# Labor Market Dynamics in Sudan through Political Upheaval and Pandemic

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# LABOR MARKET DYNAMICS IN SUDAN THROUGH POLITICAL UPHEAVAL AND PANDEMIC

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**Abstract**

Sudan's economy, society, and labor market have experienced a large number of shocks since Sudan's last household survey in 2014/15. Pre-existing political and economic challenges contributed to the revolution in 2018 and substantial political change in 2019, followed by the COVID-19 pandemic in 2020, and further political and economic turmoil in 2021-2022. The new Sudan Labor Market Panel Survey 2022 provides an important opportunity to understand labor market dynamics in Sudan during this turbulent period. Both contemporaneous and retrospective data allow the creation and analysis of monthly statuses and transitions throughout the 2015-2021 period. The paper specifically examines the dynamics of job finding and entry into the labor market, unemployment durations, and employment exits. The results show the increased difficulties in entering employment as Sudan was beset by shocks.

**Keywords:** Labor market dynamics; Employment; Unemployment; Sudan
**JEL Classifications:** J64, J63, J21, J45, J46, J43

**ملخص**

شـهد الاقتصـاد والمجتمع وسـوق العمل في السـودان عددًا كبيرًا من الصـدمات منذ آخر مسـح للأسر في السـودان في عام 2014/15. ساهمت التحديات السياسية والاقتصادية الموجودة مسبقًا في الثورة في عام 2018 والتغيير السياسي الكبير في عام 2019، تليها جائحة الكورونا في عام 2020، والمزيد من الاضطرابات السياسية والاقتصادية في 2021-2022. يوفر المسـح التتبعي لسـوق العمل السـوداني الجديد 2022 فرصـة مهمة لفهم ديناميكيات سـوق العمل في السـودان خلال هذه الفترة المضـطربة. تسـمح كل من البيانات المعاصرة والأثر الرجعي بإنشـاء وتحليل الأوضـاع الشـهرية والتحولات طوال الفترة 2015-2021. تدرس الورقة على وجه التحديد ديناميكيات البحث عن عمل والدخول إلى سـوق العمل، ومدد البطالة، وخروج العمالة. تظهر النتائج الصـعوبات المتزايدة في الدخول إلى العمل حيث عانى السودان من الصدمات.

# 1    Introduction

Structural and cyclical economic challenges shape labor market dynamics and intersect with the existing structure of countries' economies. In low- and middle-income countries (LMICs), labor market challenges can manifest in heterogeneous ways. Structural issues may mean labor markets and job creation are relatively unresponsive to economic growth (Said, Galal, and Sami 2022; Assaad and Salemi 2019; Assaad, AlSharawy, and Salemi 2022; Assaad, Krafft, and Yassin 2020; Krafft and Assaad 2014; Verme et al. 2016). Economic shocks, can, however, have negative effects on LMICs labor markets. For instance, during the COVID-19 pandemic, steep job losses occurred in many LMICs, which lacked the social safety nets of higher-income countries (Miguel and Mobarak 2021).

Sudan has experienced a particularly large number of economic and political shocks in the decade preceding the pandemic and in its aftermath. South Sudan seceded from (North) Sudan in 2011, taking with it three quarters of the country's oil production, generating an external balance deficit and economic pressure to diversify (Asare et al. 2020; Elbadawi and Suliman 2018). The years following secession saw a slow-down in growth, rising rates of poverty, a lack of structural transformation, and declining productivity (Ebaidalla and Nour 2021; Etang Ndip and Lange 2019).

Driven by political instability, a series of worsening economic challenges, the pandemic and its lockdowns, and open conflict, the economic situation since 2018 has become even more dire. In late 2018, protests against corruption, poverty, and unemployment began and spread (Al Jazeera and news agencies 2022). In April 2019, President Al-Bashir was removed by the military, which also suspended the constitution and imposed a state of emergency. Civilians protested military rule, leading to a power sharing agreement in August 2019.

Economic instability, including rampant inflation, combined with the pandemic and lockdowns in 2020 to generate a very challenging labor market environment. Political and economic instability were intertwined through October 2021, when a military coup was followed by the November 2021 reinstatement of the prime minister, and his 2022 resignation after being unable to form a government (Al Jazeera and news agencies 2022). A period of substantial economic and political instability followed throughout 2022 and early 2023. Over the 2018-2021 period, Sudan's GDP contracted by a cumulative 10.4% (World Bank 2023a). The economy contracted a further 1% in 2022 (World Bank 2023a). In April of 2023, large-scale hostilities broke out between the Sudanese Armed Forces and the Rapid Support Forces militia and remained ongoing as of August 2023.

While there has been some macroeconomic data available during this extremely turbulent period, Sudan's last labor force survey was in 2011 (Ministry of Human Resources Development and Labour 2011) and the most recent household budget survey was conducted in 2014/15 (Ebaidalla and Nour 2021). How Sudan's labor market has performed between 2015 and today has been an unanswered question. This paper takes advantage of the new Sudan Labor Market Panel Survey (SLMPS) 2022 data (OAMDI 2023; Krafft, Assaad, and Cheung 2023) to examine labor market dynamics in Sudan from 2015 to 2022. The data include a detailed retrospective labor market history for all individuals 15+ who ever worked, allowing analyses of job finding, job loss, and unemployment durations. This paper presents descriptive patterns of these key labor market

dynamics and estimates discrete time hazard models to understand how these key labor market dynamics have evolved and whose labor market status has been particularly affected by Sudan's economic and political challenges.

It should be kept in mind, however, that in the context of Sudan, in which a substantial proportion of the workforce is in self-employment and unpaid family work in and out of agriculture (Krafft et al. 2023), job acquisition and separation may not be the primary manifestation of economic distress.[4] Individuals involved in family-based activities are likely to experience economic distress as declines in real income and purchasing power, reduced productivity, and increased underemployment (Satti 2022; Krafft et al. 2023), all of which are unlikely to show up in the sort of labor market dynamics we examine here.

## 2 Data

### 2.1 Survey

The SLMPS 2022 is a nationally-representative survey of households and individuals in Sudan carried out by the Economic Research Forum (ERF) in cooperation with the Sudanese Central Bureau of Statistics in mid-2022 (Krafft, Assaad, and Cheung 2023; OAMDI 2023). The 2022 wave is designed to be the first wave of an ongoing longitudinal survey to be carried out periodically. The data captured 4,878 households and 25,442 individuals using a stratified random cluster sample design (Krafft, Assaad, and Cheung 2023). All individuals aged 5+ completed individual questionnaires (20,086 of the 21,057 eligible individuals consented and completed the questionnaire, a 95% response rate). Individuals aged 15+ had detailed data collected on their current and usual labor market status (which was collected for individuals aged 5+), details of any current unemployment, as well as a full labor market history. The history covered all employment and non-employment spells of at least six months in duration since exiting school or starting to work. Questions in the employment and unemployment sections also captured the dates of unemployment for those who never worked. The educational module enquired about the full educational trajectories of individuals including the date school exit (if they had attended schooling in the past).

Attempts were made to capture the start and end dates in month and year for all employment and non-employment spells. Only spells of six months or longer were supposed to be captured in the employment history. Additional questions help determine whether a non-employment spell is in fact unemployment. For each employment spell, a series of employment characteristics were captured, such as employment status, institutional sector, economic activity, occupation, and social insurance coverage, among others. If the spell in question is not the current job, an end date was collected, along with whether there was a period of non-employment after that job, and if so, its nature.[5] An indefinite number of employment spells could theoretically be captured, but up to nine were captured in the data.

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[4] As shown in Krafft, Assaad, Cortes-Mendosa and Honzay (2023), 45% of workers in Sudan are in some form of non-wage work, and 40% are in informal wage employment.

[5] This design of questions was a substantial improvement over past designs that asked for statuses (whether employment or non-employment) repeatedly and often missed non-employment periods (Assaad, Krafft, and Yassin 2018; Krafft and Assaad 2021; Krafft, Assaad, and Rahman 2021).

## *2.2 Outcomes*

This paper uses the contemporaneous employment and unemployment data, as well as retrospective labor market history data, to construct a monthly panel of labor market statuses for each individual. States are defined as: (1) out of the labor force (*O*) (2) unemployed[6] (*U*) (3) working in agriculture (*A*) (4) in non-wage non-agricultural work (*NW*) (5) in informal non-agricultural wage work (*I*), and (6) in formal non-agricultural wage work (*F*). States 3-6 are types of employment, based on the market definition of employment.[7] Formality is defined based on social insurance coverage; [8] in the context of Sudan almost all formal employment is in the public sector (Krafft et al. 2023). Although both the month and year were asked for the dates that identify labor market states, some respondents did not know the dates, particularly months, but in some cases years.[9] We exclude from our analyses labor market status where the year was unknown. However, for months, if the month was given as don't know, but the year was present, we randomly assign the month, while maintaining chronological sequencing.

The primary outcomes we consider in this paper are labor market dynamics – transitions between our six labor market states. Thus, job transitions within states, such as a job move from one employer to another within the same state are not considered transitions in our analysis. Given the predominantly informal (and irregular) nature of wage labor in Sudan, there are probably frequent transitions across employers within the same sort of work. These transitions are generally not captured in our data.

In describing the transitions, we sometimes aggregate together unemployment and out of the labor force into non-employment (*NE*) and the employment types as employment (*E*). We consider monthly transitions between month *t-1* and *t*. Transitions are always conditional on being in a particular state in *t-1*. Denoting generically as *S* any particular state, we are interested in transitions from state *i* to state *j*, namely $S_{i,t-1} \rightarrow S_{j,t}$. We estimate transition rates as the share transiting relative to the base state. Table 1 characterizes both the generic idea of transitions and transition rates, as well as several specific transitions we focus on. While we characterize all transitions descriptively, in our multivariate models we particularly focus on entry or job-finding, ($NE_{t-1} \rightarrow E_t$). We further explore this dynamic specifically from unemployment ($U_{t-1} \rightarrow E_t$). For those employed, we examine separations or job exit ($E_{t-1} \rightarrow NE_t$).

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[6] Using the broad definition of unemployment, which requires that an individual not be working, desiring to work and available for it, but does not require active search, as the exact timing of search is not capturable in the retrospective data.

[7] The market definition of employment is work for pay or profit, a definition which conforms to the recommendations of the 19th International Conference of Labour Statisticians (ICLS-19) (ILO 2013). Subsistence (own-consumption) work is not considered employment according to the ICLS-19 recommendations and is not captured in the retrospective data.

[8] The 17th International Conference of Labour Statisticians (ICLS-17) guidance in 2003 defines informal employment as employment "in law or in practice, not subject to national labor legislation, income taxation, social protection or entitlement to certain employment benefits" (ILO 2003). For employees, this is usually operationalized as employees that are not covered by social insurance (United Nations Economic and Social Council 2021).

[9] Sudan has relatively low literacy rates with only half of the population aged 25-64 literate (Krafft et al. 2023).

**Table 1. Labor market transitions of interest**

| | Transition | Transition rate |
|---|---|---|
| Transition between states i and *j* (generic) | $S_{i,t-1} \rightarrow S_{j,t-1}$ | $\dfrac{S_{i,t-1} \rightarrow S_{j,t}}{S_{i,t-1}}$ |
| Entry (job finding) | $NE_{t-1} \rightarrow E_t$ | $\dfrac{NE_{t-1} \rightarrow E_t}{NE_{t-1}}$ |
| Entry from unemployment | $U_{t-1} \rightarrow E_t$ | $\dfrac{U_{t-1} \rightarrow E_t}{U_{t-1}}$ |
| Separations (job exit) | $E_{t-1} \rightarrow NE_t$ | $\dfrac{E_{t-1} \rightarrow NE_t}{E_{t-1}}$ |

## 2.3   Analysis samples

Our analyses focus on those aged 15-64 in the (time-varying) year in question. We restrict our analyses to the period 2015-2021, since 2022 is a partial year and going further back than 2015 may suffer from increasing recall problems. Moreover, patterns of labor market outcomes from 2011 and 2014/15 have been studied elsewhere (Ebaidalla and Nour 2021; Ministry of Human Resources Development and Labour 2011). For job exit in the multivariate models, we consider the entire pool of those employed in each month of 2015-2021.

For the entry and transitions out of unemployment models, because the duration of non-employment and unemployment spells are of particular interest, we restrict our analyses to those who started a spell of non-employment or unemployment in the 2015-2021 period (those who are not left-censored). For non-employment, we exclude time spent in school,[10] to better capture the dynamics of school-to-work transitions. For those who never went to school or exited school before age 15, we start our analyses at age 15; otherwise analyses start at the time of school exit. For those who started employment before age 15 or school exit (whichever is later), we assign them a duration from non-employment to employment of one month, which is our minimum duration of transition.

## 2.4   Covariates

A number of different individual characteristics may be associated with labor market dynamics. Sudan's labor market is strongly gender-differentiated (Ebaidalla and Nour 2021; Krafft, Nour, and Ebaidalla 2022; Krafft et al. 2023). We therefore initially estimate our models with a sex dummy as a covariate, and thereafter run models separately for men and women. The completed level of education is categorized as (1) illiterate (2) reads and writes (3) primary (4) secondary or (5) higher education. The SLMPS collects data on parents' socio-economic status, even if the parents are not in the household. Other research has established an important role of parental socio-economic status in school-to-work transitions in MENA (Assaad, Krafft, and Salemi 2023; Assaad

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[10] Since the year but not month of school exit is reported, we assume school consistently ended at the end of May each year.

and Krafft 2021). Given low levels of education in Sudan (and even lower levels for the parental generation), we categorize socioeconomic status as (1) neither parent completed primary education (2) one but not both parents completed primary education or (3) both parents completed primary education.[11] Sex, completed education, and parents' socioeconomic status are covariates that do not vary over time.

Other covariates do vary over time. We use time-varying age to define a time-varying age group as youth (aged 15-29) or prime age (aged 30-64). We use the timing of first marriage to define a time-varying covariate for those ever married.[12] Given substantial differentiation between rural and urban labor markets (Krafft et al. 2023), we distinguish between (1) urban, (2) rural, and (3) abroad/camps categories. These are time-varying annually based on information from the residential mobility history module of the SLMPS. Two key covariates relate to time itself. The most important is the year considered (we include dummies for each year from 2015 to 2021). We also control for the month (dummies for each month 1-12 in the year) to account for any seasonality. In models for exiting employment, we also control for the previous month's employment state (four categories as described above).

The paper specifically answers the following research questions:

1. How have labor market dynamics evolved over the 2015-2021 period?
2. Which groups have disproportionately experienced difficult conditions in the labor market in terms of job finding and separation?

For (1), time is our key covariate, and enters our models as a series of dummies for the calendar year. For (2), we consider a number of covariates of interest, including particularly sex.

## 3   Methods

The paper initially describes the distribution of our panel of monthly states for the period 2015-2021. It then presents the rates of transition over the pooled period to characterize the frequency of different transitions (e.g. how frequent is moving between agriculture and informal non-agricultural wage work)? Subsequent analyses present how specific dynamics have changed over time, first between the E/U/O states, and then for transitions from non-employment to employment and employment to non-employment.

Our multivariate models are discrete-time logit hazard models estimated on the monthly data for the probability of (1) entering employment from non-employment (2) ending an unemployment spell (finding employment) or (3) exiting employment for non-employment. If $T_t$ is the outcome of interest (e.g. finding a job), we can describe our outcomes with a hazard function, $h_{it}$ (Jenkins 1995):

$$h_{it} = \Pr(T_t | T_t \geq t) \tag{1}$$

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[11] In the SLMPS 2022, 77% of those aged 15-64 had neither parent with a complete primary, 13% had one parent but not both complete primary, and 9% had both parents complete primary.

[12] For those reporting they are married but don't know the date they married, we use the median age of marriage by sex for ages 15-59 (Krafft et al. 2023).

To estimate the relationship between this hazard and covariates, $X_{it}$, we use a logit model (Jenkins 1995):

$$\ln\left(\frac{h_{it}}{1 - h_{it}}\right) = \theta(t) + \beta X_{it} \qquad (2)$$

Here, $\theta(t)$ is the baseline hazard (included in entry and unemployment models), which enters in single months of duration from the start of the spell for months 1-23, and then is aggregated into dummies for additional 12-month periods thereafter, with 60+ months as a final category. The specification estimates the odds for different hazard ratios, that is, how individual characteristics vary the odds of an outcome compared to the baseline hazard for a reference individual. Odds ratios greater than one mean a characteristic leads to an individual being more likely to end a state, whereas those less than one mean an individual is more likely to remain in a state. For all our models, we cluster our standard errors on the individual level, as we have multiple monthly observations for most individuals.

## 4 Results

### 4.1 Labor market states

In order to contextualize labor market dynamics, Figure 1 presents the states observed across 2015-2021 in the pooled monthly data, for individuals ages 15-64, by sex. Overall, 31% of the time individuals were employed,[13] 67% of the time they were out of the labor force (OLF), and 2% of the time they were unemployed.[14] Women have much lower participation then men – they were employed only 9% of the time,[15] and 2% were unemployed. In the retrospective data, 55% of the time men were employed,[16] 3% were unemployed, and 42% of the time they were out of the labor force. For men observed in employment states, 32% were in agriculture, 21% were in non-agricultural non-wage work, and 41% were in informal non-agricultural wage work. Only a small fraction (6%) were in formal wage work. For women observed in employment states (only 9% of the relevant universe), a third (36%) were in agriculture, 16% in non-agricultural non-wage work, a third (36%) in informal non-agricultural wage employment, and a small fraction (11%) in formal wage employment. This underscores the highly informal nature of the Sudanese labor market and the important role agriculture plays in it. The predominance of the out of labor force state, for example, must be kept in mind when interpreting transitions from non-employment (out of the labor force or unemployment) into employment.

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[13] This compares to a contemporaneous 2022 employment rate of 34% overall (Krafft et al. 2023).

[14] Note that this is not an unemployment rate – the unemployment rate is as a share of the labor force, and was 8% as of 2022 (Krafft et al. 2023).

[15] This compares to a contemporaneous 2022 female employment rate of 12% (Krafft et al. 2023). Women are, however, more often participating in market and subsistence activities on an annual basis (Krafft et al. 2023; Assaad, Krafft, and Jamkar 2023). Women's employment tends to be more difficult to measure and under-detected by standard metrics compared to that of men (Assaad, Krafft, and Yassin 2018; Assaad and Krafft 2023; Langsten and Salem 2008).

[16] This compares to a contemporaneous 2022 male employment rate of 59% overall (Krafft et al. 2023).

**Figure 1. States (percentages) by sex, ages 15-64, pooling 2015-2021**
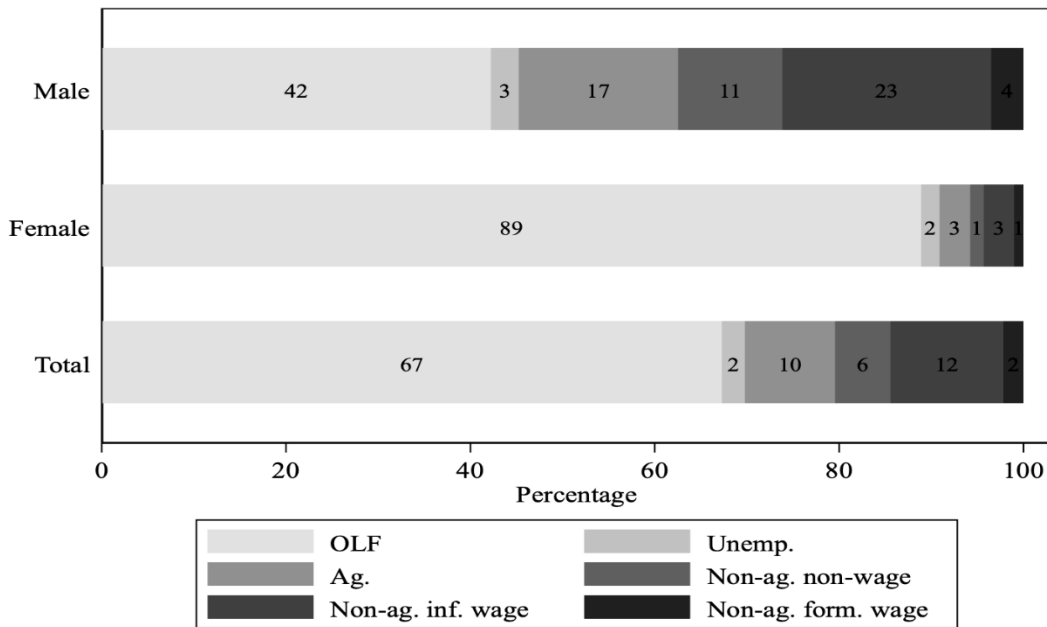


Source: Authors' calculations based on SLMPS 2022 retrospective data

## 4.2 Patterns of transitions

What labor market transitions are commonly observed in Sudan? Figure 2 presents monthly transition rates by origin state and sex, pooling data across 2015 to 2021. The figure does not show those remaining in the same state, who are the vast majority of individuals, particularly given that we are looking at monthly transition rates. The most common transitions relate to job-finding and labor market entry; 0.14% of those out of the labor force enter employment each month and 0.06% of those out of the labor force enter unemployment each month. Rates of entry into employment from OLF are much higher for men (0.37% per month) than women (0.05%). The most frequent transitions are entry to employment from unemployment (but this is a rarer state to be in), at 1.24% per month (1.72% for men; 0.60% for women). Transitions once employed are generally rare (0.03%-0.09% to OLF across types of employment; 0.01%-0.03% to unemployment across types of employment; less than 0.01% to 0.05% between employment states). The low rates of transition between employment states are particularly noteworthy and suggest that individuals do not change their type of employment much once they have been employed. This rigidity is likely the result of the high levels of self-employment and the mostly informal (and irregular) nature of wage employment in which transitions from one employer to another within the same type of work are common but do not constitute an employment transition by our definition.

The relatively greater rates of transitions between non-employment and employment, from unemployment, and to some extent exit from employment motivate our focus on these outcomes in our job-finding, job separation, and unemployment models. Given the rarity of transitions among employment states, we refrain from analyzing these transitions further.

**Figure 2. Monthly transition rates (percentages) by origin state and sex, pooling 2015-2021**
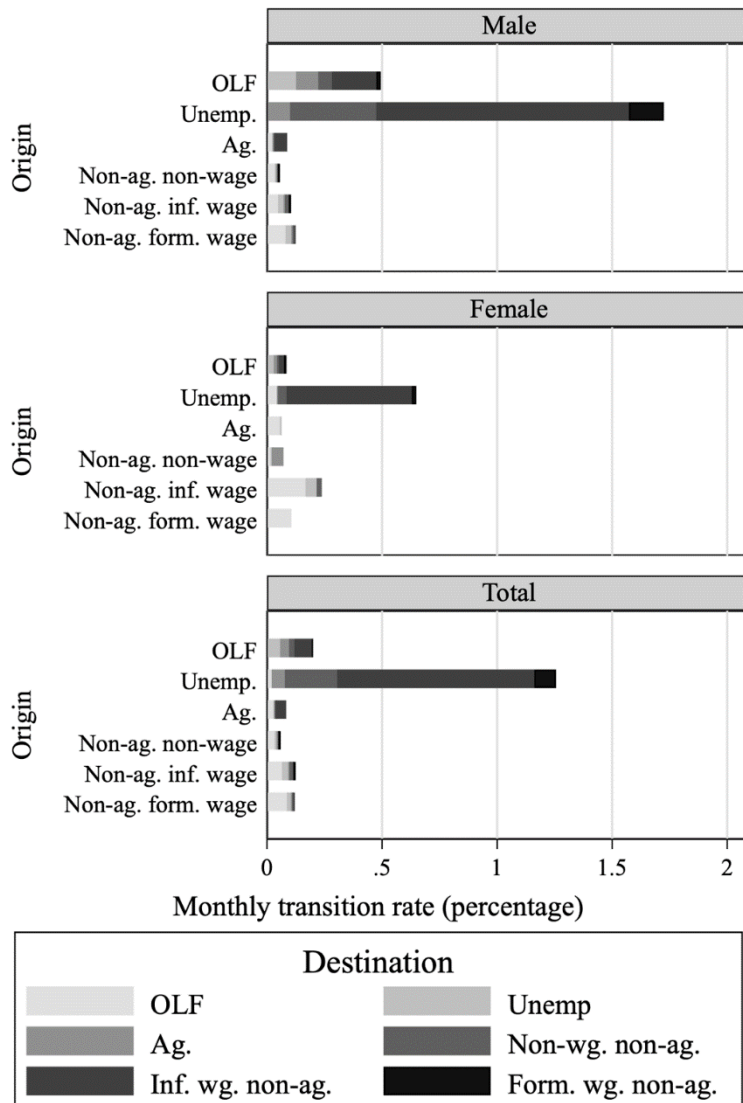


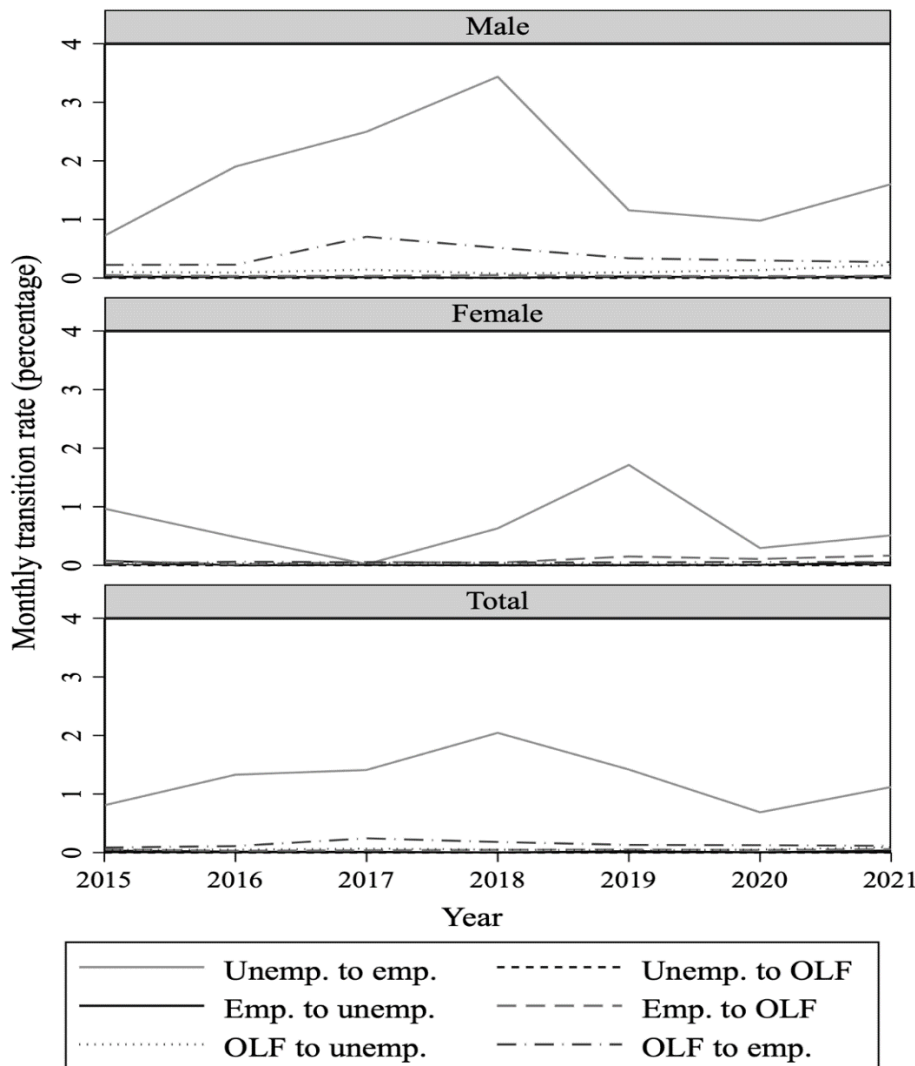Source: Authors' calculations based on SLMPS 2022 retrospective data
Notes: Figure does not show those remaining in state. The universe for each transition is restricted to the population at risk of the transition (in the origin state) in *t*-1.

Figure 3 begins to examine how these dynamics have evolved over the 2015 to 2021 period, focusing on transitions between employment, OLF, and unemployment. As we discuss these findings, keep in mind that economic conditions began to seriously deteriorate in Sudan in 2018, leading to the start of political unrest at the end of the year. Since 2018, GDP growth rates in Sudan have been negative, but the contraction worsened in 2020 partly as the result of the COVID-19 pandemic.[17] Job-finding from unemployment peaked in 2018 overall (2018 for men; 2019 for women) and declined substantially in 2019 and even more so in 2020, with only a slight recovery

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[17] The GDP growth rate was -2.7% in 2018, -2.2% in 2019, -3.6% in 2020, and -1.9% in 2021 (World Bank 2023b).

in 2021. Job-finding from OLF peaked in 2017 and declined gradually thereafter. For women, there was some increase in employment to out of labor force transitions starting in 2019. Past research has established that, in MENA, women often withdraw or remain out of the labor force in response to poor prospects, while men are more likely to either persist in unemployment or accept less-than-ideal employment (Assaad, Krafft, and Salemi 2023). Importantly, there does not appear to be an appreciable spike in job losses for men, consistent with other research suggesting youth entry tends to be the key margin of adjustment in times of economic difficulty in MENA (Alazzawi and Hlasny 2022; Wahby and Assaad 2023).

**Figure 3. Monthly transition rates (percentages) between employment, out of the labor force, and unemployment, by sex and year**
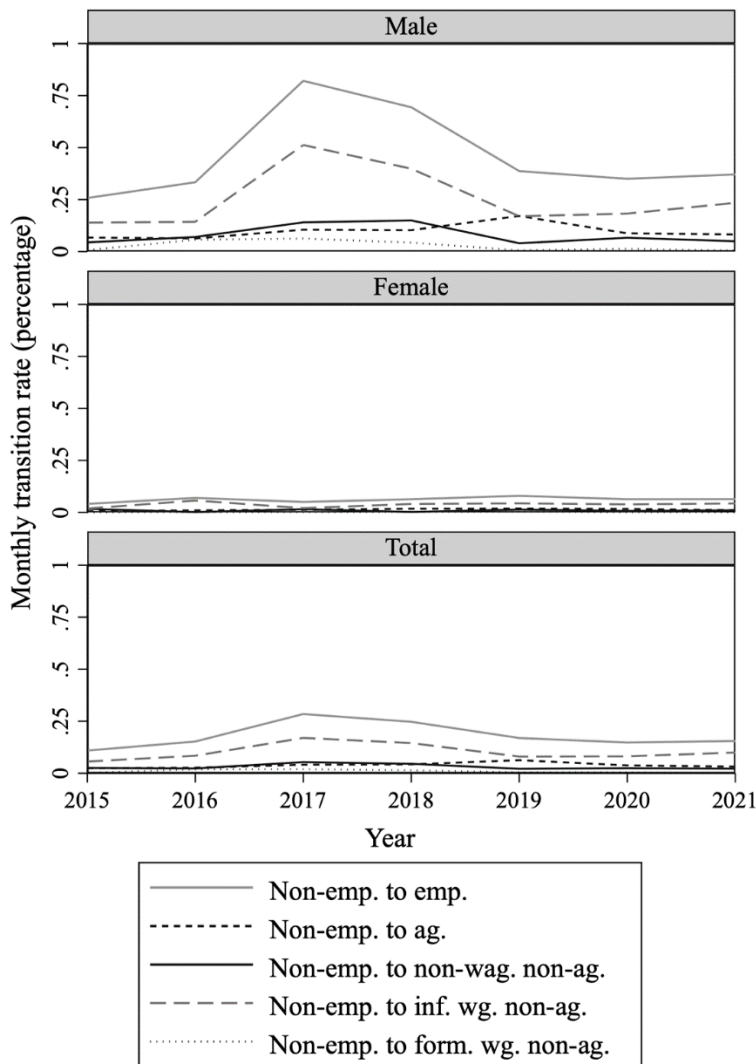


Source: Authors' calculations based on SLMPS 2022 retrospective data
Notes: The universe for each transition is restricted to the population at risk of the transition in *t*-1. The relative size of the at-risk population in each origin state is provided on average for the 2015-2021 period in Figure 1.

Figure 4 specifically explores job-finding trends, both overall rates of transition from non-employment to employment, and entry into specific types of employment. Job finding rose from 2015 to 2016 and 2017, diminished slightly in 2018, fell further in 2019 and slightly in 2020 and 2021. The trend for entry into informal non-agricultural wage work followed the overall trend (and was the most common initial status throughout the period). Entry into agriculture, however, rose slightly particularly in 2019, indicating that agriculture was potentially acting as a labor-absorbing sector during lean economic times. Transitions into non-wage non-agricultural work declined particularly sharply in 2019.

**Figure 4. Monthly transition rates (percentages) to employment from non-employment, by sex and year**



Source: Authors' calculations based on SLMPS 2022 retrospective data

Figure 5 explores job separation trends, i.e. transitions from employment to non-employment over time, as well as separately for different types of employment. Overall, job losses or separations were relatively flat over the entire period, although they rose for women after 2018. Separations from informal non-agricultural wage work rose for women but fell for men in 2019. Separations from formal employment were more common in 2019 and 2020; 2019 particularly for men and 2020 for women.

**Figure 5. Monthly transition rates (percentages) to non-employment from employment, by sex and year**
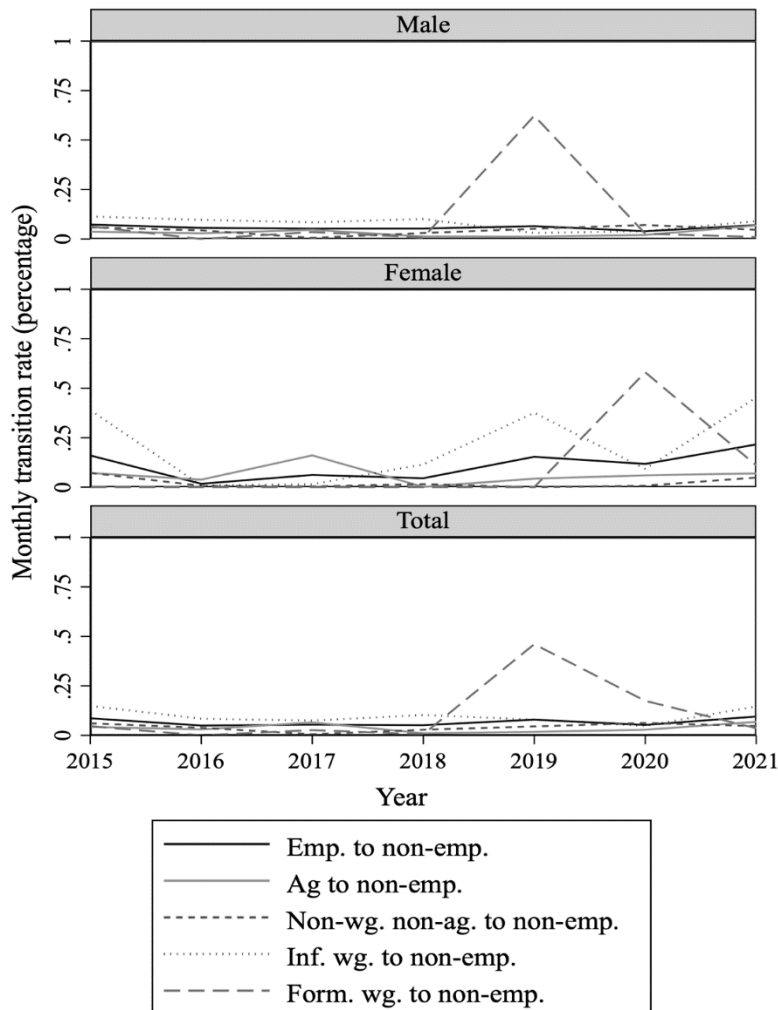


Source: Authors' calculations based on SLMPS 2022 retrospective data
Notes: The universe for each transition is restricted to the population 15-64 at-risk of the transition in *t*-1. The relative size of the at-risk population in each origin state is provided on average for the 2015-2021 period in Figure 1.

### *4.3 Unemployment durations*

Figure 6 turns to unemployment durations, exploring the proportion of individuals remaining unemployed each month from the start of their unemployment spell. Unemployment spells are from the period 2015-2021 and include only spells that are not left censored (started in 2015 or later). The Kaplan-Meier estimator is used to account for right censoring (those still in unemployment). A sizeable fraction (23%) of those who start an unemployment spell exit it within 12 months (32% for men and only 4% for women). The $25^{th}$ percentile unemployment duration is 15 months (12 months for men, 24 months for women). The median is 40 months overall (34 months for men and undefined for women as fewer than half exit unemployment over the study period). There are primarily two modalities of unemployment: those that experience a (relatively) short initial entry period of unemployment of less than two years, and a group that experiences very long-term unemployment among both men and women.

**Figure 6. Unemployment durations (proportion remaining unemployed), by months since start of spell and sex**
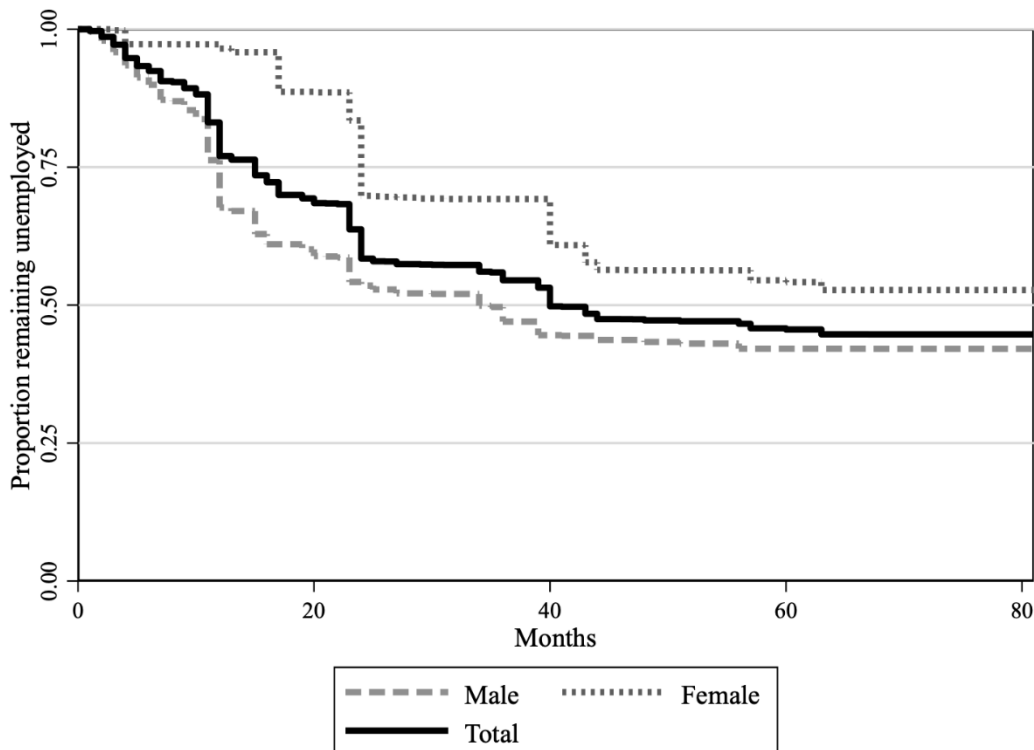


Notes: Kaplan-Meier estimator. Includes only non-left censored spells being in 2015-2021 for individuals aged 15-64 in (time-varying) year.

Table 2 presents the discrete-time hazard models of unemployment durations. Only non-left-censored spells starting in 2015-2021 are included. The first model includes both men and women, as well as the covariates, baseline hazard, and year dummies to extract the trend over time. The reference year is 2018 (omitted), since this year generally had the best labor market outcomes in the descriptives. Compared to 2018, there are significantly lower odds of exit from unemployment (odd-hazard ratios of less than one) in 2015, 2020, and 2021. The results for 2020 and 2021 are

consistent with the expectation of longer unemployment durations as a result of the pandemic and the continuing political and economic instability.

**Table 2. Logit discrete time hazard model of unemployment durations**

|  | All | Men | Women |
|---|---|---|---|
| **Year (2018 omit.)** | | | |
| 2015 | 0.039** | 0.036** | |
|  | (0.046) | (0.044) | |
| 2016 | 0.692 | 0.720 | |
|  | (0.397) | (0.485) | |
| 2017 | 0.979 | 1.299 | 0.045* |
|  | (0.531) | (0.724) | (0.056) |
| 2019 | 0.937 | 0.516 | 4.672 |
|  | (0.466) | (0.324) | (3.688) |
| 2020 | 0.246** | 0.229* | 0.262 |
|  | (0.131) | (0.144) | (0.264) |
| 2021 | 0.195** | 0.098** | 1.257 |
|  | (0.120) | (0.071) | (1.637) |
| **Age group (15-29 omit.)** | | | |
| 30-64 | 0.268* | 0.516 | 0.002*** |
|  | (0.174) | (0.304) | (0.003) |
| **Education (Illiterate omit.)** | | | |
| Reads & Writes | 0.434 | 0.327 | 131.939*** |
|  | (0.488) | (0.399) | (173.556) |
| Primary | 0.661 | 0.449 | 2.969 |
|  | (0.620) | (0.448) | (4.470) |
| Secondary | 1.188 | 0.650 | 11.086 |
|  | (1.009) | (0.609) | (21.798) |
| Higher education | 1.617 | 0.976 | 28.773** |
|  | (1.468) | (0.999) | (35.273) |
| **Location (Urban omit.)** | | | |
| Rural | 0.581 | 0.478 | 3.253 |
|  | (0.298) | (0.246) | (3.293) |
| Abroad/camps | 0.155 | 0.022* | 270.424** |
|  | (0.206) | (0.036) | (482.263) |
| **Sex (Male omit.)** | | | |
| Female | 0.187*** | | |
|  | (0.082) | | |
| **Marriage (Never married omit.)** | | | |
| Ever married | 0.776 | 0.648 | 0.431 |
|  | (0.522) | (0.408) | (0.379) |
| **Parents education (Neither primary omit.)** | | | |
| One parent primary | 0.535 | 0.455 | 2.004 |
|  | (0.254) | (0.229) | (2.246) |
| Both parents primary | 0.861 | 0.781 | 2.317 |
|  | (0.343) | (0.358) | (1.695) |
| **Month** | Yes | Yes | Yes |
| **Baseline hazard** | Yes | Yes | Yes |
| **N (obs.)** | 9968 | 5732 | 1111 |
| **N (indiv.)** | 399 | 259 | 136 |

Source: Authors' calculations based on SLMPS 2022 retrospective data
Notes: *p<0.05; **p<0.01; ***p<0.001. Cells are odds ratios. Standard errors in parentheses, clustered at individual level. Includes only non-left censored spells beginning in 2015-2021 for individuals aged 15-64 in (time-varying) year.

This first model also allows us to test for gender differences in unemployment durations throughout the period. As was clear from Figure 6, women are significantly less likely to exit unemployment than men.[18] There are no significant differences in exiting unemployment by education. Although the incidence of experiencing unemployment may depend in part on educational attainment (Krafft et al. 2023), once unemployed, the duration of unemployment is similar across educational levels. There are likewise no differences in unemployment durations by parental socioeconomic status, being ever married, or location. Although youth (aged 15-29) are much more likely to experience unemployment (Krafft et al. 2023), older workers (aged 30-64) have significantly lower odds of exiting unemployment, once unemployed, compared to youth.

The subsequent models in Table 2 are estimated separately for men and women, allowing the effects of all covariates to be different. Figure 7 presents the hazards by unemployment duration, by sex, that are included in the models for men and for women, along with their confidence intervals. The initial hazard of exiting unemployment in the first month tends to be quite low, but rises by the second month for men and thereafter for women. Men have a relatively similar hazard of around 0.025-0.03 for months 2-7 of an unemployment spell, before the hazard drops lower but remains above that of women through 12 months from the start of the spell. There are then some spikes around 15 months (for men) and 17 months (for women), but with large confidence intervals. The hazard in later months (around 23 months and onward) is higher for women than men, with the long-term hazards consistent with our characterization of Figure 6, showing a group of unemployed who obtain jobs relatively quickly, as well as a group of long-term unemployed.

**Figure 7. Hazards by unemployment duration**
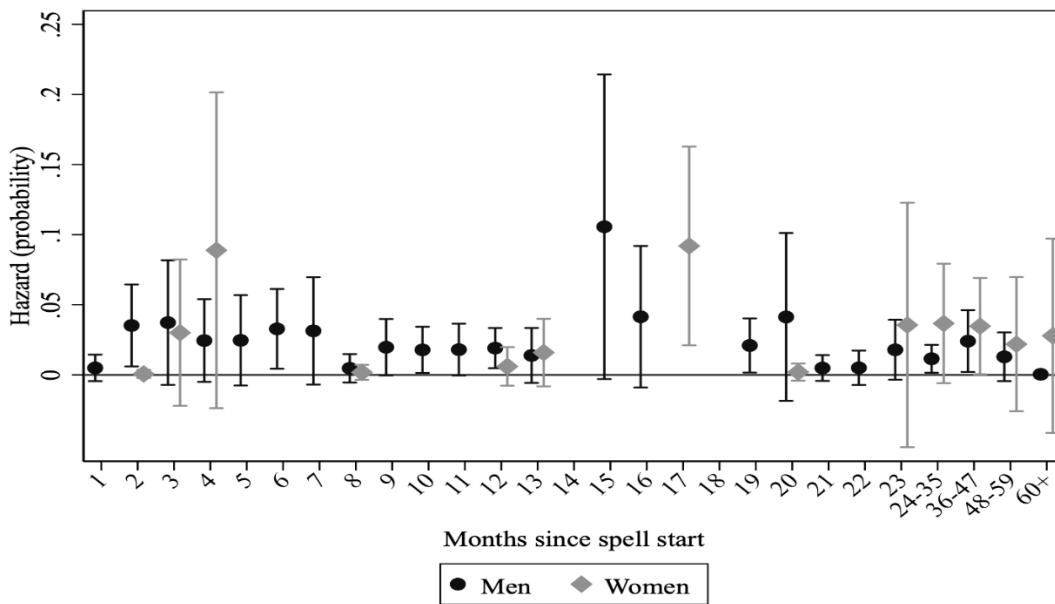


Source: Authors' calculations based on men and women models in Table 2.
Notes: Bars show 95% confidence intervals. Absent if perfect predictor of failure (not exiting unemployment). Note that 24 month and higher baseline hazards recoded into groups.

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[18] When testing interactions between sex and year, women were significantly less likely than men to exit unemployment in 2015 and significantly more likely in 2021.

Returning to Table 2, for men, the same significantly lower hazard of exit is observed in 2015, 2020, and 2021 compared to 2018. For women, none exited in 2015/2016 and significantly fewer in 2017 compared to 2018. There are not, however, significant differences between 2018 and 2019-2021. The significant differences in exit for older ages are driven by very low hazards of exit for women aged 30-64. Compared to illiterate women, women who can read and write or who have higher education, but not primary or secondary education, are significantly more likely to exit unemployment. There are not significant differences by parental socioeconomic status or being ever married for either men or women.

### 4.4   Non-employment durations

Figure 8 explores the duration pattern of the probability of exit from the non-employment state (including both OLF and unemployment) and entry into employment. The figure excludes time in school. As mentioned above, we treat initial transitions to employment before age 15 or before school exit as having a duration of one month. Non-employment spells are from the period 2015-2021 and include only spells that are not left censored (started in 2015 or later). The Kaplan-Meier estimator is used to account for right censoring (those still in non-employment).

Non-employment is often an absorbing state for women; only 26% of women exit non-employment to employment even after 80 months. Only 11% find a job immediately (or before school exit or before age 15). Only 16% find a job within 24 months of starting their non-employment spell. Men can experience long non-employment durations, but 36% find employment immediately (or before school exit or before age 15). Half of men transition to employment within 10 months. By 36 months, 61% of men have transitioned to employment. By 60 months this share reaches 70%, and 73% by 80 months.

**Figure 8. Non-employment durations (proportion finding employment), by months since start of spell and sex**
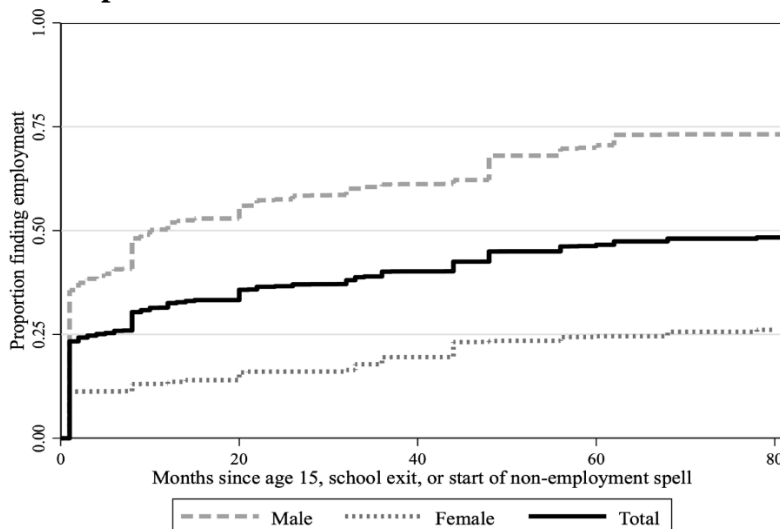


Notes: Kaplan-Meier estimator. Includes only non-left censored spells beginning in 2015-2021 for individuals aged 15-64 in (time-varying) year.. Excludes time in school, treats those employed at age 15 or when exiting school as having a duration of one month.

Table 3 presents the discrete time logit hazard model of entry (NE→E), based on the duration from age 15 or school exit, whichever is later, to employment (with those who entered employment at or before school exit or age 15 assigned a one-month duration, as in the figure). Only non-left-censored spells starting in 2015-2021 are included. The first model includes both men and women with a dummy variable for female as a covariate. We see, as expected, significantly lower odds of entry into employment for women as compared to men. Compared to 2018, there are lower odds of entry in all other years, but the difference is only significant in 2017. There are no significant differences by age group, location, marital status, or parents' socioeconomic status. There are some significant differences by education, with those with primary education significantly less likely to transition into employment than those who are illiterate.[19]

**Table 3. Logit discrete time model of entry into employment (duration from age 15 or school exit, whichever is later, to work)**

|  | All | Men | Women |
|---|---|---|---|
| **Year (2018 omit.)** |  |  |  |
| 2015 | 0.554 | 0.564 | 0.258 |
|  | (0.240) | (0.256) | (0.227) |
| 2016 | 0.599 | 0.560 | 0.623 |
|  | (0.245) | (0.259) | (0.496) |
| 2017 | 0.514* | 0.595 | 0.274* |
|  | (0.168) | (0.233) | (0.158) |
| 2019 | 0.666 | 0.456* | 1.265 |
|  | (0.204) | (0.172) | (0.674) |
| 2020 | 0.678 | 0.547 | 0.904 |
|  | (0.196) | (0.198) | (0.463) |
| 2021 | 0.695 | 0.545 | 1.001 |
|  | (0.233) | (0.210) | (0.646) |
| **Age group (15-29 omit.)** |  |  |  |
| 30-64 | 1.582 | 1.408 | 0.809 |
|  | (0.485) | (0.627) | (0.459) |
| **Education (Illiterate omit.)** |  |  |  |
| Reads & Writes | 0.574 | 0.697 | 0.141*** |
|  | (0.174) | (0.256) | (0.067) |
| Primary | 0.460* | 0.402* | 0.258 |
|  | (0.158) | (0.169) | (0.196) |
| Secondary | 0.698 | 0.598 | 0.454 |
|  | (0.233) | (0.229) | (0.282) |
| Higher education | 1.244 | 0.722 | 1.328 |
|  | (0.401) | (0.290) | (0.663) |
| **Location (Urban omit.)** |  |  |  |
| Rural | 0.863 | 1.130 | 0.343** |
|  | (0.166) | (0.274) | (0.135) |
| Abroad/camps | 0.350 | 0.408 | 0.530 |
|  | (0.236) | (0.299) | (0.411) |
| **Sex (Male omit.)** |  |  |  |
| Female | 0.166*** |  |  |
|  | (0.036) |  |  |
| **Marriage (Never married omit.)** |  |  |  |
| Ever married | 1.016 | 1.485 | 0.779 |

---

[19] When we tested interactions between sex and time in the entry model, there were not significant year-sex interactions.

|  | All | Men | Women |
|---|---|---|---|
|  | (0.287) | (0.637) | (0.272) |
| **Parents education (Neither primary omit.)** |  |  |  |
| One parent primary | 0.655 | 0.695 | 0.650 |
|  | (0.164) | (0.209) | (0.365) |
| Both parents primary | 0.962 | 1.051 | 1.050 |
|  | (0.235) | (0.320) | (0.423) |
| **Month** | Yes | Yes | Yes |
| **Baseline hazard** | Yes | Yes | Yes |
| **N (obs.)** | 51063 | 17167 | 26191 |
| **N (indiv.)** | 1872 | 897 | 975 |

Source: Authors' calculations based on SLMPS 2022 retrospective data

Notes: *p<0.05; **p<0.01; ***p<0.001. Cells are odds ratios. Standard errors in parentheses, clustered at individual level. Includes only non-left censored spells beginning in 2015-2021 for individuals aged 15-64 in (time-varying) year. Excludes time in school, treats those employed at age 15 or when exiting school as having a duration of one month.

Splitting our results by sex, Figure 9 shows the hazard of entry into employment for men and women by non-employment duration. The hazard of initial entry (one month duration of non-employment) is high for men (0.32) and appreciable for women as well (0.18). It then falls to very low levels for women and remains low with a few fluctuations. For men, the hazard drops to 0.084 two months into non-employment, 0.060 after three months of non-employment, and then fluctuates around approximately 0.05 through 10 months. Hazards drop appreciably thereafter, although they again rise at 13-15 months, and at some later points as well, but with wide confidence intervals. Modest hazards for men are visible at 48-59 and 60+ months, consistent with a delayed entry group.

**Figure 9. Hazard of entry into employment by non-employment duration**
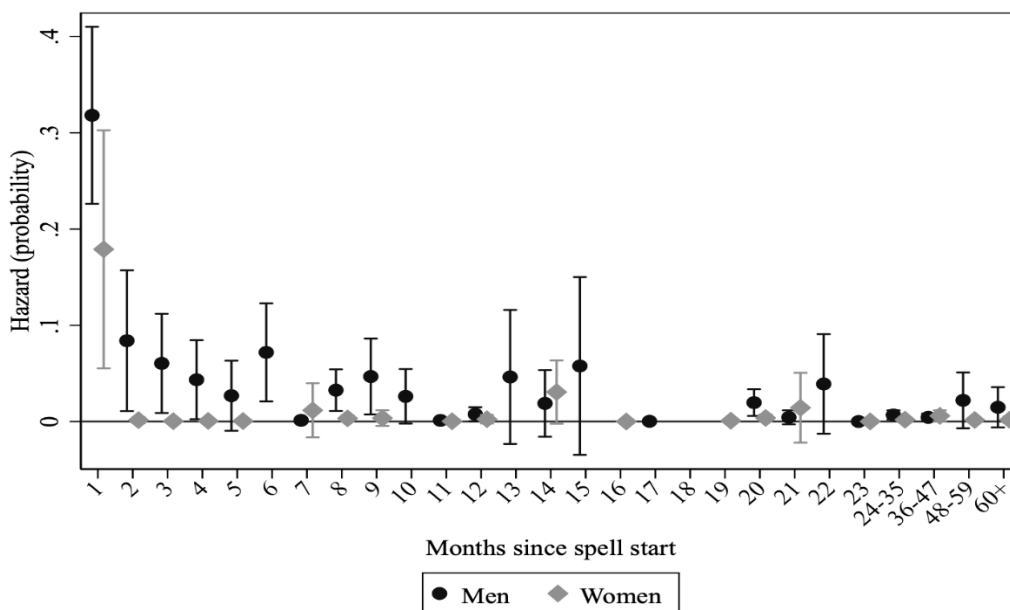


Source: Authors' calculations based on men and women models in Table 3.
Notes: Bars show 95% confidence intervals. Absent if perfect predictor of failure (not entering employment). Note that 24 month and higher hazards recoded into groups.

Returning to Table 3, compared to 2018, entry is lower in all other years for men, but significantly so only in 2019. For women, entry is lower in 2015-2017, but only significantly so in 2017. The odds of transitioning into employment in 2019-2021 are closer to 2018 for women. Men with primary education have significantly lower odds of transitioning to employment compared to illiterate men. However, among women it is those who can read and write but have no completed educational certificate who have lower odds of transitioning to employment. There are no significant differences in the odds to transition to employment by parental socioeconomic status or marital status. Only for women are there significant differences by urban/rural location. Rural women are significantly less likely to enter employment (at least the type of market employment that gets reported in the individual questionnaire; subsistence and market support to household enterprises may be going under-detected for rural women (Assaad, Krafft, and Jamkar 2023; Assaad and Krafft 2023; Krafft et al. 2023)).

## 4.5   Employment exits

In Table 4, we model the probability of exiting employment for those who are employed in the previous month. The first model includes men and women. There are no significant differences in exit rates along any covariates, except for parental socioeconomic status.[20] Individuals whose parents have both completed primary school are significantly more likely to exit employment. These may be individuals with wealth and resources to retire early.

Splitting the results by sex, women aged 30-64 who are employed are significantly less likely to exit than younger women; this may be because older employed women have found jobs that are more reconcilable with their domestic responsibilities, as other research has suggested specifically for married women (Assaad, Krafft, and Selwaness 2022; Krafft, Selwaness, and Sieverding 2022). For men, those with a primary education are significantly more likely to exit employment compared to those who are illiterate. This result is consistent with this group struggling with higher unemployment. Both women and men show socioeconomic differences in exit, with significantly higher exit for men with both parents primary and women with one parent primary.

**Table 4. Logit model of employment exit**

|  | All | Men | Women |
|---|---|---|---|
| **Year (2018 omit.)** | | | |
| 2015 | 1.631 | 1.411 | 3.655 |
|  | (0.837) | (0.831) | (4.150) |
| 2016 | 0.962 | 1.076 | 0.365 |
|  | (0.593) | (0.718) | (0.451) |
| 2017 | 1.059 | 1.020 | 1.338 |
|  | (0.606) | (0.645) | (1.750) |
| 2019 | 1.501 | 1.216 | 3.673 |
|  | (0.884) | (0.846) | (4.080) |
| 2020 | 0.995 | 0.759 | 2.851 |
|  | (0.545) | (0.473) | (3.073) |
| 2021 | 1.786 | 1.319 | 5.181 |
|  | (0.960) | (0.790) | (5.182) |

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[20] When we tested interactions between sex and time in the exit model, there were not significant year-sex interactions.

|  | All | Men | Women |
|---|---|---|---|
| **Previous state (Non-ag. form. wage omit.)** | | | |
| Ag. | 0.713 | 0.861 | 0.218 |
|  | (0.674) | (0.984) | (0.378) |
| Non-ag. non-wage | 0.444 | 0.542 | 0.055 |
|  | (0.345) | (0.486) | (0.084) |
| Non-ag. inf. wage | 0.982 | 0.926 | 1.085 |
|  | (0.653) | (0.775) | (1.300) |
| **Age group (15-29 omit.)** | | | |
| 30-64 | 0.587 | 0.730 | 0.282* |
|  | (0.208) | (0.240) | (0.181) |
| **Education (Illiterate omit.)** | | | |
| Reads & Writes | 0.672 | 0.929 | 0.673 |
|  | (0.340) | (0.588) | (0.595) |
| Primary | 2.054 | 3.544* | 0.631 |
|  | (1.086) | (2.248) | (0.542) |
| Secondary | 1.773 | 2.747 | 0.280 |
|  | (0.883) | (1.694) | (0.298) |
| Higher education | 1.384 | 2.906 | 0.191 |
|  | (0.879) | (2.150) | (0.220) |
| **Location (Urban omit.)** | | | |
| Rural | 0.644 | 0.668 | 0.801 |
|  | (0.281) | (0.337) | (0.669) |
| Abroad/camps | 2.228 | 2.415 | 0.546 |
|  | (1.369) | (1.678) | (0.529) |
| **Sex (Male omit.)** | | | |
| Female | 1.617 | | |
|  | (0.567) | | |
| **Marriage (Never married omit.)** | | | |
| Ever married | 1.153 | 0.791 | 3.891 |
|  | (0.463) | (0.305) | (3.445) |
| **Parents education (Neither primary omit.)** | | | |
| One parent primary | 1.608 | 1.210 | 5.589* |
|  | (0.682) | (0.598) | (4.464) |
| Both parents primary | 2.178* | 2.371* | 3.455 |
|  | (0.806) | (0.851) | (4.289) |
| **Month** | Yes | Yes | Yes |
| **N (obs.)** | 256838 | 203681 | 53157 |
| **N (indiv.)** | 3884 | 3004 | 880 |

Source: Authors' calculations based on SLMPS 2022 retrospective data

Notes: *p<0.05; **p<0.01; ***p<0.001. Cells are odds ratios. Standard errors in parentheses, clustered at individual level. Includes stock of individuals aged 15-64 in (time-varying) year and employed in previous month.

## 5   Discussion and conclusions

Sudan has experienced a large number of political, economic, and pandemic shocks in the period since its last household survey in 2014/15. The analysis presented here is the first to describe labor market dynamics in the Sudanese context, focusing on 2015-2021. The highly informal nature of the Sudanese labor market and the important role played by agriculture and non-agricultural self-employment makes the concept of a job that one can lose somewhat ill-defined. Agricultural workers are mostly self-employed, but even if working for wages, they are casual laborers moving from one farm to another on a regular basis. They may therefore experience periods of underemployment and job turnover but are unlikely to actually "lose" a job in the sense used here

or even entirely change their type of employment. Their work may be interspersed with short spells of employment outside agriculture, but their predominant employment is still agriculture. Non-agricultural non-wage workers either run their own enterprises or work in a family-owned enterprise. They are therefore also unlikely to lose their "job" or switch to another line of work. Informal wage workers outside agriculture are also mostly casual workers who may move frequently across employers, and possibly experience some days of non-employment in between jobs. The predominance of these three forms of employment explains why separation rates tend to be low in Sudan even in times of severe economic crisis.

It is no surprise, therefore, that much of the action on labor market dynamics during crisis occurs at the point of entry, either through changes in the rate of transition from out of the labor force to employment or, if a job search period precedes employment, from unemployment to employment. This pattern is in fact what we observe. When the economic crisis worsened considerably in 2018, we note that the trend in these two transitions starts falling, indicating a greater difficulty in finding employment. The reversal happens a little later for women than for men, but the timing is in line with when the economic (and political) crisis peaked in Sudan in late 2018 and 2019. The rates of transition from non-employment to employment stabilized in 2020 and 2021, but did not recover to their pre-2018 levels, suggesting that the effects of the economic crisis on employment was ongoing.

With respect to transitions to different types of employment, it is noteworthy that the first type of transition to be affected by the crisis is the transition from non-employment to informal non-agricultural employment, which started trending downward in 2018. The transition from non-employment to non-agricultural wage work trends downward only in 2019 as conditions in family enterprises are negatively affected by the rapidly rising inflation and severe deterioration in economic conditions following the collapse of the Al-Bashir regime. It is interesting to note that rates of transition from non-employment to agriculture continue to rise through 2019, suggesting that agriculture initially served as a refuge to people unable to find opportunities elsewhere in the economy. However, this shock absorbing role of agriculture did not last as transitions from non-employment to agriculture fall back in 2020 and stabilize in 2021.

Given the informal nature of the Sudanese labor market, the only job separation rates (the rate of transition from employment to non-employment) to spike were those from formal wage work. These rates spiked for men in 2019 and for women in 2020. This suggests that the crisis wreaked havoc with Sudan's formal economy, which, as we have discussed earlier, is concentrated in the government and public sector. This result may indicate a number of public sector workers opting to, or being forced to, retire early in the midst of the crisis. These rates of exit from formal employment subside in 2020 for men and in 2021 for women. It is noteworthy that women in informal wage employment outside agriculture began losing jobs in 2018 and were still losing them at a relatively high rate in 2021.[21]

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[21] Women in informal wage employment are probably in somewhat less casual employment as their male counterparts, making the notion of a "job loss" more relevant for them.

Again, given the mostly informal nature of the Sudanese labor market, only a small fraction of labor market entrants[22] actually experience an unemployment spell upon entry, with the majority (76%) that do transition to employment doing so directly from out of the labor force. Even among this fraction, however, our analysis shows that the unemployed in Sudan fall into two major groups, namely those who will leave the unemployment state fairly rapidly (within approximately two years) and those who will remain in unemployment for a very long time (more than 6 years), with only small group in between. Our results suggest that among unemployed men in Sudan, 46% will leave unemployment within 2 years and 42% will remain in unemployment for more than six years. Among unemployed women, the proportion of the very long-term unemployed is higher at about 53% at six years and about 17% are unemployed for less than two years. The high share of those with very long unemployment durations in Sudan is similar to Tunisia, while Egypt and Jordan have relatively shorter unemployment durations (Assaad and Krafft 2016).

Our multivariate analysis of the duration of unemployment shows that the crisis extended unemployment durations, but not until 2020 and 2021. It also shows that although the higher educated are more likely to enter unemployment as they search for formal jobs (Krafft et al. 2023), their odds of exiting unemployment are no different than those with less education. Again, even though those with higher socioeconomic status are more likely to enter unemployment,[23] there are no differences in unemployment durations by socioeconomic status. Finally, although young people are much more likely to enter unemployment than prime age adults (Krafft et al. 2023), the prime age adults, especially among women, find it much harder to exit unemployment once unemployed.

Our analysis of the transition from non-employment to employment is essentially an analysis of the time it takes for first-time entry into employment given the low rates of separation and re-entry. Although about 71% of men transition to employment within 5 years from school exit (or age 15, whichever is later), only about 25% of women transition with 5 years; most of the rest will probably never enter the labor force. More than a third of men (36%) and 11% of women either transition immediately to employment upon school exit or transition to it prior to school exit (or age 15, whichever is later).

Our multivariate results on initial entry into employment show that men with primary education have longer transition durations into employment than illiterate men, and that women who are literate but have no educational certificate have higher odds to transition than illiterate women. Otherwise, there are no significant differences in the odds of transitioning to employment by socio-economic status, marital status, or age group. Rural women have lower odds to transition to employment than urban women, but it should be kept in mind that our definition of employment here does not include subsistence work or women's work in family farm activities, which are not captured in the individual employment questions.

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[22] Only 18% of those exiting school or turning 15, whichever was later, over 2015-2018 experienced an initial unemployment spell within three years of exit.

[23] The broad unemployment rate for those aged 15-64 in the SLMPS 2022 is approximately double (22%) for those with one or both parents with a primary education compared to that for those for whom neither parent has a primary education (11%).

There are few covariates that are associated with exit rates from employment. The main exceptions are socioeconomic status and education, which appear to be positively correlated with the hazard of exit, suggesting that people from more privileged backgrounds are more able to afford exit. It could also be due to the fact that many of the exits we captured during the crisis are from formal work, jobs that are more likely to be occupied by people with higher socioeconomic status.

In summary, our results confirm that the crisis made it harder to find work for first time entrants to the labor market, with those aspiring to obtain formal jobs (the more educated) taking even longer than those who just enter into informal activities. With regard to exit, we saw that exit rates during the crisis were highest for those in formal jobs, who also tend to be more educated and from higher socioeconomic backgrounds. This finding does not mean than those in less advantaged jobs are not experiencing economic distress, but that given the nature of their jobs, exit from employment is not the primary manifestation of distress. Other research has established that the pandemic, for example, led to substantial declines in income and hours more so than job losses (Krafft, Marouani, et al. 2022; Assaad et al. 2022; Marouani et al. 2022; Satti 2022; Krafft, Assaad, et al. 2022). Likewise, in the aftermath of the January 25, 2011 revolution in Egypt, while workers sometimes reported layoffs (3.2% of all workers experienced layoffs), much more common were decreases in sales (28.1%), decreases in wages (8.7%), or decreases in hours (7.1%) (Assaad and Krafft 2015).

## 5.1   Limitations

The primary limitation of this study is that, given the mostly informal nature of the Sudanese economy and labor market, an analysis of labor market dynamics that captures job gains and separations such as this one is not capable of capturing the full extent of economic and livelihood distress that people are experiencing in times of crisis. The notions of job gain and separation apply best to either well defined formal jobs or informal wage jobs that involve a regular relationship to an employer. These sorts of job are relatively rare in Sudan. With most people either self-employed, in unpaid family labor, or in casual wage employment (Krafft et al. 2023), economic distress usually translates into low income, disrupted markets for their inputs and products, greater irregularity and insecurity of employment, visible and invisible underemployment, but rarely does it involve long periods of unemployment or long-term job loss (Satti 2022).

Another limitation of this study is that it relies on people's recall of past labor market states and their timing. Such recall is more accurate when jobs are well defined and involve a relationship with a regular employer (Assaad, Krafft, and Yassin 2018). If an individual experiences frequent job changes as a casual or independent worker, it is often hard to know what is a job change and what is not. Given the difficulty of recall in this context, we had a number of instances where the month of the transition was missing. For these cases we had to impute month by assigning a random number, while making sure that the sequence of events remained correct. This imputation could have introduced some timing errors in the analysis. We also experienced in some analyses sample size limitations, when the frequency of the transition in question was low. This issue was the case for analyses involving job exits and job-to-job transitions.

Finally, we relied primarily in this analysis on status in the primary job as described by responses on the employment and job history modules of the individual questionnaire of the SLMPS. As we

show in other work, this approach often misses economic activities undertaken by women who are primarily engaged in household-based crop and livestock activities and who support household non-agricultural activities as unpaid workers (Assaad and Krafft 2023; Assaad, Krafft, and Jamkar 2023; Krafft et al. 2023). This kind of work is best captured through questionnaire modules that focus on household enterprises and farms and ask detailed questions about who is involved in them. Given the prevalence of women's work in household economic activities in Sudan, especially in rural areas, the individual approach is likely to miss much of the work women are engaged in. While we do have information about who is engaged in such work in the SLMPS 2022, we do not have any information about the dynamics of movement in an out of such work in the labor market history data.

## *5.2 Future research*

The SLMPS 2022 has rich data that can allow researchers to better understand how Sudan's labor market has responded to repeated shocks and ongoing crises. There are specific modules on household shocks and coping mechanisms that merit detailed research. Future work could, for example, examine how households in Sudan cope with economic distress through livelihood diversification. Research on livelihood diversification could take advantage of not only data on secondary employment in the individual module of the questionnaire, but also household involvement in multiple livelihood activities in crop production, livestock rearing, other farm activities and non-farm enterprises. However, the dynamics of such involvement will only be possible to study when a second wave of the panel is available, and we have measurements at more than one point in time. Research from Egypt suggests that participation in household non-farm enterprises is one of the more dynamic sectors of the economy, and that this sector may be particularly responsive to macroeconomic conditions (Krafft 2016).

Future waves of the SLMPS will also be particularly valuable for assessing how the conflict, which started in April of 2023 and continued as of writing in August 2023, has affected the labor market, economy, and society in Sudan. However, the ability to undertake future waves is conditioned on conflict ending and the security and political situation in Sudan stabilizing. Even if the conflict ends, conflict will inevitably leave lasting scars on Sudan's society, economy, and labor market (Fergusson, Ibáñez, and Riaño 2020; Bozzoli, Brück, and Wald 2013; Miaari and Sauer 2011; Mansour 2010; Kondylis 2010).

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