral external interventions by individual countries, proper UN peacebuilding operations operates under very strict mandate that ensures neutrality and impartiality and subordination to sovereignty of the country in question.

Several determinants were used to represent the three sides of the peace-building triangle. There are two hostility proxies that reflect the extent of lack of trust in the war-affected community. The most obvious one being the number of death and displacements; the other is whether the war is of ethnic nature, pitting specific religious, ethnic or cultural groups against each other. As opposed to ideological wars that cut across identities, ethnic conflicts are likely to be much more devastating for social cohesion and inter-communal trust. With regards to the local competency several proxies are considered, such as initial income per capita, educational attainment or the level of electricity consumption per capita. A war-affected society with high local competency is likely to achieve strong economic recovery in post-conflict during the presence of the UN peace-keeping force, which in turn, should enhance the prospects of sustainable peace after the UN operation ends.

Unfortunately, even by the standard of post-conflict societies, Sudan is characterized by low intercommunal trust and social cohesion as well as low local competency. As we have already seen, compared to previous civil wars in Sudan and elsewhere, the scale of death, displacement and destruction wrought by this war is unprecedented (Figure 1) and there are already signs that the war has further hardened its highly fractionalized social characteristics (Figure 4). It has ignited raw, divisive emotions, 'weaponizing' social media along ethnic and regional lines. This state of mind has also 'implicitly' fuelled the aggressive recruitment campaign largely along ethnic lines, further depreciating the country's already low social capital, which was globally ranked among the lowest eight scores in 2023 (Figure 6). Moreover, and notwithstanding that the main protagonists remain SAF and RSF, some of the rebel militias, which signed the Juba Peace Accord and subsequently joined the Transitional Government, have taken sides and joined the conflict, some supporting SAF, and others joining RSF. This is likely to further complicate peacebuilding prospects, because their relationships are bound to be adversarial and they also have had history of conflicts among themselves.

And in terms of local competency, Sudan income per capita is much lower than the median for low and lower-middle income countries (Figure 2) and it is among the ten African countries with the largest population without access to electricity in 2021 (Figure 7). Even more compelling is

the very low scores of the country's multi-faceted competitiveness indexes relative to the global averages (Figure 8).

Under such deplorable social capital and low domestic capabilities, a successful process for ending the war and building peace in Sudan would undoubtedly require robust "international competency", the third side of the peace triangle. This is accounted for in the literature by several factors, including whether or not the war ended as a result of a peace treaty, usually facilitated or guaranteed by external actors; whether or not a UN peacekeeping force was involved; and whether the UN mandate was a regular monitoring and reporting peacekeeping operation (PKO) or an extended one. Moreover, high aid per capita is another indicator of international competency. This literature finds that wars that end in a peace treaty are likely to achieve successful peacebuilding outcomes as treaties are reflective of the war participants' will to end their violent conflict. Additionally, peace-building success is also likely to be associated with multidimensional PKOs. In addition to basic peace-keeping, such operations are also tasked with undertaking peace enforcement as well as longer term peace-building measures aimed at achieving democratic transition and tangible development goals, such as addressing poverty and economic inequality, especially horizontal inequality along regional or ethnic lines (Doyle and Sambanis, 2000).



## Figure 6. Sudan social capital score and ranking

Source: Data on social capital score and ranking is obtained from the 2023 Global Sustainable Competitiveness Index (<u>https://solability.com/the-global-sustainable-competitiveness-index/the-index</u>)

Notes: The social capital index measures: health, security, freedom, equality and life satisfaction within a country.



Figure 7. Countries with the largest population without electricity access in Africa in 2021 (million)

Source: This data is obtained from Statista, July, 2023: <u>https://www.statista.com/aboutus/our-research-commitment</u>. Notes: The chart displays countries in Africa with the largest population (measured in millions) that don't have access to electricity in 2021.





The Global Sustainable Competitiveness Index 2023

Source: Data on global sustainable competitiveness index obtained from <u>https://solability.com/the-global-sustainable-competitiveness-index/the-index</u>

Notes: The Global Sustainable Competitiveness Index (GSCI) measures competitiveness of countries based on 190 measurable, quantitative indicators derived from reliable sources, such as the World Bank, the IMF, and various UN agencies. The 190 indicators are grouped into 6 sub-indexes: Natural Capital, Resource Efficiency & Intensity, Social Cohesion, Intellectual Capital, Economic Sustainability, and Governance Efficiency.

In a more recent paper, Sambanis (2008), using an updated version of the Doyle and Sambanis dataset and applying different estimation strategies to analyze the short-term and long-term effects of UN peace missions, he corroborates the findings of the earlier literature, with some important qualifications, however. He finds that while UN missions are effective in implementing agreements and promoting broad-based participatory peace and democracy, their influence tends to fade in the longer run after the mission is concluded. The key insight behind this important qualification is that avoiding post-conflict relapses and maintaining peace in the longer run requires robust, sustained economic growth. However, at least until recently, UN missions were designed as political project with little attention to structural economic transformation as a key component of the peacebuilding process. To be sure, standard PKOs' tasks, such as humanitarian aid and financing of demining, demobilization and re-integration (DDR), for example, are very critical for peacebuilding, especially in the short run. However, as the simulations of Figures 5 make clear transformative economic growth can effectively promote inter-ethnic cooperation through enhancing supra-ethnic, nationwide economic progress and welfare; hence mollifying inter-ethnic hostilities. Moreover, growth is not only a major driver of sustainable peace, it is also a major determinant of sustainable democracy.<sup>30</sup>

## 3.2 The case for UN-Regional multi-dimensional PKO for Sudan

The moral of the lessons from the Sudanese peace-building story is that ending the war and rebuilding peace must be a participatory process at the center of which the Sudanese civil society and civilian democratic forces. In view of the rich democratic tradition in Sudan, despite that it was short-circuited by military coups and undermined by civil wars, success of peace agreements hinges on proving space for the civilian stakeholders, such as political parties, civil society and local communities. Therefore, the current peace initiatives, such as Jeddah Forum and the IGADD, must expand the process to include non-military stakeholders from the beginning.

Invoking the Doyle and Sambanis concept of the "peace triangle", the Sudanese political and civil society forces must address the war-ravaged social capital and depleted institutional capabilities, which constitute the two sides of this triangle. This would require building a broad-based coalition for democratic civil peace. However, as we document in this paper, the extent of damage wrought by this war and the evolving military contest between the two armies, leaves little chances for ending the war, much less rebuilding sustainable peace, without external support. In particular, we would argue, for securing a decent chance for peace, the third side of the peace triangle must be a multi-dimensional, transformative UN/Regional peace keeping operation (UN PKO). Such hybrid operation would not only help enforce and keep peace but would also support the Sudanese civilian and military counterparts in implementing security reforms for re-building an apolitical, professional armed forces that is also totally divorced from dealings in commercial activities or any form of economic interests.

However, in as much as multidimensional hybrid UN/Regional mission are very critical for transitional priorities of peace-building, including provision of humanitarian aid and financing of demining, demobilization and re-integration (DDR), they were not effective in sustaining peace in the longer run, because aid and external support has not been enough to sustain long-term growth. The evidence from the received literature, also confirmed by the simulations of this paper, suggests

<sup>&</sup>lt;sup>30</sup> Rodrik and Wacziarg (2005); Collier and Rohner (2008); Epstein et al (2005); Elbadawi and Makdisi (2011, 2016).

that transformative economic growth can effectively promote inter-ethnic cooperation through enhancing supra-ethnic, nationwide economic progress and welfare; hence mollifying inter-ethnic hostilities. Moreover, growth is not only a major driver of sustainable peace, it is also a major determinant of sustainable democracy.

In the end, we would like to reaffirm the point that, it is very critical that the civilian democratic forces build a national peacebuilding initiative as part and parcel of a transformative, developmental civil democratic project. Realism about the state of social capital and domestic capabilities should lead the broad-based national coalition to openly call for a neutral, multi-dimensional UN-Regional peacekeeping operation, that is credibly owned and guided by the coalition. The latter would also confer the required legitimacy to the operation to help end the war and enforce the peace, allowing the national stakeholders to launch the desired security, governance and economic reforms for ushering the country on a path of renewal and sustainable peace.

#### 4. The long-term economic perils of large-scale ethnic war in Sudan

Besides tallying the humongous humanitarian and direct destructive impact, assessing the longer-term economic cost of conflicts, is also critical for delegitimizing this tragic, senseless war; raising awareness about its potential risks for the country and people of Sudan; and, hopefully, mobilizing national, regional and international action for ending it. We do this through a growth accounting exercise, using a version of the World Bank's Long Term Growth Model (LTGM). The model posits three main equations: the first states an extended Solow-type growth equation, accounting for the key growth drivers; the second contains the formula for the investment/GDP ratio required for achieving an assumed growth path; and the third stipulates how to finance such investment (a brief description of the model and associated assumptions are contained in Annex II).<sup>31</sup>

We argue above that if this war is not ended very soon, hopefully, before it completes its second year, it will likely morph into a long-duration ethnic civil war. And, drawing from the history of past Sudanese civil wars, such a war will likely last for at least 15 years (2023-37). However, we also consider a 5-year shorter term civil war scenario (2023-27). To derive the ensuing cost of the war, we compare the in-conflict and post-conflict GDP to two assumed counterfactual peacetime economies: stagnant economy fixed at its 2022 level and another assumed to grow at a modest rate of only 4%. Moreover, we also assume that in the post-conflict phase catch up growth sets in buttressed by economic reforms. Even under these very conservative assumptions, the war will be extremely costly, especially when it takes 15 years before it ends and peace is restored.

Assessing the cost of the war in this section; and the potential peace dividend in the next one, hinges on simulating the first equation of the growth drivers for the assumed scenarios, expressed in a log-linear approximation, where  $g_{t+1}^X$  denotes the annual growth rate of variable X in period t + 1):

$$g_{t+1}^{GDP} \approx g_{t+1}^{A} + \beta \left( g_{t+1}^{h} + g_{t+1}^{\varrho} + g_{t+1}^{\omega} + g_{t+1}^{N} \right) + (1 - \beta) \left[ \frac{I_{t}}{Y_{t}} / \frac{K_{t}}{Y_{t}} - \delta \right]$$
(1)

Where  $g_{t+1}^A, g_{t+1}^h, g_{t+1}^\varrho, g_{t+1}^\omega, g_{t+1}^N$ , respectively, refer to the growth rates of TFP, human capital,

<sup>31</sup> This link contains all what LTGM its applications: you need to know about the and https://www.worldbank.org/en/research/brief/LTGM

labor force participation, working-age population, and population (more detailed discussion in Annex II).

In the war-time catastrophic scenarios, we make certain assumptions regarding the war period until 2027 or 2037. These include a low investment rate of 8% of GDP, no increase in Labor Force Participation, negative Total Factor Productivity (TFP) growth ranging from -4.5% to -1%, and reduced Human Capital (HC) growth compared to what would be expected in the absence of war. However, in the post-conflict phase we assume optimistic catch-up recoveries where Investment, TFP growth, LFP, years of schooling for cohorts aged 0-4 and health increased to levels experienced by other countries at comparable level of development to Sudan (a comprehensive summary of the underlying assumptions is contained in Annex III).

Under the 15-year war time scenario, GDP would experience a negative growth rate of -2.2% in 2024, following its major collapse in 2023. Then the rate of growth deceleration is progressively reduced until it reached 0% by 2037 by the end of the war. During post-conflict, fast catch-up growth will set in leading to convergence to the 2022, prewar GDP by 2046. The growth rate is simulated to continue its rising trend until it reached 8.7% by 2050. Instead, for the case of the 5-year war, GDP would decline by 1.6% in 2024, but at decreasing negative rates thereafter, rapidly reaching 0% in 2026, in just two years. Rapid post-conflict growth propels the economy to reach the pre-war income level in 2033. The accelerated growth continues reaching a peak of more than10% by 2041, before slowing down to 9% by 2050. (Figures 9.A and 9.B).

In terms of GDP per capita (GDPpc), the simulation results indicate a similar pattern. For the 15year war scenario, GDPpc growth starts at -4.7% in 2024, progresses to -1.9% by 2037, and then accelerates to a growth rate of 6.9% by 2050. Consequently, achieving convergence with the GDPpc level of 2022 is not realized until 2050 due to the positive population growth that reduces GDPpc growth. Instead, in the5-year shorter war scenario, GDPpc experiences a decline of -4.1% in 2024, progresses to 0.5% by 2029, and then accelerates to a growth rate of 8.1% by 2041, followed by a decline to 7.1% by 2050. Consequently, convergence with the GDPpc level of 2022 is realized by 2038 (Figures 10.A and 10.B).



## Figure 9.A. GDP and GDP growth in 15-year war scenario







#### Figure 10.A. GDPpc and GDPpc growth in 15-year war scenario





Having discussed the simulated growth profiles of shorter and longer war scenarios, under extremely conservative, even favorable, assumptions, we take up at this juncture the ultimate question as to how costly a civil war might be for Sudan, relative to two conservative peacetime growth scenarios. A very conservative, even pessimistic, assessment would be to assume a stagnant peacetime economy at the 2022 GDP level, with zero annual growth. Another still conservative scenario would be to assume annual growth of 4% during the post-2023 period. Convergence to those counterfactuals can be found in Figures 11.A and 11.B.

For the counterfactual scenario of stagnant peacetime growth, converge to 2022 GDP is achieved by 2047 and 2034 in the 15-year and 5-year war wars, respectively. Instead, for case of the 4% peacetime growth counterfactual, convergence to the peacetime GDP would take 19 years (till 2043) for the short war scenario; and a whopping 55 years (till 2079) for the longer war scenario.

The simulated growth and GDP levels allows addressing the fundamental question about the estimated cost of the war for each of the war duration scenarios in terms of cumulative losses until reaching convergence to the two assumed (no-war) peacetime growth counterfactuals: stagnant peacetime growth at 2022 GDP and GDP growing at 4% from 2024. Table 2 shows the simulated cost of these war scenarios relative to the two counterfactuals.

If the war lasted 15 years, and assuming a comprehensive economic reform after the war, the cost of the war amounts to USD 189 billion, relative to the counterfactual of a stagnant peacetime economy. Yet the estimated cost is rather high accounting for nearly six times the size of the GDP in 2022. Instead, relative to the counterfactual of a modestly growing peacetime economy, at 4%, the estimated economic cost becomes of existential threat proportions, amounting to USD 2.2 trillion (or more than 66 times the country's GDP in 2022).

For the 5-year war scenario, the simulated costs are much lower, but by no means negligible. Relative to the counterfactual of stagnant peacetime economy, the cost comes to USD 52 billion, about 1.6 times the size of the GDP in 2022. Instead, the loss compared to the GDP level that would have been reached with 4% growth, the cost of the war comes to USD 271 billion, which amounts to more than eight times the GDP in 2022.





Figure 11.B. Economic cost of short war - GDP in 5-year war vs peacetime GDP counterfactuals



War Duration	Relative to Stagnant Growth Rate (at 2022 GDP level)	Relative to GDP growing at 4% from 2022
15-year War	<b>189 billion</b> (convergence achieved by 2047)	<b>2.2 trillion</b> (convergence achieved by 2079)
5-year War	<b>52 billion</b> (convergence achieved by 2034)	<b>271 billion</b> (convergence achieved by 2043)

## Table 2. The simulated costs of Sudanese civil war for two peacetime growth counterfactuals

## 5. The economic dividend for Sudan renaissance democratic civil peace

In this section, we calibrate the LTGM model for Sudan (Annex II) to create three peacetime growth scenarios: low, moderate and renaissance (miracle) growth rates. The "low" peacetime growth is the worst case, baseline scenario, which assumes no reforms and no TFP growth. This constitutes a case of peaceful but non developmental political order. However, as this paper makes clear, neither peace nor democracy could be sustained under such regime. The "moderate" growth scenario assumes increase in investment in view of the huge potential in Sudanese agriculture as well as modest increase in TFP growth to its historical average. Finally, the "renaissance" growth scenario assumes significant improvements in all growth drivers, based on other countries performance (see Annex IV).

Subject to the above assumptions, GDP and GDPpc are expected to follow different paths, depending on the assumed scenario (Figures 12.A and 12.B). Under the Renaissance Scenario, GDP growth will increase from 5.6% in 2024 to approximately 10% by 2030 and is expected to maintain this level of growth until 2050. Given the projected population growth, these truly miracle rates of growth would set income per capita into a phenomenal trend, with GDPpc rising from 2.9% to 7% by 2030, reaching 8.6% by 2050. Under the Moderate Scenario, GDP is projected to grow from 4.1% in 2024 to 6.8% by 2031 and then slowly decelerate to 5.1% by 2050. Accordingly, GDPpc is expected to modestly rise from 1.5% to 3.3% by 2050. Finally, in the Low Scenario, GDP will grow at a modest rate of 3.9% in 2024, pursuing a declining trend to just 2.5% by 2050; and income per capita would pursue a slowly declining trend from just 1.3% in 2024 to a meager 0.8% by 2050.

Therefore, under optimistic, but plausible assumptions pertaining to the key growth drivers in the LTGM model, GDP under the miracle peacetime scenario will surpass its 2011 level, the last year during the oil era, in 2029, followed by GDPpc in 2033. And, by 2050, GDP is projected to be more than 7 times its 2011 level, while GDPpc is expected to be around 3.5 times its level in the same year. This scenario highlights substantial economic progress and growth over the years. The Moderate growth rates indicate a slower but respectable recovery. Under this scenario, GDP is estimated to surpass its 2011 level by 2031, while GDPpc by 2038. And, by 2050, GDP is projected to be more than 3 times its 2011 value, while GDPpc is expected to be around 50% higher. Instead, in the low peacetime scenario, GDP is projected to take some 24 years before surpassing its 2011 level, while GDPpc will still be lower than its 2011 level by 2050.









The "peaceful renaissance" scenario is anchored in fundamental changes, such as amicably and effectively ending the militarization of Sudanese politics and economics and building a unified apolitical, professional armed forces. This is premised on the capacity of the Sudanese civilian democratic forces to build a national peacebuilding initiative as part and parcel of a transformative, developmental civil democratic project. Furthermore, the imperatives of a peaceful, democratic renaissance require a viable social contract, accounting for both economic as well as political legitimacy. However, we are hastened to point out that most scholarship community coalesce around the view that states emerge as a result of agreement by the elites to share the rent available under the existing power structure, no matter how small it is. However, only in a few cases ruling elites would "gamble" on development and, therefore, willing to sacrifice available rent for future growth and development. This is a gamble because there is no recipe for success, just general principles, such as investing in physical and human capital, institutions ... etc. (Dercon, 2022).

Hence, if success is not guaranteed, why would some elites take the risk? We argue elsewhere that ruling elites might choose to gamble on development under certain conditions, "should they reckon that there is an imminent risk for the incumbent regime due to economic stagnation, such as the case of the Chinese Communist Party (CCP) elites during the era of the "Cultural revolution". Under Chairman Deng Xiaoping, who assumed power shortly after the death of supreme leader Mao Zedong in 1976, the CCP leadership radically restructured the party's

ideology and public policy and transformed China into a phenomenal growth miracle. In other cases, such as countries coming out of devastating civil wars, choosing to bet on development depends on the ability of elites to learn from mistakes and engage in a course-correction path. The Ethiopian ruling elites under Melees Zenawi decided to undertake major economic transformation in 2004 after a decade of adopting an extreme Albanian brand of Marxism," (Elabadwi et al,2023: p. 31).

The political economy of reforms is very critical and requires that while implementing economic reforms, it is important to consider the impact of reforms for future political equilibria (Acemoglu and Robinson, 2013). For example, the proposed renaissance growth agenda requires investment strategies, fiscal, monetary and exchange rate policies that would undoubtedly favor tradable economic sectors, most notably agriculture and agri-business. This might be bad politics to the extent that the redistribute outcomes associated with these reforms might create potential backlash, for example, by the rebel movements whose support is crucial for successful peace transition. Stressing this political economy of reforms from a more dynamic lens to avoid prematurely jumping into idealized final outcomes (such as, the proposed sweeping reforms commensurate with achieving miracle growth) before laying the necessary political buy-in through targeting less ideal but achievable intermediate goals.

However, an alternative perspective suggests that a unifying "national narrative" that is "culturally specific" and "credible" might allow elites gambling on development to generate strong support for targeting idealized end goals, especially if reforms are perceived to benefit the vast majority in the society in question. In this context, the lessons from other country experiences could be helpful not for trying to clone them, but in terms of understanding the processes behind the transformation they were able to achieve. Regardless of the differences in political ideology, the processes behind the phenomenal economic transformation of China are very important to consider and learn from. As explained by Professor Paul Collier, China's "scaffolding" for achieving its transformation had four building blocks (Collier, 2019: p. 6-7):

"The first was an overarching narrative spread around the population, namely, to rebuild a prestigious, proud China. The second was a political leadership that encouraged intensive, rapid social learning to understand what would work within the local context. The third was to evaluate the performance of those who held positions of authority and hold them to account for success and failure. The fourth was decentralization, used to foster yardstick competition across jurisdictions, further encouraging experimentation on a local scale."

Assuming that a political settlement for a transformational peacebuilding is in place and the political economy is aligned for launching a miracle renaissance peacetime growth, still we need to ask one more fundamental question pertaining to the required level of investment for Sudan to achieve an average "miracle" growth record at 9.8% for more than a generation, during 2024-2050; and how might Sudanese elites "gambling" on development finance such scale of investment?

The LTGM allows derivation of the second equation referred to above that could be simulated to answer the first part of the question:

$$\frac{I_{t}}{Y_{t}} = \frac{K_{t}}{Y_{t}} \left[ \frac{(1 + \bar{g}_{t+1}^{GDP PC})^{\frac{1}{1-\beta}} (1 + g_{t+1}^{N})}{(1 + g_{t+1}^{A})^{\frac{1}{1-\beta}} (1 + g_{t+1}^{\omega})^{\frac{\beta}{1-\beta}} (1 + g_{t+1}^{\omega})^{\frac{\beta}{1-\beta}} (1 - \delta)} \right]$$
(2)

where all growth drivers and parameters are set as in the stipulated calibration for each scenario and  $\bar{g}_{t+1}^{GDP PC}$  would be the target GDPpc growth rate. We calculate the required investment rates and marginal ICOR for the Miracle "Renaissance" Growth Scenario (Figure 13). We target an average annual growth rate of 9.8%, akin to the 2004-19 GDP growth rates achieved by Ethiopia.<sup>32</sup>

As depicted in Figure 13, the initial investment required to achieve a growth rate of 9.8% is notably high, surpassing 46%. However, the simulated investment for achieving the assumed "miracle" growth gradually declines to around 40% between 2030 and 2043. Subsequently, with the acceleration of Total Factor Productivity (TFP) and the consequent increase in the marginal product of capital (MPK) due to the implemented reforms, the required investment begins to decrease. By 2050, the investment needed reaches approximately 33.5%. This trend is primarily driven by the significant increase in MPK until 2030 (and, hence, decrease in marginal ICOR), when most of the reforms are assumed to take place. Furthermore, another increase in TFP growth is anticipated from 2043, contributing to the decline in the required investment.

The simulation of Figure 13 suggests that achieving the average annual miracle growth of 9.8 per annum for the first critical decade (2024-2033) would require about \$186 billion (in 2021 fixed US dollars). This brings us to the second half of the above question regarding how such a hefty investment be financed? Let us motivate the discussion, using the third equation we mentioned above:

$$\frac{I_{t}}{Y_{t}} = \frac{S_{t}}{Y_{t}} + \frac{FDI_{t}}{Y_{t}} + \left[\frac{D_{t}}{Y_{t}} - \frac{D_{t-1/Y_{t-1}}}{(1+g_{y,t}^{pc})^{\Box}(1+g_{t}^{N})}\right]$$
(3)

Therefore, as the equation makes clear, financing such a hefty level of investment requires large national savings, enabled by robust fiscal and other economic reforms and new lending (the third RHS term) facilitated by substantial debt relief, such as the HIPCs program that was supposed to reduce the country's external debt from more than \$60 billion to about \$15 billion, before it was pre-empted by the October 2021 coup that blocked the constitutional pathway for the country. It was hoped that the then engagement of Sudan with the international development community would open the door for new, preferably concessional, borrowing for financing the much needed social programs in education, health and social protection. Therefore, ending this war and repositioning the country on the path of democratic civil peace is *sine qua non* for unlocking these financing possibilities. However, we would argue, FDI will likely be the main source of finance, attracted by the growth prospects of the huge potential of the Sudanese agriculture.

<sup>&</sup>lt;sup>32</sup> Thus, we set  $\bar{g}_t^{GDP PC} = \frac{1 + \bar{g}_{ETH}^{GDP}}{1 + g_t^N} - 1$ , where  $\bar{g}_{ETH}^{GDP}$  is the above average GDP growth rate and  $g_t^N$  is the population growth previously described. In the LTGM  $ICOR_{m,t} = \frac{1}{1 - \beta} \frac{K_t}{Y_t}$ , which is also the inverse of the Marginal Product of Capital (MPK). Hence, if  $\beta = 0.5$  and  $\frac{K_t}{Y_t} = 2$ , then  $ICOR_{m,t} = 4$ , so one needs to increase the investment share by 4ppts to boost headline GDP growth by 1%.

## Figure 13. Required investment to achieve a miracle 9.8% annual average GDP growth and marginal ICOR



Notes: ICOR stands for Required investment and Incremental Capital to Output Ratio. It is the percentage point increase in the investment share of GDP needed to boost headline GDP growth by 1%.

The Sudanese agriculture has long been seen as a potential "bread basket" magnet, attracting large FDI associated with regional food security initiatives, especially for the capital-surplus GCC countries. The first such initiative came about in the 1970s, after the oil boom, which also coincided with the Addis Ababa Peace agreement in 1972 that ended the first civil war in Sudan. The FDI associated with the Pan-Arab "Sudan Breadbasket Strategy" managed to empower an impressive agriculture-led growth of about 10% per annum for about a decade but could not be maintained due to the failure to develop other complementary growth drivers and eventually it came to a grinding halt in 1983, when the second phase of the civil war plunged the country into conflict and political instability.

The recent global supply chain disruptions associated with the Covid-19 pandemic and the Russia-Ukraine war has significantly enhanced the drive toward re-localization and regional cooperation, especially with regard to food security. This would undoubtedly generate renewed interest in Sudanese agriculture, once the current war is ended and the country managed to embark on transformative economic reforms to anchor positive expectation about the future. The Sudanese agriculture presents a blend of potential opportunities for FDI that could hardly be rivalled by other African and Arab countries.

In a recent report, the World Bank suggests three reasons as to why Sudanese agriculture might be so attractive for FDI. Firstly, Sudan's agroecological characteristics are suitable for a wide variety of crop cultivation, and animal husbandry with 74 million hectares of cultivable land, 110 million heads of animals, marine and freshwater fisheries resources, underground and surface water supplies, biodiversity, and genetic pool presents opportunities. Secondly, Sudan is home to a diverse basket of agriculture products, in some of which it has a unique advantage. The country's favorable location at the crossroads of Sub-Saharan Africa and the Middle East places it in greater proximity to some of the largest sesame importing countries (China, Iran, and Turkey) and meat (goat and sheep) importing countries (China, France, the Middle East, and the United Kingdom) compared to competing exporters. It had distinguished strength in gum Arabic, a key input in food and industrial products worldwide. A wide basket of oilseeds—cottonseed, groundnut, sesame,

and sunflower—also enables relatively better resilience against imports of cheaper oils (a dynamic being faced by all edible oil deficit countries that do not produce palm oil). Thirdly, there is a significant headroom for agricultural production growth. With only under 23 percent of arable land being cultivated and yield level of most crops currently being lower than Sudan's own best in the past, the potential to raise production remains high.<sup>33</sup>

In the same vein, in a more recent report, Elbadawi et al (2022) propose 12 agricultural growth corridors, arguing that a major investment transition could transform the economy of Sudan through these corridors. These corridors, it is argued, would "promote the efficient use of resources by concentrating capital on the area of the greatest agricultural potential, eliciting a quick supply response that can generate central loops. This large-scale approach has many advantages, such as: attracting the participation of many investors because the risks are pooled; concentration of agri-business allows economies of scale and lowers cost per unit of production; diffusion of technology takes place more easily. Various supportive markets form to serve the area." (p. 83).

## 6. Conclusions

Sudan has been devastated by the ongoing factional military war between the Sudan Armed Forces (SAF) and the paramilitary Rapid Support Force (RSF), which is now entering its second year since it broke out in March 2023. It is estimated that this war has so far caused more than 13000 casualties, destroyed at least 10 percent of the country's capital stock and created the largest pool of refugees and internally displaced people in the world, among other untold humanitarian crises. Worse still, this largely forgotten factional military conflict could very well morph into a large scale, long-duration ethnic civil war. We argue in this paper that, in view of the high fractionalization of the Sudanese society, such development is a distinct possibility in the absence of a robust, coordinated plan for forcing the two protagonists to accept a permanent peace process, eventually leading to a viable security reform and credible transition to civilian democratic rule.

In this context, we ask three pivotal questions as to how serious the risk involved, since there are country experiences of many violent coups and intra-military conflicts that did not lead to large-scale ethnic wars; what are the likely drivers of such risk for Sudan, especially the role of social fractionalization and social groups exclusion; and, why should a Sudanese ethnic war be a long-drawn conflict rather than a short, high intensity war akin to the experiences of some civil wars that broke out in the aftermath of popular uprisings, such as those in eastern Europe after the collapse of the Soviet Union?

In addressing the first two pivotal questions, we draw on the evidence from the literature that models violence as a continuum, ranging from riots and uprising to coups and intra-military warfare to full blown civil wars. In this framework, civil wars happen as an escalatory outcome in terms of intensity or scope of violence from coups and other lower intensity conflicts, such as popular uprisings or riots. Using indexes of social fractionalization and polarization, based on the shares of politically-relevant social groups of the Ethnic Power Relations (EPR) database, and estimate logit and probit models of the hazard of civil war escalation, condition on a history of the other types of violence. Simulations of the model suggest that socially fractionalized societies tend to face high risk of civil wars escalation. However, high level of development and well-

<sup>&</sup>lt;sup>33</sup> Elaborated and collected from different parts of the report (World Bank, 2020).

functioning democracy significantly reduce proneness to civil war risk, even in socially fractionalized societies. Sudan history of repeated civil wars episodes is borne out by the model simulations, where the probability of civil war escalation from uprisings or coups and violent intramilitary conflicts, is estimated at 0.68. This very high probability is explicable by the country's attributes of highly socially fractionalized society, low level of development and anocratic, unstable democracies and long-reigning authoritarian regimes.

As to why a Sudanese ethnic war will likely be a long-drawn conflict, we first appeal to Sudanese history, which is rife with episodes of long-duration civil wars that lasted for 15 to 20 years. This is consistent with the received literature that finds long-duration civil wars to be associated with struggle over land, the so called "sons of the soil" wars, or when rebel forces can extract resources from contraband trading. Both SAF and RSF have been engaged in gold extraction and trading even before the war. Also, presumably they have access to other sources of income through levying fees on private sector activities. Perhaps even more importantly, both sides have actively sought to forge external alliances. The literature suggests that external intervention could reduce the cost of coordinating a rebellion for a given level of ethnic fractionalization, thereby increasing the ease of mounting civil wars as well as maintaining them for the long haul.

The current Sudanese factional military war is like an inter-state war fought within the border of one country in terms of intensity or scope of violence. Therefore, by the standard of other domestic conflicts, including those experienced by Sudan, this war is different in terms of its level of intensity and destructive impact. Indeed, if the current cycle of violence is allowed to deteriorate into a high-intensity, drawn-out ethnic war, it could very well pose an *existential* threat for the country and its territorial integrity and, in view of the strategic location of this large country, it is already impacting the region around Sudan. Unfortunately, it remains largely forgotten and only attracting half-hearted peacebuilding initiatives by the regional and international communities, while the Sudanese democratic civilian forces continue to struggle in their efforts to build consensus behind a transformative national project for renewal and democratic civil peace.

Sudan nation building discourse is not only impaired by conflicts but it was also plagued by dysfunctional peacebuilding initiatives, including four regionally and internationally supported power-sharing agreements (PSAs) and two UN missions. As discussed in the Sudanese conflict and peacebuilding literature, the first three PSAs were forged under authoritarian regimes that confined the agreements to the military protagonists and side-lined civil societies and political parties and eventually failed to keep its commitments stipulated in the agreement. And the last one was exploited by the military and the rebel groups to pre-empt the transition to civilian democratic rule, as has happened during the transitional government in the aftermath of the December 2018 Revolution. Unfortunately, therefore, it is not surprising that these PSAs have been disastrous for the country. Not only these PSAs failed to sustain peace, but one led to the partitioning of the country in 2011 and another pre-empted the constitutional path to democracy and, arguably, contributed to the build up to the current tragic factional military war.

The moral of the lessons from the Sudanese peace-building story is that ending the war and rebuilding peace must be a participatory process at the center of which the Sudanese civil society and civilian democratic forces. Even at the expense of complexity, peace agreements should, therefore, avoid disenfranchising non-militarized stakeholders, such as political parties, civil

society and local communities. In view of the rich, if aborted, Sudanese democratic legacy, providing space and voice for civilian stakeholders would be a huge boon for civil democratic peacebuilding. This is an important lesson that the current Jeddah Forum and the IGADD, among the other initiatives, must fully internalize.

Furthermore, we argue in this paper that the deplorable state of the war-ravaged social capital and the vastly diminished domestic capabilities suggest that, in fact, peacebuilding in Sudan would require much more elaborate approach than the current peace initiatives could offer. Indeed, realism should lead the envisaged broad-based national coalition to stand up to its responsibility and openly call upon the UN Security Council, the African Union and other regional entities to form a neutral, multi-dimensional UN-Regional peacekeeping operation for Sudan. In this context the mission would be credibly owned and guided by the coalition, which would also confer the required legitimacy to the operation and allow it to effectively help ending the war and enforcing peace. In turn, this would pave the way for the national stakeholders to launch the desired security, governance and economic reforms for ushering the country on a path of renewal and sustainable peace.

In the quest for delegitimizing this war and making the case for peace, we contrast the long-term economic fortunes of the country between the states of war and peace. We deploy the World Bank's Long-term Growth Model (LTGM) to assess the potential cost of the current military warfare should it spiral into an ethnic civil war. Even though we argue that such war will likely be a long-term affair, for the sake of comparisons, we assume two scenarios: a 15-year long-duration and a 5-year shorter duration civil war. We also assume that a viable political settlement could be reached at the end of the war, enabling the economy to realize rapid recovery, driven by catch up growth and robust economic reforms. Furthermore, to derive the ensuing cost of the war, we compare the in-conflict and post-conflict GDP and GDP per capita to two assumed to grow at a modest rate of 4%. Even under these very conservative assumptions, the war will be extremely costly, especially when it takes 15 years before it ends and peace is restored.

Simulated cost of a short-term war:

- \$52 billion (about 1.6 times the GDP in 2022), relative to a counterfactual of a stagnant peacetime economy at the pre-war level of GDP in 2022; and convergence to the pre-war GDP is achieved after 14 years in 2036
- \$271 billion (or more than 8 times the GDP in 2022), relative to a counterfactual of a growing peacetime economy at only 4%; and convergence to the pre-war GDP is achieved after 21 years in 2043

Simulated cost of a long-term war:

- \$189 billion (almost six times the GDP in 2022), relative to a counterfactual of a stagnant peacetime economy at the pre-war level of GDP in 2022; and convergence to the pre-war GDP is achieved after 25 years in 2047
- \$2.2 trillion (or more than 66 times the GDP in 2022), relative to a counterfactual of a growing peacetime economy at only 4%; and convergence to the pre-war GDP is achieved after 57 years in 2079

The moral of this story is that, allowing the current military warfare to continue for just five years, will be extremely costly, even relative to counterfactual of stagnant or modestly growing peacetime economy. Even worse, should this military conflict is allowed to spiral into a 15-year ethnic civil war it will cause catastrophic economic collapse; posing an existential threat to the country and could also create far reaching geo-political risks for the entire region. Under both scenarios, the current generation of youth and the one that follows will be languishing in poverty and instability, while post-conflict relapse remain a distinct possibility.

On the other hand, the simulated peace dividend associated with ending the war in 2024, provides a stark contrast to the war time simulations. In particular, the peacetime Miracle Growth Scenario is the one that would fully exploit the tremendous potential of Sudanese agriculture for achieving a combination of phenomenal investment transitions and sustained growth in TFP and other growth drivers. In just 5 years, GDP is estimated to surpass its 2011 level, followed by GDPpc in 2033. By 2050, GDP is projected to be more than 7 times higher than its 2011 value, while GDPpc is expected to be around 3.5 times higher. This swift recovery would, indeed, be of "miracle" proportions. Under the peacetime Moderate Growth Scenario, GDP is estimated to surpass its 2011 level by 2031, while GDPpc would do so by 2038. By 2050, GDP is projected to be more than 3 times higher its 2011 value, while GDPpc is expected to be around 50% higher. Therefore, the Moderate Growth Scenario resembles a case of decent recovery, but still way below the potential for the Sudanese economy. However, growth under the Low Growth Scenario is a blueprint for reliving the conflictive and disappointing historical development discourse of the country. GDP is projected to surpass its 2011 level only after more than a generation, by 2035. However, the more unsettling reality about this low case scenario is that, even by 2050, income per capita will fail to match its 2011 level. Though GDP is projected to be more than 60% higher than its 2011 value, GDPpc is expected to be 20% lower.

To achieve the miracle growth scenario, our simulation estimates that about \$186 billion (in fixed 2021 dollars) are required for the first ten years of the growth profile (2024-2033). It goes without saying that ending this war and repositioning the country on the path of democratic civil peace is *sine qua non* for unlocking domestic resource mobilization and attracting the much-needed FDI for financing the desired growth transition. We argue that most of the required FDI inflows would be associated with financing modernization and structural transformation of Sudanese agriculture by strengthening its linkages with agroindustry using agro-industrial growth corridors. We reckon that such FDI flows are likely to be feasible due to the potentially high returns on such investment and also in view of the renewed interest on investing in Sudan as a "breadbasket" for the Arab world and Africa, especially in the wake of the recent global supply chain disruptions and the revival of re-localization and regional cooperation.

The renaissance (miracle) growth scenario is premised on a robust political settlement, leading to a transformative civil-democratic transition. In turn, such political preconditions must be grounded in fundamental changes, such as amicably and effectively ending the militarization of the Sudanese politics and economics and building a unified apolitical, professional armed forces. It involves implementing security reforms in line with international standards that are typically recommended for countries emerging from civil wars. These reforms would be overseen by a transitional civil authority. Furthermore, a national conference for peace would be convened, bringing together all civil and military stakeholders to foster reconciliation and unity. The scenario also entails putting an end to the devastating Sudanese syndrome and embarking on a comprehensive social, political, and economic renaissance, guided by a social contract inspired by the "iconic" principles of the "glorious" December Revolution: Freedom, Peace, and Justice. The imperatives of a peaceful, democratic renaissance require that the envisaged social contract accounts for both economic as well as political legitimacy. An important instrument for promoting the social contract and overcoming the intermediate political economy impediments to the required reforms is a compelling, unifying "national narrative" that is also "culturally specific" and "credible". The ruling elites of the future must, therefore, be accountable for achieving development and prosperity, not just majorities in the electoral competition.

#### 7. References

- Acemoglu, Daron and James Robinson. 2013. "Economics versus Politics: Pitfalls of Policy Advice," *Journal Of Economic Perspectives*, Vol. 27, No. 2, Spring 2013: pp. 173-92.
- Adeel, Malik and Chahir Zaki. 2024. "The Political Economy of Post-Conflict Reform in Arab Societies," unpublished mimeo, (forthcoming) in Samir Makdisi and Raimundo Soto (editors). *Conflict, Peacebuilding, and Reconstruction in Arab Countries*.
- Almak, Hanadi Alnour Adlan. 2024. "Blue Nile, its conflict dynamics, and the potential implications for the wider war in Sudan: 2017 2024." STPT Regional Situation Report # 4: <u>https://sudantransparency.org/wp-content/uploads/2024/04/BlueNileEN.pdf</u>
- Baldo, Suliman. 2024. "Sudan's Interminable War," *Sudan Transparency and Policy Tracker*: <u>https://dialogueinitiatives.org/sudans-interminable-war/</u>, January.
- Bodea, Cristina, Ibrahim Elbadawi and Christian Houle. 2017. "Do Civil Wars, Coups and Riots Have the Same Structural Determinants," *International Interactions*: Vol. 43, Issue 3: pp. 537-561.
- Bodea, Cristina and Ibrahim Elbadawi. 2007. "Riots, Coups and Civil War: Revisiting the Greed and Grievance Debate". World Bank Working Paper 4397, November.
- Bormann, Nils-Christian and Ibrahim Elbadawi. 2021. "The Juba Power-Sharing Peace Agreement: Will It Promote Peace and Democratic Transition in Sudan?" *ERF Working Paper* No. 1490, Economic Research Forum, Cairo, Egypt, October.
- Collier, Paul (2019). "Ideas, networks and jobs: rebasing growth in the Middle East and North Africa", ERF Working Paper # 1331, Economic Research Forum, Cairo, Egypt, August: https://www.tandfonline.com/doi/abs/10.1080/17938120.2019.1664843?journalCode=rmd j20
- Collier, Paul and Dominic Rohner. 2008. "Democracy, Development, and Conflict," *Journal of the European Economic Association*. Vol. 6, No. 2/3, Proceedings of the Twenty-Second Annual Congress of the European Economic Association (Apr. May, 2008), pp. 531-540.
- Collier, Paul, Anke Hoeffler and Måns Söderbom. 2004. "On the Duration of Civil War," *Journal* of Peace Research, Vol. 41, No. 3, pp. 253-273: May
- Cederman, Lars-Erik and Luc Girardin. 2007. "Beyond Fractionalization: Mapping Ethnicity onto Nationalist Insurgencies," *The American Political Science Review*, Vol. 101, No. 1: pp. 173-185, February.
- Craze, Joshua and Kholood Khair. 2023. "The Remains of the JPA: The Unlearnt Lessons of the Juba Peace Agreement". The Rift Valley Institute: <u>https://riftvalley.net/wp-content/uploads/2024/01/The-Remains-of-the-JPA\_Nov-2023-FINAL.pdf</u>
- Dercon, Stefan. 2022. Gambling on Development: Why Some Countries Win and Others Lose. Hurst & Company, London, UK.
- De Waal, Alex. 2019. "Sudan: a political marketplace framework analysis". Occasional Papers (19). World Peace Foundation, Somerville, MA.
- Doyle, Michael W. and Nicholas Sambanis.2000. "International Peacebuilding: A Theoretical and Quantitative Analysis." *American Political Science Review*, 94 (4):779- 801
- Doyle, Michael W. and Nicholas Sambanis. 2006. "Making War and Building Peace: United Nations Peace Operations." *Princeton University Press.*
- Elbadawi, Ibrahim. 2008. "The Security Challenge in Conflict Prone Countries" A Conflicts Perspective article on the Challenge Paper, Copenhagen Consensus Center: URL: <u>https://www.jstor.org/stable/resrep25499</u>.

- Elbadawi, Ibrahim. 1999. "Civil Wars and Poverty: The Role of External Interventions, Political Rights and Economic Growth," presented at the World Bank's Conference on "Civil Conflicts, Crime and Violence," Washington, DC, Feb. 22- 23.
- Elbadawi, Ibrahim and Alzaki Alhelo. 2023. "The Sudan Syndrome: State-Society Contests and the Future of Democracy Post-September 2018 Revolution", ERF Working Paper No. 1644, The Economic Research Forum, Cairo, Egypt: August.
- Elbadawi, I., M. Amin, A. Elobaid, A. Alhelo, A. Osman and K. Suliman. 2023. "Post-conflict Reconstruction, Stabilization and Growth Agenda for Sudan," ERF Working Paper No. 1662, Economic Research Forum, Cairo, Egypt, November.
- Elbadawi, I, A. Elbashir, A. Osman, A. Elobaid, E. Eltahir, A. Alhelo and K. Suliman. 2022. Sudan's Challenges and Opportunities: A Renaissance Project for Sudan- From Poor Agriculture to Agro-Industrial Growth and Sustainable Development. Policy Research Report, ERF PRR 40, The Economic Research Forum, Cairo, Egypt: July.
- Elbadawi, Ibrahim and Samir Makdisi (editors). 2016. <u>Democratic Transitions in the Arab World.</u> Cambridge University Press.
- Elbadawi, Ibrahim and Samir Makdisi (editors). 2011. <u>Democracy in the Arab World: Explaining</u> <u>the Deficit</u>, Routledge, Ottawa & London (An Arabic version published by The Council for Arab Unity Studies, Beirut, Lebanon).
- Elbadawi, Ibrahim and Nicholas Sambanis. 2000. "External Interventions and the Duration of Civil Wars," unpublished mimeo, World Bank, Washington DC: https://papers.ssrn.com/sol3/papers.cfm?abstract\_id=632504
- Elmedni, Bakry. 2023. "The unthinkable might happen The Unthinkable Inferno is Yet to Come: Sudan's Expanding War," Sudan Transparency Tracker: <u>https://sudantransparency.org/the-unthinkable-inferno-is-yet-to-come-sudans-expanding-war/</u>: August.
- Epstein, David Lester and Bates, Robert and Goldstone, Jack A. and Kristensen, Ida and O'Halloran, Sharyn. 2005. "Democratic Transitions". Available at SSRN: https://ssrn.com/abstract=920180 or http://dx.doi.org/10.2139/ssrn.920180
- Fearon, James. 2004. "Why Do Some Civil Wars Last So Much Longer Than Others?" *Journal of Peace Research* 41(3): 275-301.
- Fearon, James D., and David D. Laitin. 2003. "Ethnicity, Insurgency, and Civil War," *American Political Science Review* 97(1): 75–90. doi: 10.1017/S0003055403000534.
- Goldstone, Jack A., Robert Bates, David Epstein, Michael Lustik, Monty Marshall, Jay Ulfelder, and Mark Woodward. 2010. "A Global Forecasting Model for Forecasting Political Instability," *American Journal of Political Science* 54(1):190-208.
- Ibrahim, Abdullahi Ali. 2021. "The Elite Concept: I stumble when I see." A paper presented at the conference on "Democratic Transition in Sudan and Algeria" (in Arabic).
- Loayza, Norman V. and Steven Pennings. 2022. The Long Term Growth Model: Fundamentals, Extensions, and Applications. Washington, D.C.: World Bank Group.
- Makdisi, Samir, Raimundo Soto, and Razan Amine. 2024. "The Arab Uprisings and the Path to National Peace and Sustainable Development," unpublished mimeo, (forthcoming) in Samir Makdisi and Raimundo Soto (editors). *Conflict, Peacebuilding, and Reconstruction in Arab Countries*.
- Powell, Jonathan. 2014. "Trading Coups for Civil War: The Strategic Logic of Tolerating Rebellion." Available at SSRN: https://ssrn.com/abstract=2466225 or http://dx.doi.org/10.2139/ssrn.2466225
- Rodrik, Dani, and Romain Wacziarg. 2005. "Do Democratic Transitions Produce Bad Economic

Outcomes?" American Economic Review, 95 (2): 50-55.

- Sambanis, Nicholas. 2008. "Short- and Long-Term Effects of United Nations Peace Operations," *The World Bank Economic Review*, Vol. 22, No. 1: pp. 9-32.
- Treisman, Daniel. 2015. "Income, Democracy, and Leader Turnover," American Journal of Political Science 59(4): 927-942.
- United Nations Office for the Coordination of Humanitarian Affairs (OCHA). 2024. "Sudan Situation Report": https://reports.unocha.org/en/country/sudan/.
- Wimmer, Andreas, Lars-Erik Cederman and Brian Min. 2009. "Ethnic politics and armed conflict". *American Sociological Review* 74(2): 316–33.
- World Bank. 2020. *SUDAN Agriculture Value Chain Analysis*. Agriculture Global Practice Finance, Competitiveness and Innovation Global Practice, Washington DC, USA, June.

## Annex I

## Data and regression results

	Description and Source	Mean	Median	Std. Dev.	min	max
Civil War Onset	The civil war onset variable is based on the dependent variable created by Bodea et al. that showcases the absence of (i.e. peace) or the escalation of violence whether in the form of coup, riots or civil wars onset. However, since our variable of interest is civil wars onset we drop the other categories and use them as reference groups. In line with Bodea's paper we use PRIO's definition of civil war, POW's definition of coups and Banks definition of riots.	.031	0	0.174	0	1
Ongoing civil war as defined as by PRIO	A dummy variable measuring whether a civil war was ongoing in the previous year	.163	0	0.369	0	1
EF index	Stands for ethnic fractionalization index and is used to measure the extent of a country's fractionalization based on the share of politically relevant ethnic groups. We compute the index based on Ethnic Power Relations (EPR) data called power access dataset : https://icr.ethz.ch/data/epr/core/ https://growup.ethz.ch/rfe The index's computation is based on the below equation $FRACT_j = 1 - \sum_{i=1}^{N} s_{ij}^2$	.426	.418	0.288	0	.986
polarization	Similar to the EFindex , the Polarization index is also computed using Ethnic Power Relations (EPR) data called power access dataset and is also based on the share of politically relevant groups. It is computed using the equation below $POLAR_{j} = 1 - \sum_{i=1}^{N} \left(\frac{0.5 - s_{ij}}{0.5}\right)^{2} s_{ij}$	.56	.607	0.293	0	.999
Log GDP pc, lagged 1 year	Income per capita comes from Treisman (2015). Based on Bodea et al	7.963	7.952	1.064	5.33	10.35
Log Population, lagged	Population size is based on World Bank World Development Indicators (WDI)	16.083	16.003	1.426	12.336	21.00
Oil dummy	Oil wealth is a dummy variable for countries with oil exports that make more than 30% of total exports (Fearon and Latin 2003; updated from the WDI).	.16	0	0.366	0	1
Transitional and interregnum reg, lagged 1 year	measure of political regime from Goldstone et al. (2010)	.033	0	0.178	0	1
Full democracy, lagged	measure of political regime from Goldstone et al.	.207	0	0.405	0	1
Full autocracy	(2010), full autocracy is dropped in the regression as the reference category	.417	0	0.493	0	1
Partial autocracy, lagged 1 year	measure of political regime from Goldstone et al. (2010)	.096	0	0.294	0	1
Factional Partial Democracy, lagged 1 year	measure of political regime from Goldstone et al. (2010)	.113	0	0.317	0	1
Non-Factional Partial Democracy, , lagged 1 year	measure of political regime from Goldstone et al. (2010)	.13	0	0.336	0	1
1990s	A decade's dummy variable that indicates whether the event occurred in the 1990s or not	.202	0	0.401	0	1

## Appendix Table 1: The risk of escalation to civil wars, conditional on past incidences of protests/uprisings and coups

	All	
	Encompassin	All Encompassing Log
	g Probit	1 0 0
Explanatory Variables	Civil War	
	Onset	Civil War Onset
	Coef/se	Coef/se
Ongoing civil war as defined as by PRIO	-0.260**	-0.510*
	(0.129)	(0.266)
Ethnic Fractionalization index	4 189**	9.211**
	(1.841)	(4.341)
Ethnic Fractionalization index squared	-2.899*	-6.465*
	(1.558)	(3 689)
polarization	-1.126**	-2.359*
	(0.565)	(1.266)
Log GDP pc (-1)	-0.106	-0.222
	(0.074)	(0.162)
Log population (-1)	0.193***	0.416***
	(0.043)	(0.092)
Log Mountainous terrain	0.054	0.131
	(0.031	(0.095)
Regime change over the past 3 years Polity IV	0.146	0.293
regime enange over the past 5 years, 1 only 1 v	(0.095)	(0.200)
Oil dummy	0.271**	0.568**
On_dummy	(0.118)	(0.255)
Military regime(-1) Banks	0.126	0.310
Wintary regime(-1), Danks	(0.120)	(0.281)
british colony	-0.074	
ontish colony	(0.138)	(0.314)
french colony	0.011	0.037
	(0.138)	(0.310)
Transitional and interregnum regime (-1)	0.357**	0.682*
Transitional and interregium regime (-1)	(0.168)	(0.357)
Full democracy (-1)	0.277	0.679
Tun democracy (-1)	(0.220)	(0.550)
Partial autocracy (-1)	0.081	0.222
	(0.141)	(0.307)
Factional Partial Democracy (1)	0.315**	0.706**
ractional ratial Democracy (-1)	(0.136)	(0.312)
Non Factional Partial Democracy (1)	0.024	0.034
Non-Factional Fatual Democracy (-1)	-0.024	(0.212)
1950s	(0.142)	
17505	(0.220	(0.426)
1960s		
17003	-0.020	-0.001

Notes: \*\*\*; \*\*; \* refers to statistical significance at 1, 5 and 10% levels, respectively

#### Annex II

#### A LTGM model for Sudan

The World Bank's Long Term Growth Model (LTGM) suite is based on the neoclassical Solow-Swan growth model, adapted to future growth analysis in developing countries (see Loayza and Pennings 2022 for details) and is designed to be simple, transparent, and easy to use. The LTGM takes assumptions about the paths of future growth fundamentals --- such as Total Factor Productivity (TFP) growth, human capital growth, investment rates and demographics --- and calculates the economic growth rate implied by the model. As it is a neoclassical (supply side) model of potential growth, GDP ( $Y_t$ ) is given by a simple Cobb-Douglas production function:

$$Y_t = A_t K_t^{1-\beta} (h_t L_t)^{\beta}$$

where  $A_t$  is the total factor productivity (TFP),  $K_t$  denote physical capital stocks, and  $h_t L_t$  is the effective labor used in production, which is decomposed into  $h_t$ , human capital per worker, and the labor force,  $L_t$ . The labor force is further decomposed into  $L_t = \varrho_t \omega_t N_t$  where  $\varrho_t$  is the participation rate,  $\omega_t$  is the working-age population to total population ratio, an  $N_t$  is total population. The parameter  $\beta$  is the labor share and the stock of physical capital follows  $K_{t+1} = (1 - \delta)K_t + I_t$ , where  $\delta$  denotes the depreciation rate.

To understand the drivers of growth, GDP growth can be expressed as follows (using a log-linear approximation, where  $g_{t+1}^{\chi}$  denotes the annual growth rate of variable X in period t + 1):

$$g_{t+1}^{GDP} \approx g_{t+1}^{A} + \beta \left( g_{t+1}^{h} + g_{t+1}^{\varrho} + g_{t+1}^{\omega} + g_{t+1}^{N} \right) + (1 - \beta) \left[ \frac{I_{t}}{Y_{t}} / \frac{K_{t}}{Y_{t}} - \delta \right]$$

In the short and medium terms, TFP growth has the largest effect on growth: a 1 percentage point (ppt) increase in TFP growth  $(g_{t+1}^A)$  leads to an exact 1ppt increase in GDP growth. A 1ppt increase in the growth of human capital, labor force participation, and working-age population  $(g_{t+1}^h, g_{t+1}^\varrho, g_{t+1}^\omega)$  increase GDP growth by  $\beta$ ppts. Population growth  $(g_{t+1}^N)$  also increases GDP growth by  $\beta$ ppts, though reduces GDP per capita growth.<sup>34</sup>

The effect of an increase in the investment rate  $(I_t/Y_t)$  depends on both the labor share  $(\beta)$ , as well as the scarcity of physical capital, as measured by the capital-to-output ratio  $(K_t/Y_t)$ . For example, if  $\beta = 0.5$ , a large 2ppt of GDP increase in the investment rate raises short-run growth by 1ppts per year if  $K_t/Y_t = 1$ , but only 0.5ppt if  $K_t/Y_t = 2$ . This means that an investment-led growth strategy which causes capital to accumulate faster than GDP will quickly become less effective, unless it is accompanied by other reforms to boost productivity, human capital or participation to mitigate the increase in  $K_t/Y$ .

In the long-run, the private capital-to-output ratio and public capital-to-output ratios are roughly

 $g_{t+1}^{GDPPC} \approx g_{t+1}^{A} + \beta \left( g_{t+1}^{h} + g_{t+1}^{\varrho} + g_{t+1}^{\omega} \right) + (1 - \beta) \left[ \frac{I_t}{Y_t} / \frac{K_t}{Y_t} - \delta \right] + (\beta - 1) g_{t+1}^{N}$ where it can be noted the negative effect of population growth (given that  $\beta \in (0, 1)$ ).

<sup>&</sup>lt;sup>34</sup> For GDP PC, this approximation is

constant, and so  $g_t^{GDP} \approx (1/\beta) g_t^A + g_t^h + g_t^\varrho + g_t^\omega + g_t^N$ .<sup>35</sup> This mean than the effect of all noncapital drivers of growth is amplified because they induce further capital accumulation. As a rule of thumb, a 1ppt increase in TFP growth would boost GDP per capita growth by  $1/\beta$ ppts, and there would be a one-to-one effect of  $g_{t+1}^h$ ,  $g_{t+1}^\varrho g_{t+1}^N$ , or  $g_{t+1}^\omega$ . Note however, that capital adjustment is very slow, and takes several decades to converge. However, the long-run effects are a useful upper bound, and the effects of drivers of growth throughout our three-decade simulation period (2021-2050) will fall in between the "direct short-run" and "long-run effect".

As a starting point, we consider a 20% decline in GDP for the year 2023 (referencing Caselli et al., 2017) and a corresponding 10% decrease in the capital stock due to the prevailing conflict. A summary of the assumptions for the initial conditions, parameters and demographic growth drivers can be found in Table (II) below:

 Table II: Common LTGM Assumptions: Initial Conditions (in 2023), parameters and demographics

	value	Source
Initial GDP	26.5 billion 2021 USD	WDI and other assumptions <sup>1</sup>
Initial GDP PC	566 2021 USD	WDI and other assumptions <sup>2</sup>
Initial Capital-to-output ratio	2.34	PWT10, CBS data and other assumptions <sup>3</sup>
Depreciation Rate $(\delta)$	4.3%	2019 value from PWT 10
Labor Share (β)	63.5%	2019 value from PWT 10
Total Population (growth)	2.1% (average 2023-50)	UN Projection 2022 medium variant
Working age to total population ratio (growth) <sup>4</sup>	0.4% (average 2023-50)	UN Projection 2022 medium variant

Notes:

1. We start with WDI 2021 GDP in current USD and then assume a -2.5% fall by 2022 (WEO Oct 2022) and -20% fall by 2023

2. We start with WDI 2021 GDP PC in current USD and then assume a -2.5% fall by 2022 (WEO Oct 2022) and -20% fall by 2023 for GDP and the total population projection from UN 2022 median variant for 2022 and 2023 in order to get future GDP PC:  $GDPPC_{\{t+1\}} = GDPPC_t \frac{(1+g_{t+1}^{GDP})}{1+g_{t+1}^N}$ .

- 3. We start with 2019 k/y from PWT 10 and then we use Perpetual inventory method (PIM) with PWT10 2019 depreciation rate and CBS GDP growth and Investment rates until 2021 (and using WEO forecast for 2022 GDP growth rate and 2021 investment for 2022 investment) and then we assume a 20% fall on GDP and a 10% fall in capital stock in 2023. The PIM consists in getting future K/Y by:  $\frac{K_{t+1}}{Y_{t+1}} = \frac{(1-\delta)\frac{K_t + I_t}{Y_t}}{1+g_{t+1}^{GDP}}$
- 4. Working Age Population is defined as population aged 15-64.

Building upon this initial setting, we proceed to examine the outcomes within two sets of scenarios, the catastrophic growth scenarios (following section) and the peaceful renaissance growth scenarios. In each of these scenarios, the other growth drivers will vary across (see following sections for a more detailed description of the assumptions in the different scenarios). One of the growth drivers will be human capital growth in which we use the LTGM human capital extension (LTGM-HC).<sup>36</sup>

<sup>&</sup>lt;sup>35</sup> This implies  $\frac{l}{v} / \frac{\kappa}{v} = g^{GDP} + \delta$ . Substituting into the short term approximation, generates the long run relationship.

<sup>&</sup>lt;sup>36</sup> The LTGM-HC seeks to provide a detailed analysis of the effect of changes in the different components of the World Bank Human Capital Index (HCI)—schooling quantity, schooling quality (test scores) and health—on the productivity of the workforce  $h_t$ . Unlike the HCI, the LTGM-HC focuses on dynamics by embodying human capital



#### Figure II.1. Historical GDP and GDP PC in Sudan





 $h_t^a = e^{\phi(LAYS_t - 14) + \gamma(health_t - 1)}$ 

in individual age cohorts, and tracing how those cohorts move in and out of the workforce. The resulting time series for the human capital of the workforce,  $h_t$  (measured in productivity units) is then fed into the LTGM to estimate the effect on economic growth. Specifically, the human capital of *cohort of age a* at time t takes the same form as the HCI (without child mortality):

where  $LAYS_t = quality_t \times EYS_t$  (LAYS are Learning-adjusted years of schooling and EYS are Expected years of schooling) and  $health_t$  is a measure that depends on Adult Survival Rates and/or stunting rates. The human capital of the workforce 20-64 used in production  $h_t$  is given by the weighted average of the human capital of individual age cohorts, where  $\omega_{a,t}$  is the share of the workforce of that age at time t:  $h_t = \sum_{a \in \{20, 64\}} \omega_{a,t} h_t^a$ .

### Annex III

#### Assumptions for the long and short terms war scenarios for Sudan

Growth Drivers	5-year Short War	15-year Long War
Total Factor Productivity <sup>1</sup>	$4.5\% (2023) \rightarrow -1\%$ by $2027 \rightarrow 2.5\%$ (2040)	$4.5\%$ (2023) $\rightarrow -1\%$ by 2037 $\rightarrow 2.5\%$ (2050)
Total Investment (% GDP) <sup>2</sup>	8% (2023-27) → 30% (2040)	8% (2023-37) → 30% (2050)
Male Labor Force Participation <sup>3</sup>	69% (2023-27) → 80% (2050)	69% (2023-37) → 75% (2050)
Female Labor Force Participation <sup>4</sup>	$31\% (2023-27) \rightarrow 66\% (2050)$	$31\% (2023-37) \rightarrow 54\% (2050)$
Human capital of workforce (growth rate)	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	$1\% (2023) \rightarrow -0.3\% (2038) \rightarrow 0.7\% (2050)$
Years of Schooling (20-24) <sup>5</sup>	$\begin{array}{rrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr$	$7.1 (2025) \to 4 (2040) \to 9.6 (2055)$
Quality Score (20-24) <sup>6</sup>	$0.61~(2025) \rightarrow 0.64~(2040)$	$0.61 \; (2025) \to 0.64 \; (2055)$
Adult Survival Rate (20-24)	0.79 (constant)	0.79 (constant)
Children Not Stunted (20-24) <sup>7</sup>	$0.62 (2025) \rightarrow 0.76 (2040)$	$0.62 \ (2025) \to 0.76 \ (2055)$

Table 1	III · (	Growth	drivers	during	and	after	the	war
I abic I		Growth	univers	uuring	anu	anter	unc	wai

Notes:

1. The -4.5% is minimum TFP growth is Syria during 2015-19 and -1% is average TFP growth during 2015-19 (PWT 10). Then, the 1.5% for Pessimistic and the 2.5% for Optimistic are the same as in Peace Scenarios.

2. The 8% is average 2014-19 investment in Syria (ŴDI). The 19% and 30% are the same as in Peace Scenarios.

3. 69% is the 2019 MLFP for Sudan (WDI) and 82% is the Low Income (LI) 75<sup>th</sup> percentile 2019 value. If we consider that the threshold is achieve without a war by 2050 (27 years), in 23 years it will get to 80% and in 13 years to 75%.

4. 31% is the 2019 FLFP for Sudan (WDI) and 74% is the LI 75<sup>th</sup> percentile 2019 value. If we consider that the threshold is achieve without a war by 2050 (27 years), in 23 years it will get to 69% and in 13 years to 54%.

5. 9.6 is 2020 value for Sub Saharan Africa (SSA) 75<sup>th</sup> percentile (data is taken from HCI). We assume a fall in years of schooling from 7.1 to 4 years (based on average years of schooling for the working cohorts, data Barro-Lee) to cohorts that are 0-4 in 2020 with linear fall for cohorts in the middle and then recovering the same way.

6. 0.64 is 2020 value for SSA 75<sup>th</sup> percentile (data is taken from HCI).

7. 0.76 is 2020 value for SSA 75<sup>th</sup> percentile (data is taken from HCI).



Figure III.1: Assumptions for 15-year war scenario



Figure III.2. Assumptions for the 5-war scenario

#### Annex IV

#### Assumptions for peaceful growth scenarios for Sudan

Growth Drivers	Low Growth	Moderate Growth	Renaissance Growth		
Total Factor Productivity <sup>1</sup>	0% (constant)	$0\%$ (2023) $\rightarrow$ 1.5% (2030)	$0\% (2023) \rightarrow 2.5\% (2030-43) - 3.5\% (2050)$		
Total Investment (% GDP) <sup>2</sup>	19% (constant)	$\begin{array}{c} 19\% \ (2023) \rightarrow \ 30\% \\ (2030) \end{array}$	$19\% (2023) \rightarrow 30\% (2030)$		
Male Labor Force Participation <sup>3</sup>	69% (coi	nstant)	$69\% (2023-37) \to 82\% (2050)$		
Female Labor Force Participation <sup>4</sup>	31% (constant)		$31\% (2023-37) \rightarrow 74\% (2050)$		
Human capital of workforce $(\text{growth rate})^5$	1% (2023) → 0.3% (2050)		$1\% (2023) \rightarrow 1.7\% (2050)$		
Years of Schooling (20-24) <sup>6</sup>	7.1 (constant)		$7.1\ (2025) \to 11.9\ (2050)$		
Quality Score <sup>7</sup>	0.61 (constant)		$0.61 \text{ (constant)}$ $0.61 (2025) \rightarrow 0.66 (2050)$		$0.61 \ (2025) \to 0.66 \ (2050)$
Adult Survival Rate <sup>8</sup>	0.79 (constant)		$0.79 \rightarrow 0.86 \ (2050)$		
Children Not Stunted <sup>9</sup>	0.62 (constant)		0.62 (constant) $0.62 (2025) \rightarrow 0.83 (2050)$		$0.62 (2025) \rightarrow 0.83 (2050)$

Table IV: Summary of assumptions for low, moderate and renaissance scenarios

Notes:

1. 0% is due to the recovery from a war (better to assume no change). Then, the 1.5% for Pessimistic is 2010-19 average TFP growth in Sudan and the 2.5% for Optimistic is Low Income 90<sup>th</sup> percentile 2000-19 average (PWT 10). The 3.5% is assumed as an extra 1 percentage point increase in TFP due to more reforms that start improving the TFP growth rate.

2. The 19% is 2017-21 Investment in Sudan (CBS) and 30% is average 2004-19 investment in Ethiopia.

3. 69% is the 2019 MLFP for Sudan (WDI) and 82% is the Low Income 75<sup>th</sup> percentile 2019 value.

4. 31% is the 2019 FLFP for Sudan (WDI) and 74% is the Low Income 75<sup>th</sup> percentile 2019 value.

5. These growth rates are obtained calibrating the LTGM-HC discussed in the previous section. That calibration includes assumption on years of schooling by cohorts, quality score, adult survival rate and children not stunted. We report the assumptions for the 20-24 cohort for simplicity.

6. is the 2020 expected years of schooling in Sudan, while 11.9 is 2020 value for Low Middle Income 75<sup>th</sup> percentile (data is taken from HCI).

 0.61 is the 2020 quality score in Sudan, while 0.66 is 2020 value for Low Middle Income 75<sup>th</sup> percentile (data is taken from HCI).

0.79 is the 2020 Adult Survival Rate in Sudan, while 0.86 is the 2020 value for Low Middle Income 75<sup>th</sup> percentile (data is taken from HCI).

0.62 is the 2020 not stunted rate for Sudan, while 0.83 is the 2020 value for Low Middle Income 75<sup>th</sup> percentile (data is taken from HCI).



## Figure IV.1 Assumptions in the peaceful renaissance scenarios