

The Structure of the Labor Force and Employment in Sudan

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and Isabel Honzay

THE STRUCTURE OF THE LABOR FORCE AND EMPLOYMENT IN SUDAN ¹

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Abstract

Sudan's economy and society have been repeatedly disrupted by political turmoil since 2018, with challenges further compounded by the COVID-19 pandemic. How this turbulent period has affected Sudan's labor market was previously unknown, as Sudan's last household survey was in 2014/15. This paper investigates the state of Sudan's labor market as of 2022, using the new, nationally-representative Sudan Labor Market Panel Survey data. The analyses examine labor supply, including the evolution of the age structure of the Sudanese population, the trends in age at marriage and fertility, the educational composition of the population, current enrollment rates, labor force participation, as well as employment and unemployment rates. The analyses also investigate the structure of employment by broad economic activity and institutional sector, by occupation, and by degree of informality. The results of the analyses show sizeable demographic pressures on Sudan's labor market from a large youth population. While historically Sudan had made appreciable progress in expanding access to education, that progress plateaued for cohorts born in the 1980s and later. Declines in labor force participation over time and particularly for women may reflect the labor market impacts of Sudan's recent political and economic turbulence. Unemployment is primarily a challenge for youth, new entrants to the labor market. Agriculture continues to play a sizeable role in employment in Sudan, along with non-wage non-agricultural work and informal wage work. Informality is extremely high in private sector wage work (98%), and employment is largely within microenterprises. Relatively few private sector wage workers receive employment benefits or protections, with 60% working outside establishments and 37% working irregularly, highlighting the elevated level of vulnerable employment in Sudan.

Keywords: Sudan, demographics, education, labor force participation, employment, unemployment

JEL Classification: J00, J11, J21, J32, J64

ملخص

تعطل الاقتصاد والمجتمع السوداني مرارًا وتكرارًا بسبب الاضطرابات السياسية منذ عام 2018، مع تفاقم التحديات بسبب جائحة الكورونا. كيف أثرت هذه الفترة المضطربة على سوق العمل في السودان لم يكن معروفًا من قبل، حيث كان آخر مسح للأسر في السودان في عام 2014/15. تحقق هذه الورقة في حالة سوق العمل في السودان اعتبارًا من عام 2022، باستخدام بيانات المسح التتبعي لسوق العمل السودانية الجديدة على المستوى الوطني. تدرس التحليلات عرض العمالة، بما في ذلك تطور الهيكل العمري للسكان السودانيين، واتجاهات العمر عند الزواج والخصوبة، والتكوين التعليمي للسكان، ومعدلات الالتحاق الحالية، ومشاركة القوى العاملة، فضلاً عن معدلات العمالة والبطالة. وتحقق التحليلات أيضًا في هيكل العمالة حسب النشاط الاقتصادي الواسع والقطاع المؤسسي، حسب المهنة، ودرجة الطابع غير الرسمي. تظهر نتائج التحليلات ضغوطًا ديموغرافية كبيرة على سوق العمل في السودان من قبل عدد كبير من الشباب. في حين أن السودان قد حقق تاريخيًا تقدمًا ملحوظًا في توسيع الوصول إلى التعليم، فقد استقر هذا التقدم للأفواج المولودة في الثمانينيات ولاحقًا. قد يعكس الانخفاض في مشاركة القوى العاملة بمرور الوقت وخاصة بالنسبة للمرأة آثار سوق العمل للاضطراب السياسي والاقتصادي الأخير في السودان. تشكل البطالة في المقام الأول تحديًا للشباب والوافدين الجدد إلى سوق العمل. لا تزال الزراعة تلعب دورًا كبيرًا في العمالة في السودان، إلى جانب العمل غير المأجور وغير الزراعي والعمل غير الرسمي بأجر. فالطابع غير الرسمي مرتفع للغاية في العمل بأجر في القطاع الخاص (98 في المائة)، والعمالة تقع إلى حد كبير في نطاق المشاريع البالغة الصغر. يتلقى عدد قليل نسبيًا من العاملين بأجر في القطاع الخاص مزايا عمل أو حماية، حيث يعمل 60٪ خارج المؤسسات و 37٪ يعملون بشكل غير منتظم، مما يسلط الضوء على المستوى المرتفع للعمالة الضعيفة في السودان.

1 Introduction

Since the eruption of the popular uprisings against the Al-Bashir regime in late 2018, Sudan has gone through turbulent political and economic times. Challenges culminated in the military coup of October 2021 and the outbreak of hostilities between the Sudanese armed forces and the Rapid Support Forces militia on April 15th, 2023. There had been a period of relative optimism marked by the inauguration of the civilian-led government in 2019, following the ousting of President Al-Bashir. This civilian government had been successful in convincing the international community to ease economic sanctions (Asare et al. 2020). However, the COVID-19 pandemic and its associated economic challenges ushered in a more difficult economic period (Central Bureau of Statistics (CBS) and World Bank 2020; Krafft, Nour, and Ebaidalla 2022; Nour 2022a). Inflation, already high, was exacerbated by fiscal challenges and eventually currency devaluation (UN-ESCWA 2021). The inflation rate was 163% in 2020, 359% in 2021, and 139% in 2022 (World Bank 2023b).

Political challenges culminated in the military coup of October 2021 and the outbreak of hostilities between the Sudanese armed forces and the Rapid Support Forces militia on April 15th, 2023. The government and economy were isolated again after the October 2021 coup. They then fell into chaos with the outbreak of hostilities that continues as of August 2023. The Sudan Labor Market Panel Survey (SLMPS) of 2022 that this analysis is based on was conducted in the middle of this turbulence. Although preparation for the survey spanned several years from mid-2019 to 2022, the data collection took place from June to September 2022. It therefore reflects the situation prior to the eruption of hostilities in April 2023 (Krafft, Assaad, and Cheung 2023).

The challenges Sudan has experienced since 2018 have wreaked havoc with its economy. Sudan was reclassified from a lower middle-income country to a low-income country in 2019 (World Bank 2023a). The growth of its GDP has been negative since 2018, averaging -2.3% per annum over 2018-2022 (World Bank 2023b). Per capita GDP fell by an average of 5.4% per annum from 2018 to 2021 and by 3.0% per annum on average since the 2012, the year after South Sudan seceded (World Bank 2023b). The COVID-19 pandemic and associated restrictions and economic challenges exacerbated Sudan's ongoing economic difficulties, creating further challenges for firms and workers (Nour 2022a; b). Job loss, income loss, and food insecurity were major problems during the pandemic, and the reach of the social safety net was extremely limited (Central Bureau of Statistics (CBS) and World Bank 2020).

The pandemic and political upheaval in Sudan intersected with an already fragile economy. Sudan is essentially an agrarian economy that had a resource boom in the 2000s driven in part by revenues from oil and in part by the 2005 peace agreement with South Sudan (Ebaidalla and Satti 2021). The oil-driven boom could not be sustained, however, as 75% of oil resources went to South Sudan after its secession in 2011 (Ebaidalla and Satti 2021). Throughout the 1990s and early 2000s, the share of agriculture in GDP was relatively flat, fluctuating around 40 percent, with little evidence

of the long-term decline observed in other lower-middle income countries (Medani and Ahmed 2017a; b). The share of agriculture in GDP only fell from 2003 to 2012 as the oil boom picked up steam (Ebaidalla and Satti 2021; Medani and Ahmed 2017a). The oil sector's direct contribution to employment is limited, but the boom led to a growth in government spending, which rose from 5.5% of GDP in 2000 to 8.4% in 2009, and thus also government employment (Ebaidalla and Satti 2021). While agriculture contributed roughly a third of GDP from 1990 to 2011, its share of employment was much higher at between 50% and 60% through the 1990s (Medani and Ahmed 2017a). Its share dropped in the 2000s as a result of the oil boom to 36% in 2009, but climbed back to 45% in 2011 and 54% in 2014/15 (Ebaidalla and Satti 2021).

Data from nationally-representative household surveys that allow for the analysis of labor market trends in Sudan are quite limited. There were two surveys conducted in the 1990s (1990 and 1996) and three surveys in the late 2000s and early 2010s (2009, 2011, 2014/15) (Ebaidalla and Satti 2021; Medani and Ahmed 2017a; Ministry of Human Resources Development and Labour 2011).⁶ There is also the population census which was conducted in 2008 (Minnesota Population Center 2020). Only one of the nationally-representative surveys is a labor force survey carried out in 2011 (Ministry of Human Resources Development and Labour 2011), while the others are all household budget surveys.

The purpose of this paper is to examine the state and evolution of Sudan's labor market as of 2022, using the SLMPS 2022 data (Krafft, Assaad, and Cheung 2023; OAMDI 2023). The analyses examine labor supply, including the evolution of the age structure of the Sudanese population, the trends in age at marriage and fertility, the educational composition of the population, current enrollment rates, labor force participation, as well as employment and unemployment rates. The analyses also investigate the structure of employment by broad economic activity and institutional sector, by occupation, and by degree of informality. The analyses can shed light on the impacts of the revolution, political turbulence, COVID-19 pandemic, and subsequent economic challenges on the labor market. It is not, however, possible to attribute labor market changes solely to one of the events (e.g. solely to the pandemic or revolution) given the large number of intersecting events that occurred recently in Sudan.

The results of the analyses using the SLMPS 2022 show sizeable demographic pressures on Sudan's labor market. Sudan has a young, fast-growing population, with 63% of the population aged 0-24. Fertility rates have remained high for several decades and averaged 4.9 births per woman as of 2022. Early marriage, including a high rate of girl child marriage, has been a persistent problem in Sudan, with 30% of girls married before age 18. While historically Sudan had made appreciable progress in expanding access to education, that progress plateaued for

⁶ There have also been two mobile phone surveys during the COVID-19 pandemic (Central Bureau of Statistics (CBS) and World Bank 2020; Krafft, Nour, and Ebaidalla 2022; OAMDI 2021), however, mobile phone ownership is only 46% for individuals aged 18+ (Krafft et al. 2023).

cohorts born in the 1980s and later, with particularly low enrollment rates seen in 2022 in rural areas.

There are large gender disparities in labor force participation in Sudan. Declines in participation over time and particularly for women may reflect the labor market impacts of Sudan's recent political and economic turbulence. Unemployment is primarily a challenge for youth, new entrants to the labor market, although, particularly for women, unemployment rates remain elevated into middle age. Agriculture continues to play a sizeable role in employment in Sudan, along with non-wage non-agricultural work and informal wage work. Informality is extremely high in the private sector (98%), and employment is largely within microenterprises. Relatively few private sector wage workers receive employment benefits or protections, and 60% work outside establishments and 37% work irregularly, highlighting the elevated level of vulnerable employment in Sudan.

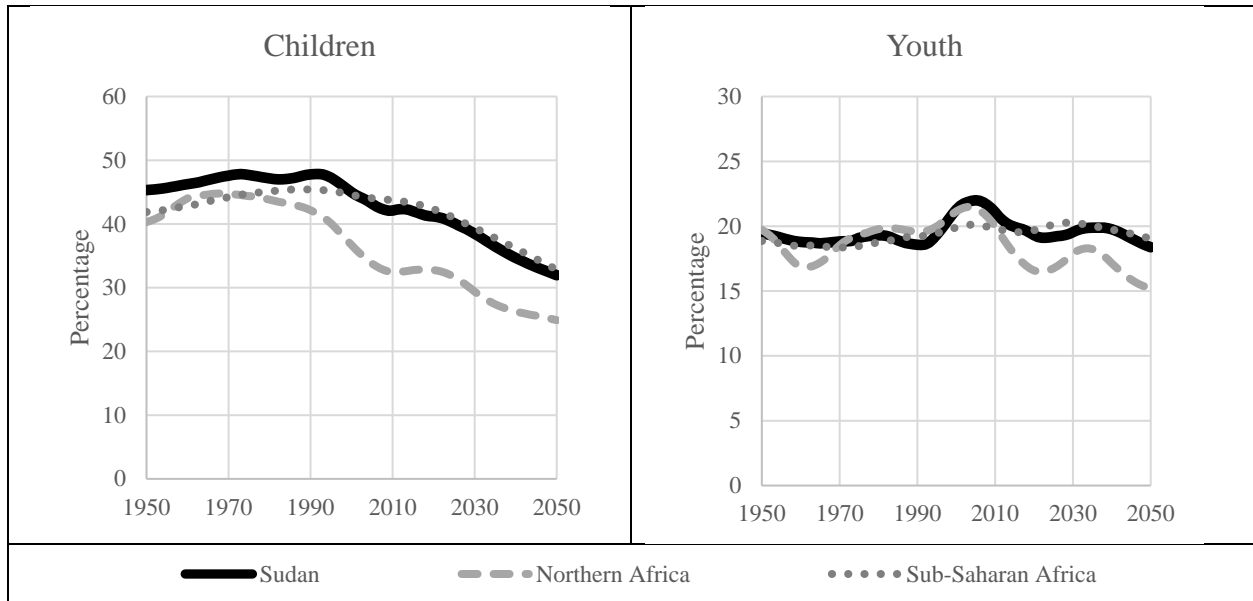
2 Demographic aspects of labor supply

2.1 Population of Sudan

Before turning to the population structure estimated in the SLMPS 2022, we present population trends in Sudan based on the UN Population Division's World Population Prospects 2022. The mid-year population for Sudan in 2022 was 46.9 million (United Nations Department of Economic and Social Affairs Population Division 2022). The population had been growing at an average rate of 2.9% per annum over the previous decade. This rate was substantially higher than the population growth rate of 1.9% per annum in Northern Africa and even higher than the average rate of 2.7% per annum for sub-Saharan Africa (United Nations Department of Economic and Social Affairs Population Division 2022).

The Sudanese population has a high relative share of children and youth. As shown in Figure 1, the share of children (aged 0-14) in the population has fallen from its peak in 1992 of 47%, but, at 41% in 2022, is estimated to be much higher than the average for Northern Africa (33%) and about the same as the average for sub-Saharan Africa (42%). The share of youth (aged 15-24) in Sudan's population peaked at 22% in 2005, which is similar to the average for Northern Africa which peaked at 22% in 2003, but Sudan's share of youth was much slower to drop in the ensuing period, reaching an estimated 19% in 2022 compared to 16% in Northern Africa. It is only slightly lower than the share in Sub-Saharan Africa, which has remained fairly constant around 20% since the mid 1990s.

Figure 1. Estimated (1950-2021) and projected (2022-2050) share of children (aged 0-14) and youth (aged 15-29) in the population (percentage), Sudan, Northern Africa, and Sub-Saharan Africa, by year

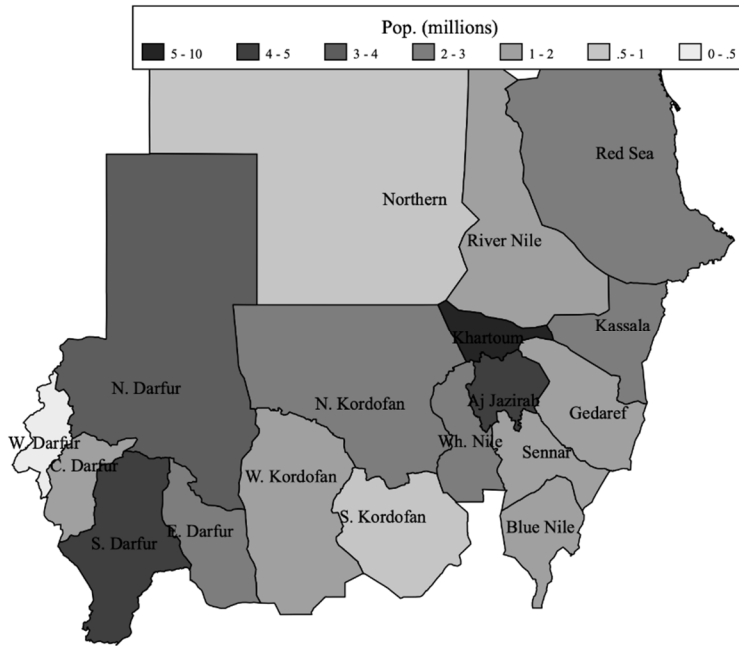


Source: Authors' calculations based on data from United Nations Department of Economic and Social Affairs Population Division (2022).

Note: Medium variant projections are used for data from 2022 to 2050.

The sample weights of the SLMPS were designed to reflect the UN's Population Division's estimate of Sudan's 2022 mid-year population (Krafft, Assaad, and Cheung 2023; United Nations Department of Economic and Social Affairs Population Division 2022). The sample and weights were also designed to represent the 1.1 million refugees, non-refugee non-Sudanese (250 thousand individuals), IDPs (3.7 million persons) within this population (Krafft, Assaad, and Cheung 2023). Figure 2 is a map illustrating the population of Sudan in millions by state (*wilaya*) in 2022, based on the SLMPS estimates. Khartoum was the largest state, with a population of 8.4 million. It also makes up its own region. The Darfur region (North, South, West, East, and Central Darfur states) had 13.3 million people, with South Darfur (4.9 million) being the most populous state. The Central region (Blue Nile, White Nile, Sannar, and Al Jazirah states) is the next most populous, at 10.3 million, with Al Jazirah the most populous state in the region, at 4.7 million. The remaining population is in the Northeast (6.8 million across Red Sea, Kassala, and Gedaref), in Kordofan (North Kordofan, West Kordofan, and South Kordofan states, 5.8 million), and in the North (River Nile and Northern, 2.3 million).

Figure 2. Population of Sudan (in millions), by state



Source: Authors' calculations based on SLMPS 2022

Notes: The Abyei area combined with West Kordofan, as it was for SLMPS sampling.

There is also substantial variation in the urban share of different states. Overall, 29.2% of Sudan was identified as urban.⁷ More than half of the population in the states of Khartoum, West Darfur, Aj Jazirah, and River Nile live in urban areas.

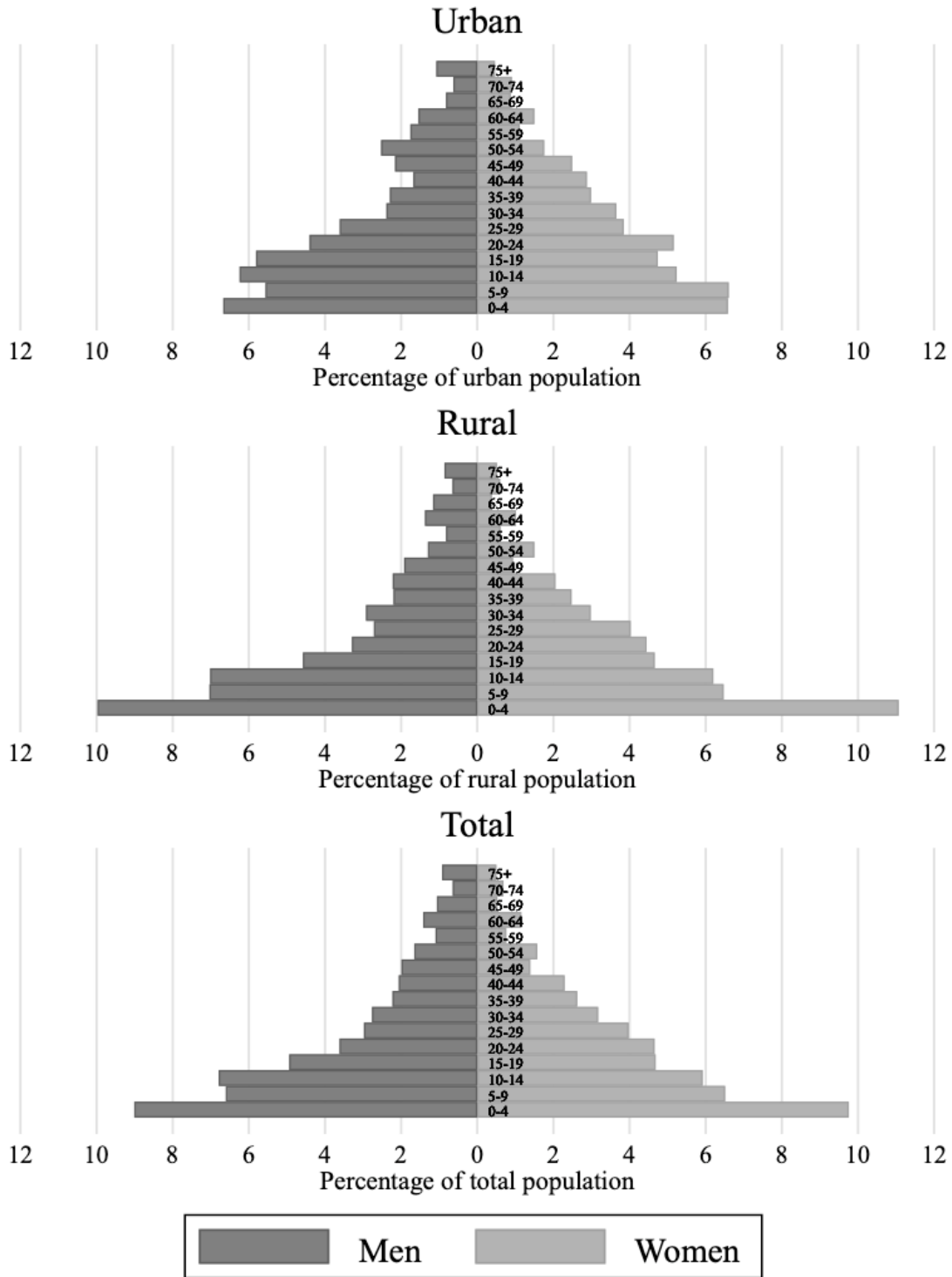
As discussed above, Sudan's population is very young and fast-growing. This is particularly true in rural areas. Figure 3 shows the percentage of the population in each age group and sex, both overall and for rural and urban areas, based on the SLMPS. The population is split almost equally by sex, 50.2% female and 49.8% male. Sudan's population is very young, with 63% aged 0-24 (45% children aged 0-14 and 18% youth aged 15-24).⁸ The rural population is younger with 65% aged 0-24 as compared to 57% in urban areas. At 48%, the share of children is particularly high in rural areas compared to 37% in urban areas.⁹

⁷ Throughout this paper, we use Sudan's administrative definition of what is urban and rural, as implemented by enumerators in the field. The urban/rural stratification used in the sampling was based on the UN's definition which uses a density cutoff to define urban primary sampling units (PSUs) (Krafft, Assaad, and Cheung 2023). By that definition, 27.6% of the population lives in an urban PSU.

⁸ These figures derived from the SLMPS 2022 are slightly different from the UN's projections for 2022 reported above, which put the share of the population 0-24 at 60%, the share of the child population at 41% and the share of the youth population at 19%.

⁹ The particularly high share of children aged 0-4 in rural areas may have been due to enumerators reclassifying children aged five or six as four in order to avoid the lengthy individual questionnaire (Krafft, Assaad, and Cheung 2023).

Figure 3. Population pyramid (percentage of the population by age group and sex), 2022



Source: Authors' calculations based on SLMPS 2022

Sudan’s population has been growing steadily since the last Census. Table 1 presents annual population growth rates, by age group and location, based on the Sudan Population Census of 2008 and the SLMPS 2022. Overall, on average over the period, the population has grown 3.2% per annum (p.a.), 2.3% p.a. in urban areas and 3.6% p.a. in rural areas. The child population has grown rapidly at 3.5% p.a., and the youth population at 2.5% p.a. The prime age population (aged 25-64) has grown at 2.9% p.a. The elderly (65+) population has actually grown the fastest, at 4.4% p.a., but it must be kept in mind that this is from a low base. The rapid growth of the child population will be an important driver of future labor market trends as they enter the labor market.

Table 1. Annual population growth rate (percentage), by age group and location, 2008-2022

	0-14	15-24	25-64	65+	Total
Urban	2.2	1.8	2.3	4.2	2.3
Rural	3.9	2.9	3.3	4.5	3.6
Total	3.5	2.5	2.9	4.4	3.2

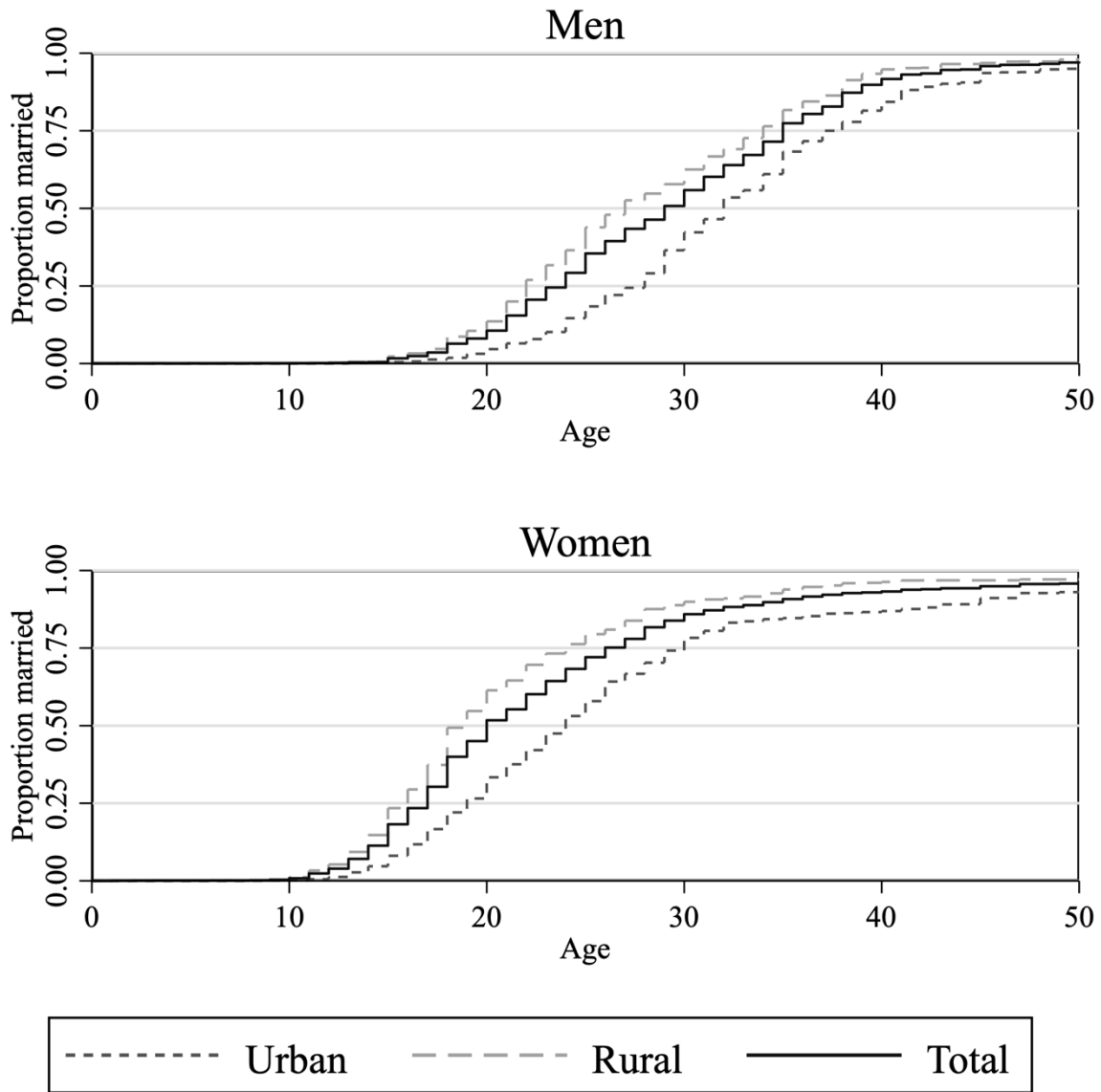
Source: Authors’ calculations based on SLMPS 2022 and Sudan 2008 Population Census (Minnesota Population Center 2020)

2.2 Family formation

Marriage is near universal for both men and women in Sudan, with more than 95% of each group marrying by age 50. Figure 4 shows the proportion of men and women who have ever married by different ages and locations, for those 15-59 in 2022. By showing Kaplan-Meier estimates, the figure accounts for censoring (those not yet married). Among those aged 15 to 59, the median age at marriage was 20 for women and 29 for men. The 25th percentile for women was age 17 and for men age 24. The 75th percentile for women was age 26 and age 35 for men.

Marriages occur at an earlier age in rural areas than in urban areas; the median age at marriage for women in rural areas is 19, compared to 24 in urban areas. Likewise, the median age at marriage for men is 27 in rural areas compared to 32 in urban areas. There are thus fairly sizable age gaps, on average, between spouses. Early marriage is common for women. While only 2% of men aged 15-59 married before age 16, and 4% before age 18, 18% of women 15-59 married before age 16 and 30% before age 18.

Figure 4. Proportion (ever) married by age, sex, and location, ages 15-59 in 2022



Source: Authors' calculations based on SLMPS 2022

Notes: Kaplan-Meier failure function, accounting for censoring (those not yet married). Proportion ever married. Displaying through age 50.

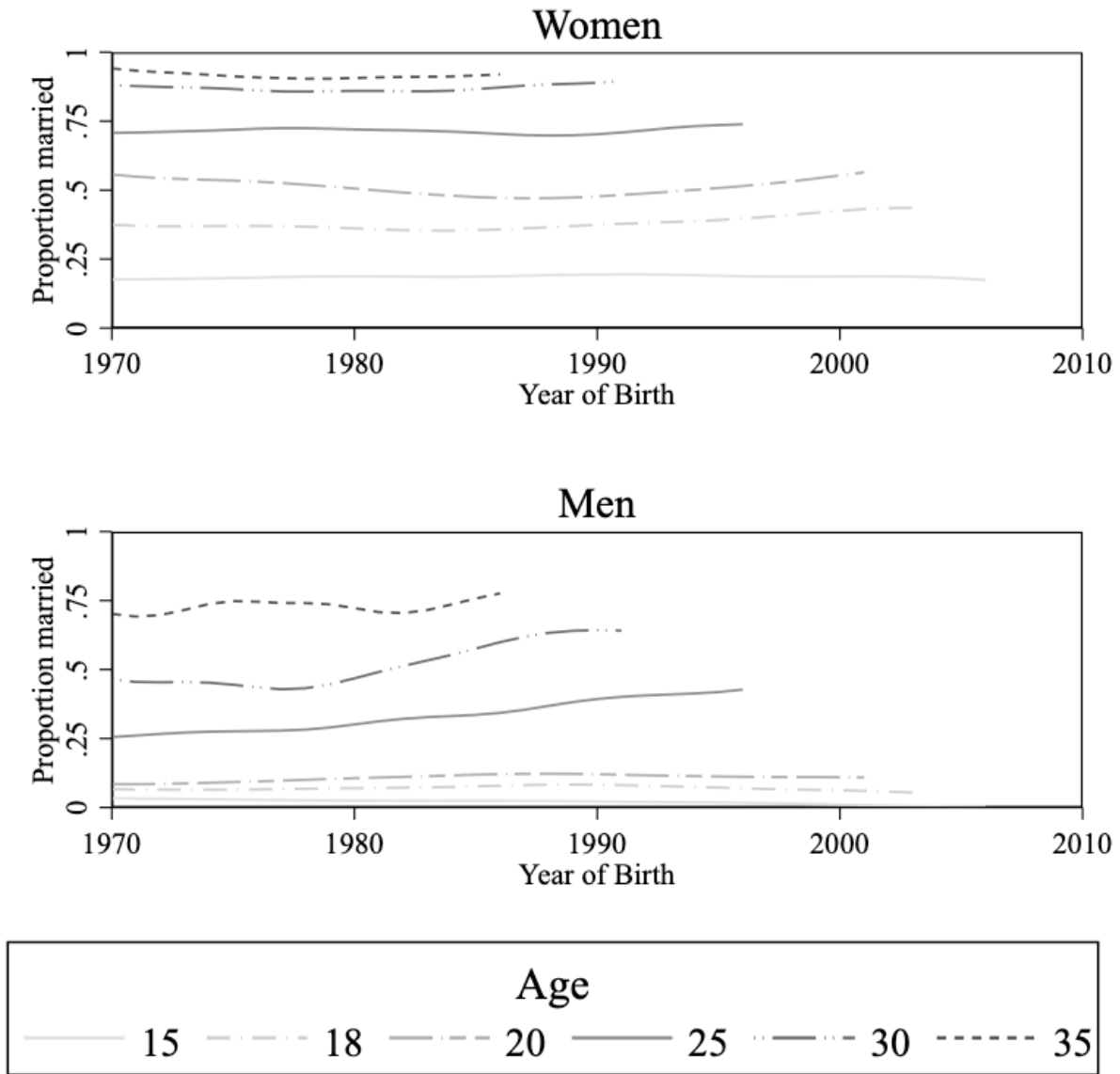
Figure 5 show trends of being ever married by different ages, by sex for different birth cohorts born from 1970 onward. The fact that these curves are relatively flat for women suggests that women's age of marriage has not changed that much over time. Almost a fifth of women are married by age 15; a percentage that has stayed constant over time indicating that not much progress is being made on reducing very early marriage. Around 40% of women are married by

age 18, with a slight increase in this percentage for cohorts born after the late 1980s. This suggests that early marriage is actually increasing over time. The share of women married by age 20 (around half) was declining for cohorts born from 1970 to the late 1980s, but has started increasing again for cohorts born in the 1990s, confirming that women are marrying earlier in these cohorts. There are no trends in the share of women marrying by age 25 or higher, confirming that there is no change in the tendency toward universal marriage among women in Sudan.

The share marrying by a given age has tended to increase even more for men than for women by birth cohort, an indication marriage ages are decreasing even faster for men than for women and thus suggesting a falling spousal age gap. While only 25% of men were married by 25 among those born in 1970, this has steadily increased to around 45% for cohorts born in the 1990s. The proportion of men married by age 30 starts just below 50%, declines slightly with time for cohorts born in the 1970s, but the decline reverses and the share rises sharply from that point onwards, indicating a rapidly falling age at first marriage for men.

The patterns of increasingly early marriage for both men and women in Sudan contrasts with trends elsewhere in the North Africa region. In Morocco and Tunisia, the trend has been toward substantially later marriage among both men and women and a move away from universal marriage (Assaad and Krafft 2015). In Egypt, the trend toward declining early marriage (prior to age 18) has continued among women, but the rise in the median age at marriage has reversed with female cohorts born in the late 1970s and male cohorts born in the early 1970s, a pattern that has been attributed to the liberalization of housing rental markets in Egypt in the late 1990s (Assaad, Krafft, and Rolando 2021).

Figure 5. Proportion (ever) married by different ages, year of birth, and sex

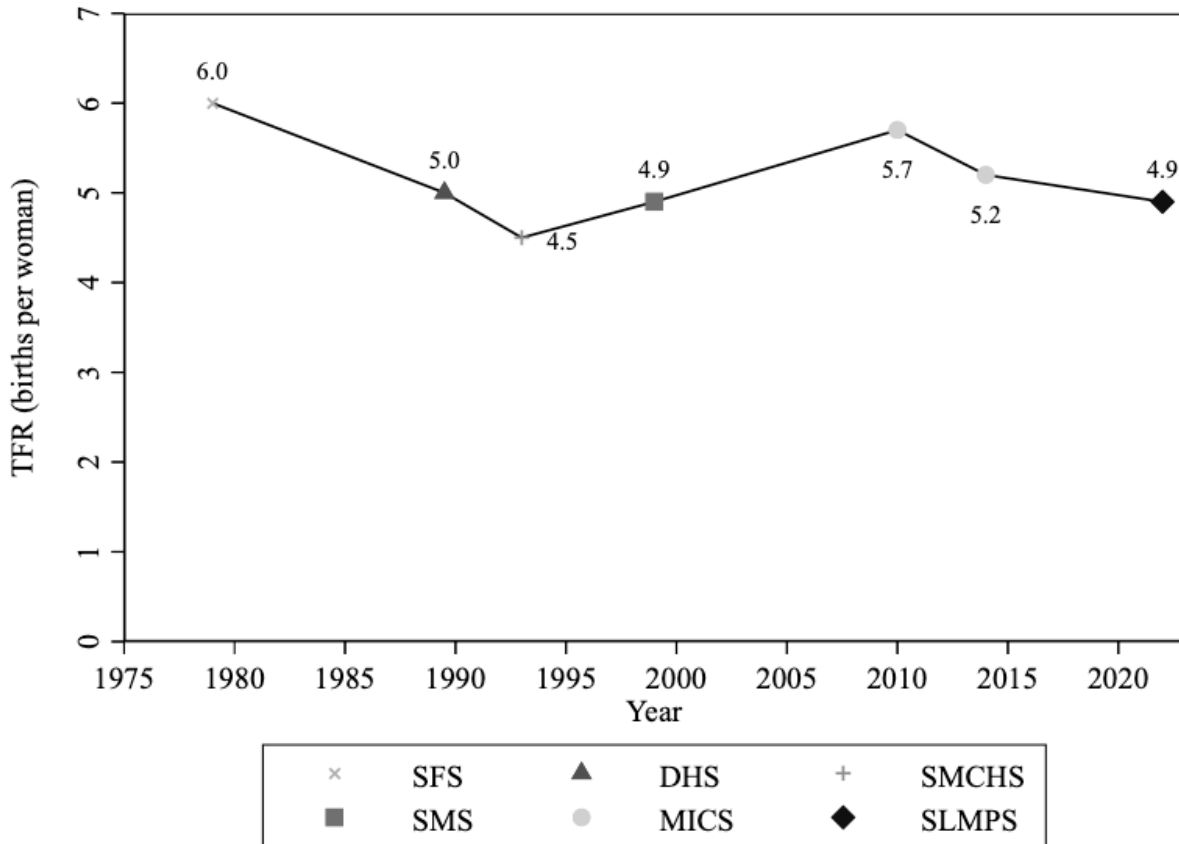


Source: Authors' calculations based on SLMPS 2022

Women's age at marriage is an important driver of fertility, and the high and persistent share of relatively early marriages among women in Sudan is likely one factor contributing to persistently high fertility rates. Figure 6 shows the total fertility rate (TFR) in Sudan between 1979 and 2022, based on a variety of survey estimates. Sudan's TFR was at its highest in 1979 at 6.0 births per woman and at its lowest point in 1993 with 4.5 births per woman. It then increased back up to 5.7 births per woman in 2010 before falling to 5.2 births per women in 2014. In 2022, based on the

SLMPS, the TFR in Sudan was estimated at 4.9 births per woman. Overall, Sudan’s TFR, has remained consistently high with a number of fluctuating decreases and increases since 1979.

Figure 6. Total fertility rate (TFR, births per woman), 1979-2022



Source: Authors’ calculations for SLMPS 2022; Central Bureau of Statistics (CBS) and UNICEF Sudan (2016) for Multiple Indicator Cluster Survey (MICS) 2014; Government of Sudan Federal Ministry of Health Central Bureau of Statistics (CBS) (2012) for MICS 2010; Mahfouz (2009) for 1999 Safe Motherhood Survey (SMS); Population Council (1995) for Sudan Maternal and Child Health Survey (SMCHS) 1993; Department of Statistics (Sudan), Ministry of Economic and National Planning (Sudan), Demographic and Health Surveys, Institute for Resource Development/Macro International Inc. (1991) for Demographic and Health Survey (DHS) 1989/90 and Sudan Fertility Survey (SFS) 1979.

Notes: SLMPS based on three years preceding the survey.

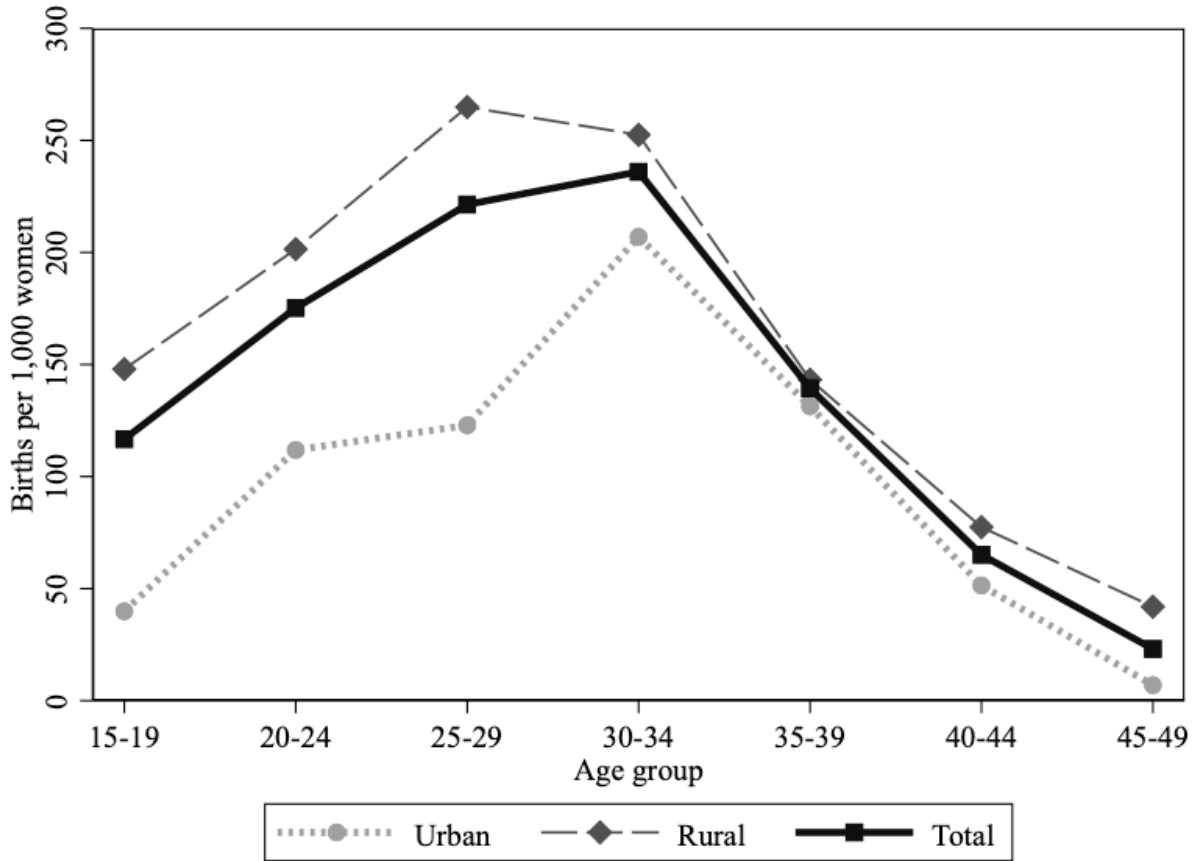
The TFR in Sudan is higher than any country in the Middle East and North Africa (MENA) and more comparable to some countries in sub-Saharan Africa (4.6 births per woman on average) (World Bank 2023b). Sudan does, however, share with a number of MENA countries a pattern of recent fertility stall and even increases in fertility (Krafft, Kula, and Sieverding 2021). For

instance, fertility in Egypt stalled since 1997, very similar to Sudan, but at a lower level of 3.3 births per woman, and then fluctuated between 3.0 and 3.5 over the period 1997-2018 (Krafft, Assaad, and Keo 2022).

The SLMPS also includes data on contraceptive prevalence among currently married women aged 15-49. The contraceptive prevalence rate in this group, in 2022, was only 6.5% overall (10.4% in urban areas and 5.1% in rural areas). This is, notably, a substantial decline from 2014, when the rate was 12.2% (Central Bureau of Statistics (CBS) and UNICEF Sudan 2016). Among the women using contraception, the most common method was the pill (70%), followed by implants (13%) and injections (10%), and IUDs (3%).

Fertility is substantially higher in rural areas (TFR of 5.6 births per woman) than urban areas (TFR of 3.4 births per woman). Figure 7 shows the age-specific fertility rates (ASFRs), as births per thousand women, by urban/rural location in 2022. The ASFRs in Sudan increase from 117 births per thousand women at ages 15-19 to 175 at ages 20-24, 221 at ages 25-29, and reaches a high of 236 at ages 30-34. Fertility then declines substantially to an ASFR of 139 at ages 35-39, 65 at ages 40-44, and 23 at ages 45-49. In rural areas, the number of births per thousand women is higher, particularly through age 25-29 when it is 265. Urban women have substantially fewer births than rural women at ages 15-29, peaking at an ASFR of 207 at ages 30-34. Overall, women in urban areas are having children later in life than women living in rural areas.

Figure 7. Age-specific fertility rates (births per thousand women), by urban/rural location, 2022



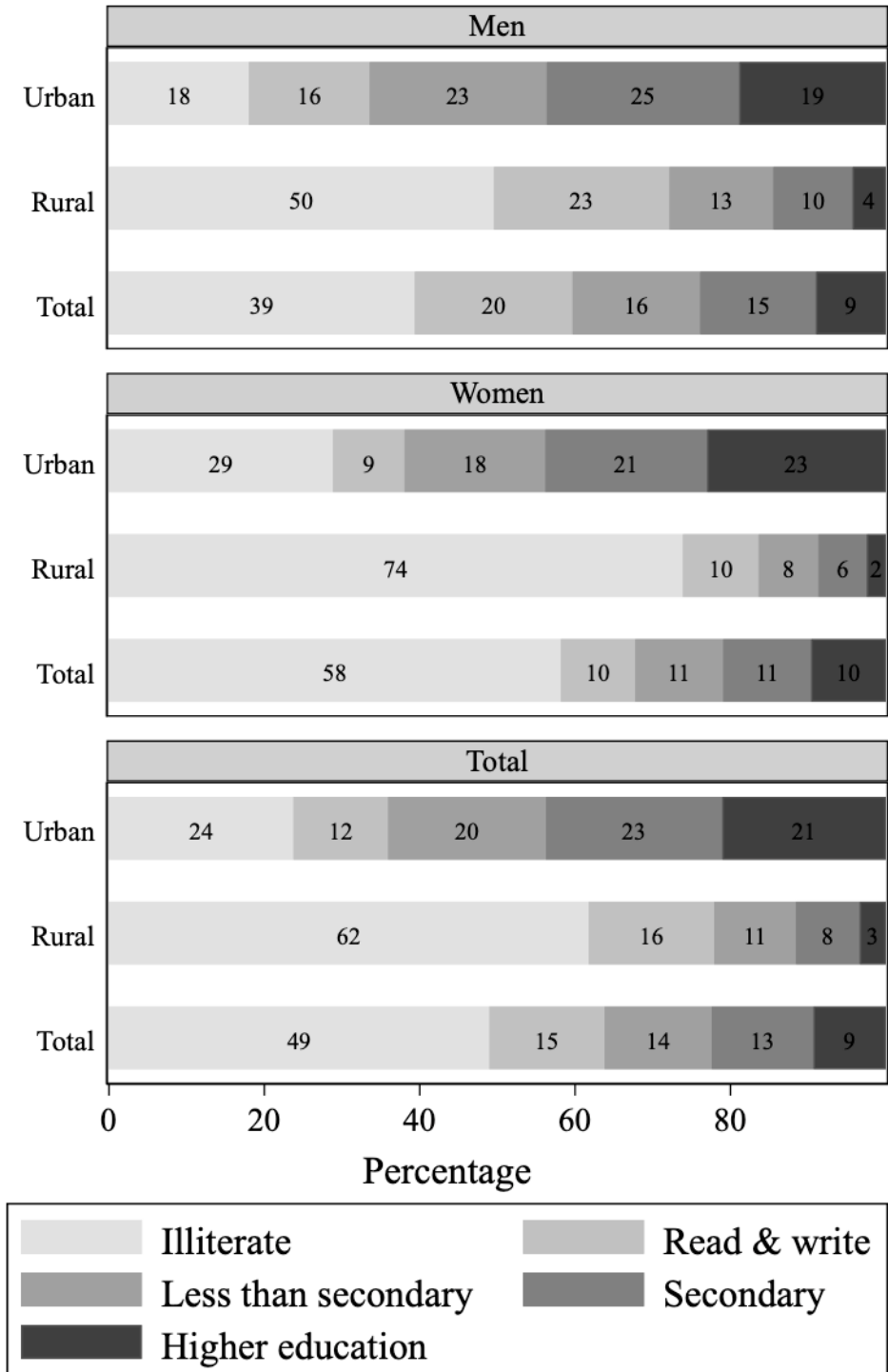
Source: Authors' calculations based on SLMPS 2022

2.3 Education

We next turn to another key aspect of labor supply, namely education. We begin with educational attainment and trends in educational attainment for adults aged 25-64 and then turn to enrollment rates for individuals aged 5-24 later in the section. Figure 8 illustrates the educational attainment of individuals aged 25 to 64 by sex and urban/rural location. Women in Sudan have higher illiteracy rates than men. Nearly half (49%) of all respondents are illiterate, 39% of men and 58% of women. A substantial fraction of adults can read and write but have not completed any level of school (15% overall, 20% of men and 10% of women). A further 14% have attained a less than secondary level, and 13% a secondary level, with fewer women than men doing so. About a tenth of adults have attained a higher education, with a slightly higher share among women than among men.

In urban areas, more individuals attain higher education (21%) than their rural counterparts (3%), with urban women having substantially greater rates of higher education than urban men (23% vs. 19%). Rural areas have particularly high rates of illiteracy (62%, vs. 24% in urban areas). A further 16% of rural adults can read or write but did not complete any level of education, while 11% attained a less than secondary level, and 8% a secondary level. In contrast, 12% of urban adults can read or write, 20% attained a less than secondary level, and 23% a secondary level. Rural women are particularly likely to have never completed school; 74% are illiterate, 10% can read and write, 8% have attained a less than secondary level, 6% a secondary level, and only 2% have achieved a higher education degree.

Figure 8. Educational attainment (percentage), by sex and location, ages 25-64, 2022

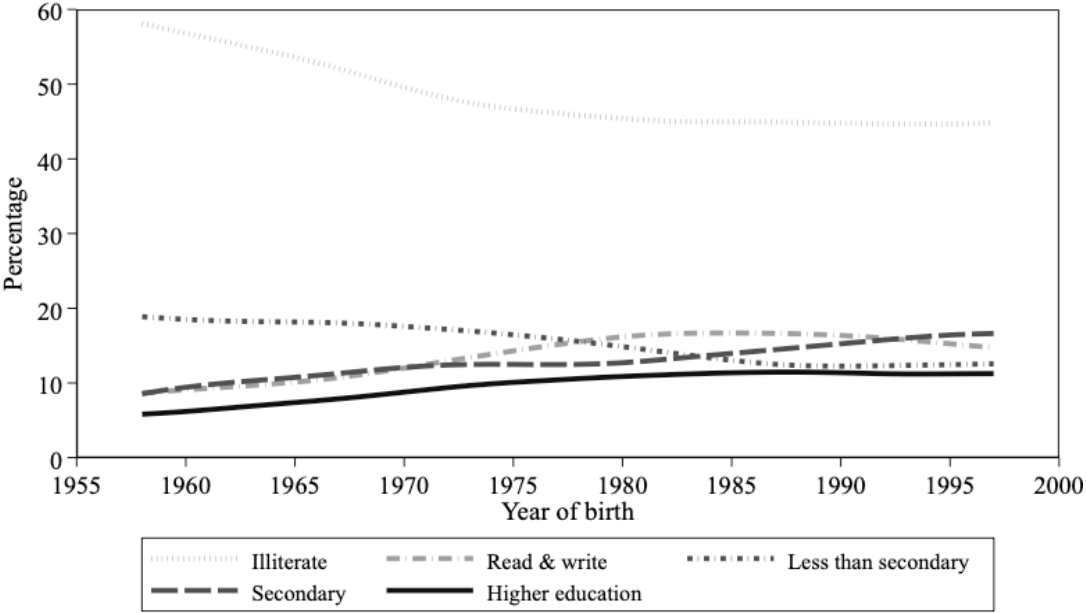


Source: Authors' calculations based on SLMPS 2022

Notes: Less than secondary includes those who completed a primary, initial basic, or middle degree, as well as those who started but did not complete upper secondary. Higher education includes post-secondary, university, and post-graduate degrees.

There is clear evidence that progress on educational attainment has stalled in Sudan in recent years. Figure 9 explores the trends in educational attainment by birth cohort. The percentage of individuals with university level education slowly increased for people born between 1960 and 1980, but that share plateaus for cohorts born after 1980. For secondary education, there is an increase in share for cohorts born between 1960 and about 1970, then it plateaus for about a decade of birth cohorts after that. Secondary education begins to steadily increase again starting around the 1985 birth cohort, and it increases about 5 percentage points through the 1995 birth cohort. The percentage of individuals with less than a secondary education decreases for cohorts born from 1960 to about 1985, after that it plateaus at about 10% of individuals in the latest birth cohorts. The percentage of individuals who are able to read and write increases from cohorts born 1960 to about 1985, when it then begins to decrease. Progress was made in reducing the share of illiterates for cohorts born between 1960 and 1975 and then the decrease begins to level out after that. Overall, much of the progress in educational attainment in Sudan happened for cohorts born prior to 1975 or 1980 with little progress observed for cohorts born after 1980.

Figure 9. Educational attainment (percentage), by birth cohort

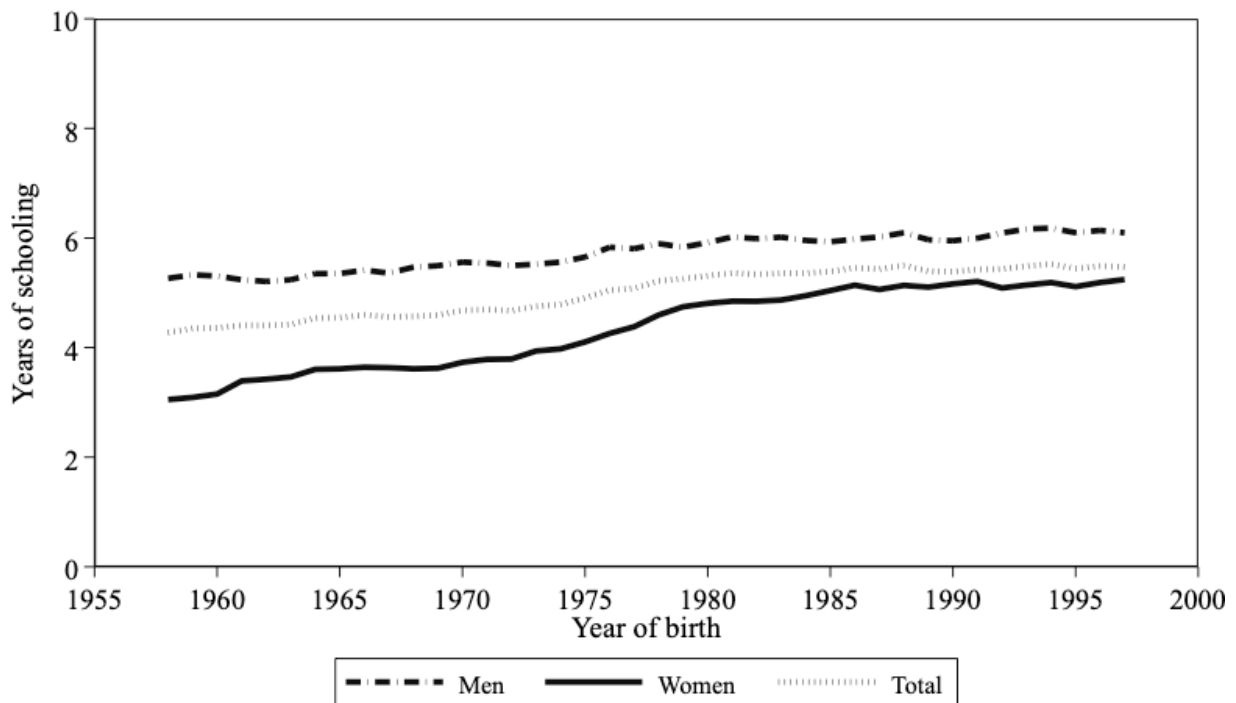


Source: Authors’ calculations based on SLMPS 2022

Notes: Lowess running mean smoother with bandwidth two. Showing for birth years corresponding to ages 25-64 in 2022

Men, on average, have more years of schooling than women, however, the gap has slowly decreased for cohorts born prior to 1985. Here as well, progress has stalled for younger cohorts. Figure 10 illustrates the average years of schooling by sex and birth cohort. For men born before 1975, they have an average of just under 6 years of schooling. Over the 40-year period, the average years of schooling for men increases slightly, reaching about 6 years of schooling by the 1995 cohort. Women saw a larger increase in the average years of schooling, starting out at 3 years on average for the earliest cohorts, and increasing by 1975 birth cohorts to 4 years and approaching 5 years by the 1995 birth cohort. There thus remains a one-year gap in schooling between men and women with a clear stall in closing this gap in recent years.

Figure 10. Average years of schooling, by sex and birth cohort



Source: Authors’ calculations based on SLMPS 2022

Notes: Lowess running mean smoother with bandwidth two. Showing for birth years corresponding to ages 25-64 in 2022.

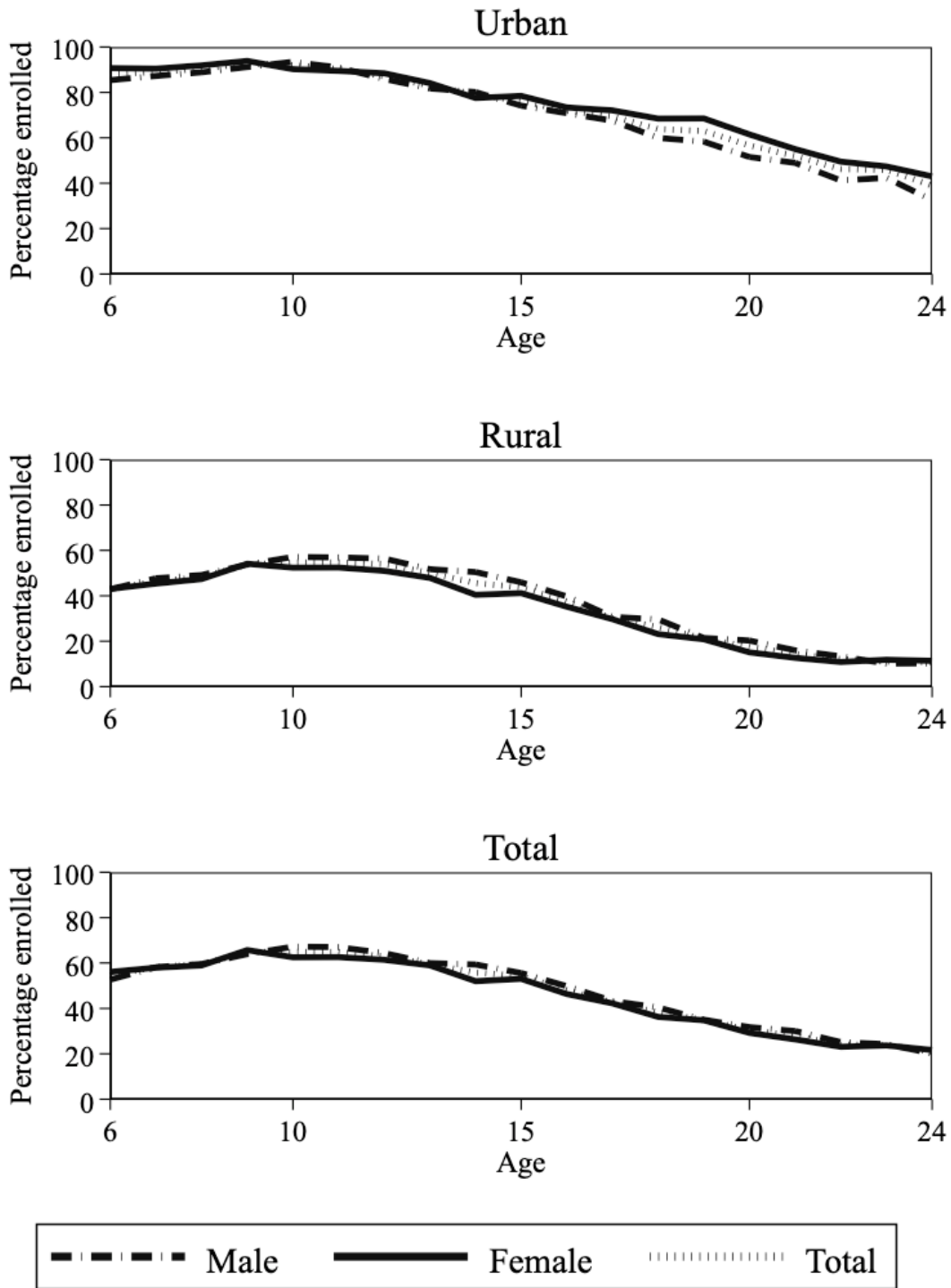
Enrollment in Sudan is substantially less than universal, particularly in rural areas. On-time primary starting age is six, and primary lasts nine years, followed by three years of secondary (ages 15-17 if on time). From the SLMPS, net enrollment rates (the percentage of those of primary age enrolled in primary and likewise for secondary) are 56% for primary and 23% for secondary. These rates are lower than in the 2014 MICS (76% for primary, 28% for secondary (Central Bureau of Statistics (CBS) and UNICEF Sudan 2016). The declines in enrollment may be due to the MICS

2014 picking up a generally more educated sample (Krafft, Assaad, and Cheung 2023), or the impact of recent shocks and COVID-19 school closures. Starting primary later than the official age (age six) is common (Central Bureau of Statistics (CBS) and UNICEF Sudan 2016). The pandemic also closed schools in Sudan for longer than in other MENA countries (Krafft, Selwaness, and Sieverding 2022). Net enrollment rates estimated from SLMPS 2022 are higher for girls (58% primary, 27% secondary) than boys (55% primary, 20% secondary) and higher in urban areas (80% primary, 48% secondary) than rural areas (48% primary, 12% secondary).

Figure 11 shows enrollment rates by age, sex, and urban/rural location for individuals aged 6 through 24 in 2022. Starting at age six, at approximately 85%, enrollment rates in urban areas are much higher than in rural areas where they are less than 45% for both girls and boys. Enrollment rates increase slightly (likely representing late entry) through age 10. There is generally gender parity in early age enrollment in both urban and rural locations.

Children in urban areas are more likely to stay enrolled in school until close to age 15, compared to children in rural areas where we begin to see a decline in enrollment past age 10. Enrollment rates in urban areas begin to drop from almost 80% at around age 15 to less than 60% after age 18. Note that older students, particularly those ages 19 and 20, are often still in secondary school. Enrollment in rural areas begins to drop from just below 60% at age 10 to approximately 20% around age 18. In addition, boys in rural areas have slightly higher enrollment rates at older ages than rural girls. In contrast, in urban areas, starting around age 15, girls have higher enrollment rates than boys.

Figure 11. Enrollment rates (percentage) by age, sex and location, ages 6-24, 2022



Source: Authors' calculations based on SLMPS 2022
 Notes: Lowess running-mean smoother with bandwidth 0.3

3 Labor force participation, employment, and unemployment

In this section, we explore labor force participation and its employment and unemployment components. We first explore the size of the working age population and the labor force, and then present labor force participation, employment, and unemployment rates by sex and urban/rural location using a variety of definitions. We then explore participation, employment, and unemployment for the standard market definition by education and age. The section concludes with a more detailed investigation of reservation wages and working conditions for the unemployed.

3.1 Labor force size and participation, employment, and unemployment rates

The labor force is composed of those who are either employed or unemployed (i.e. those seeking employment). Following the guidance of the 19th International Conference of Labour Statisticians (ICLS-19) (ILO 2013), we primarily define employment as work for pay or profit, which we call the “market” definition. This is the only definition of employment we have for the seven-day reference period, and which provides a measure of the “current” employment and labor force. We also apply this market definition of employment for a one-year reference period (the past 12 months), which we call “annual” employment or labor force. While employment in the seven-day reference period is based on responses in the individual questionnaire to questions about working or being attached to a job and temporarily absent (e.g., for vacation) and additional keyword detection questions to detect under-measured forms of employment (e.g. selling firewood), annual employment adds to this definition anyone who was listed as working for a household enterprise (agricultural or non-agricultural) that produced goods or services for the market during the 12-month reference period. Thus the difference between current and annual employment is not just the reference period, but also differences in measurement methodology.

The market definition of employment is further extended into what the ICLS-19 refers to as “work” by adding subsistence work, or the production and processing of primary goods and services for purpose of own household consumption. In the SLMPS 2022, this information is also obtained from the questionnaire modules on 12-month participation in household farm enterprises. This “extended” definition (market + subsistence) produces the annual definition of work. Both the annual employment (market only) and annual work (market + subsistence) measures are likely to detect rural workers and especially female rural workers who would otherwise would go undetected (Assaad and Krafft 2023; Assaad, Krafft, and Jamkar 2023).

In terms of unemployment, the “standard” measure of unemployment is based on those who are not employed (who did not work at all) in the past seven days, were not attached to a job, wanted to work, were ready and available to start work within two weeks, and undertook some job search activity within the preceding four weeks. The “broad” measure of unemployment drops the search criterion and therefore includes the discouraged unemployed who do not engage in any search.

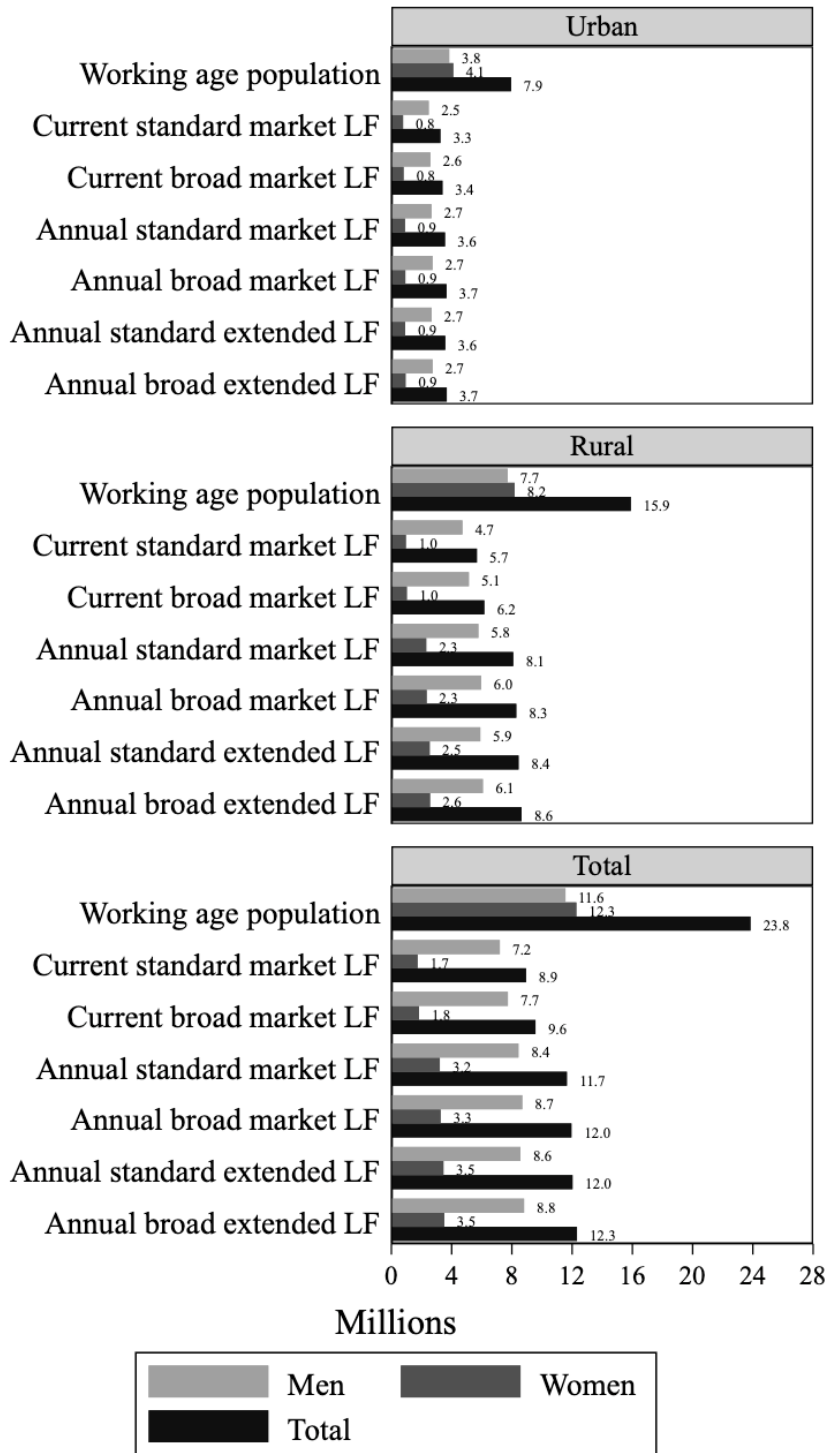
Combining together the various employment and unemployment definitions, the smallest measure of the labor force is the current (seven-day) standard market definition of the labor force, and the largest the annual broad extended definition of the labor force.

Figure 12 shows the size of the working age population and labor force (according to the various definitions), by sex and urban/rural location in 2022, for ages 15-64. The total working age population in Sudan is 23.8 million, nearly equally divided between men (11.6 million) and women (12.3 million). At 15.9 million, the working age population is larger in rural areas is larger than that in the urban areas (7.9 million).

The narrowest, current standard market definition of the labor force is an estimated 8.9 million people. Adding in the discouraged unemployed, the current broad market labor force definition increases to 9.6 million people, pointing to a sizeable population of discouraged unemployed. Using the annual definition further increases the labor force, to 11.7 million for the annual standard market definition. Both the annual broad market labor force and the annual standard extended labor force produce estimates of 12.0 million. The most expansive definition, the annual broad extended labor force produces an estimate of 12.3 million.

Using the current standard market labor force definition, there are 7.2 million men and 1.7 million women in the labor force; this rises to 8.8 million men and 3.5 million women in the most expansive, annual broad extended labor force definition. Moving to the annual measure particularly increases the number of women and the number of rural individuals who are included in the labor force.

Figure 12. Size of the working age population (in millions) and labor force (in millions, various definitions), ages 15-64, by sex and location, 2022



Source: Authors' calculations based on SLMPS 2022

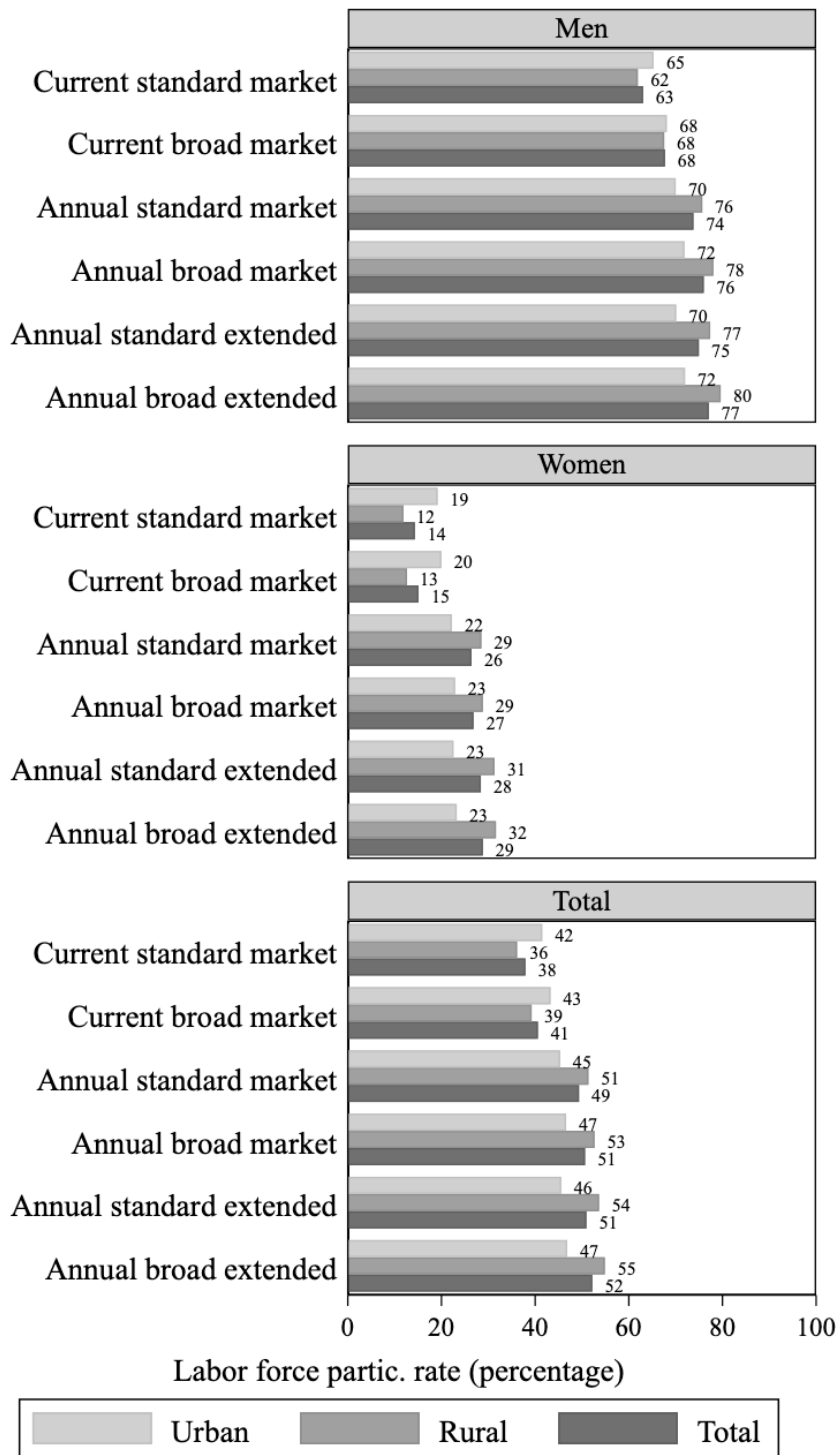
Figure 13 shows the labor force participation rate (percentage) according to various definitions, by sex and urban/rural location in 2022. Sudan's labor force participation rate using the current standard market definition was just 38% in 2022 according to the SLMPS 2022; 63% for men and 14% for women. The estimate of the labor force rises to 41% when the current broad market labor force definition is used (adding the discouraged unemployed), and to 49% with the annual standard market labor force, 51% with the annual broad market labor force and annual standard extended labor force, and 52% with the annual broad extended labor force. Rates were a little lower in rural areas with the current standard market definition (36% rural vs. 42% urban) and higher in rural areas with the annual broad extended definition (55% rural vs. 47% urban).

The large gap in male and female participation (63% vs. 14%) obtained with the current, standard market definition narrows somewhat when broader definitions are used. Using the broadest measure, the annual broad, extended definition gives a male rate of 77% vs. 29% for women.¹⁰ The largest increase in female labor force participation is observed when moving from the current broad market definition to the annual standard market definition. This is because the household enterprise modules do a better job of detecting female employment than the individual modules used for the 7-day reference period (Assaad and Krafft 2023).

The SLMPS 2022 current standard market labor force participation rate for men is consistent with steady declines in participation over time. The rate estimated in 2009 for men was 75%, and this fell to 71% in 2011 and 67% in 2014, such that the 63% in SLMPS 2022 is in line with the trend (Ebaidalla and Satti 2021; Krafft, Assaad, and Cheung 2023). Participation had been rising for women prior to the SLMPS, from 24% in 2009 to 29% in 2011 and 40% in 2014 (Ebaidalla and Satti 2021; Krafft, Assaad, and Cheung 2023). The SLMPS 2022 estimate of 14% as a participation rate for women thus represents a substantial decline, which may reflect worsening economic conditions. It may also reflect women moving between market and subsistence work or working relatively infrequently in 2022, as the annual, broad, extended definition gives a women's participation rate of 29%, similar to the rate in 2011.

¹⁰ These estimates appear to be closest to the latest ILO modelled estimates labor force participation for the population aged 15-64 in 2021 in Sudan, which are 69.5% for men and 30.2% for women, and 49.7% overall (ILO 2022). ILOSTAT states that the ILO modelled estimates are based on the 13th ICLS definition of labor force, not the 19th, which includes subsistence work as part of employment and labor force and is therefore closest to our extended definition.

Figure 13. Labor force participation rate (percentage, various definitions), ages 15-64, by sex and location, 2022



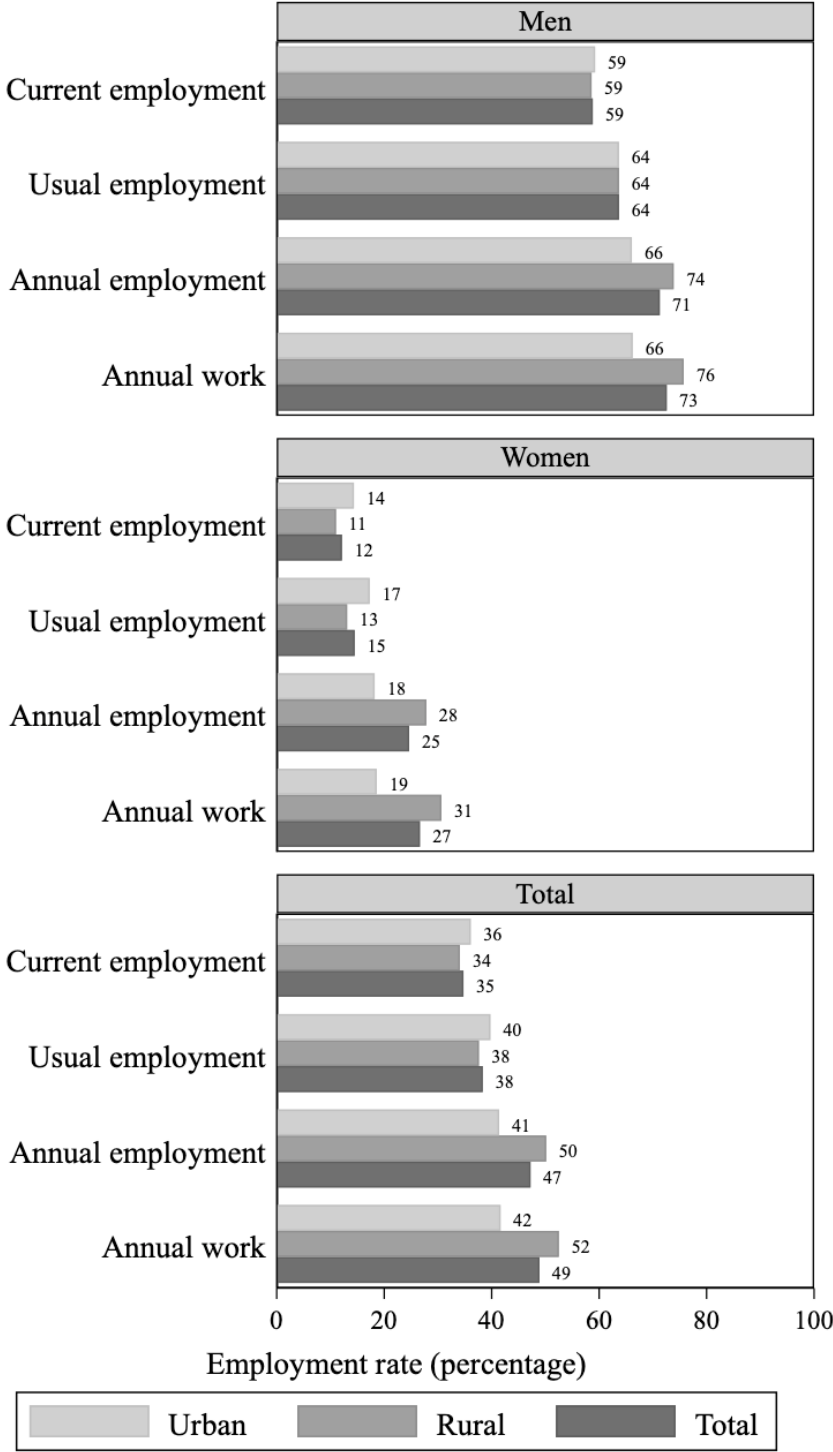
Source: Authors' calculations based on SLMPS 2022

In Figure 14, we explore the employment and work rates under various definitions, as well as by sex and urban/rural location. Again, employment according to ICLS-19 is work for pay or profit, thus the “market” definition. As well as the current and annual employment definitions, we include the definition of employment, based on individual responses, as with the current definition, but for a three-month reference period. We call that “usual employment.” Adding subsistence work turns employment into work, but in our case work rates are only available for the annual reference period.

The total current employment rate for working-age adults is 35%. The usual employment rate is 38%, and the annual employment rate is 47%. Adding subsistence work raises the annual work rate to 49%. For men, employment rates are 59% under the current definition and reach 71% under the annual definition. The male work rate increase further to 73% when subsistence work is added.

For women, current employment rates are 12% but reach 25% under the annual employment definition, which captures involvement in household market activity that is not reported in the individual employment module of the questionnaire. Adding subsistence work raises women’s work rates to 27%. Under the current and usual definitions of employment, there are no urban/rural disparities for men, while women are more likely to be employed in urban areas than rural areas (14% in urban areas with the current definition vs. 11% in rural areas). With the annual definitions, rural men and women are more likely to be employed than their urban counterparts, because we add involvement in household crop and livestock activities, which are more prevalent in rural areas.

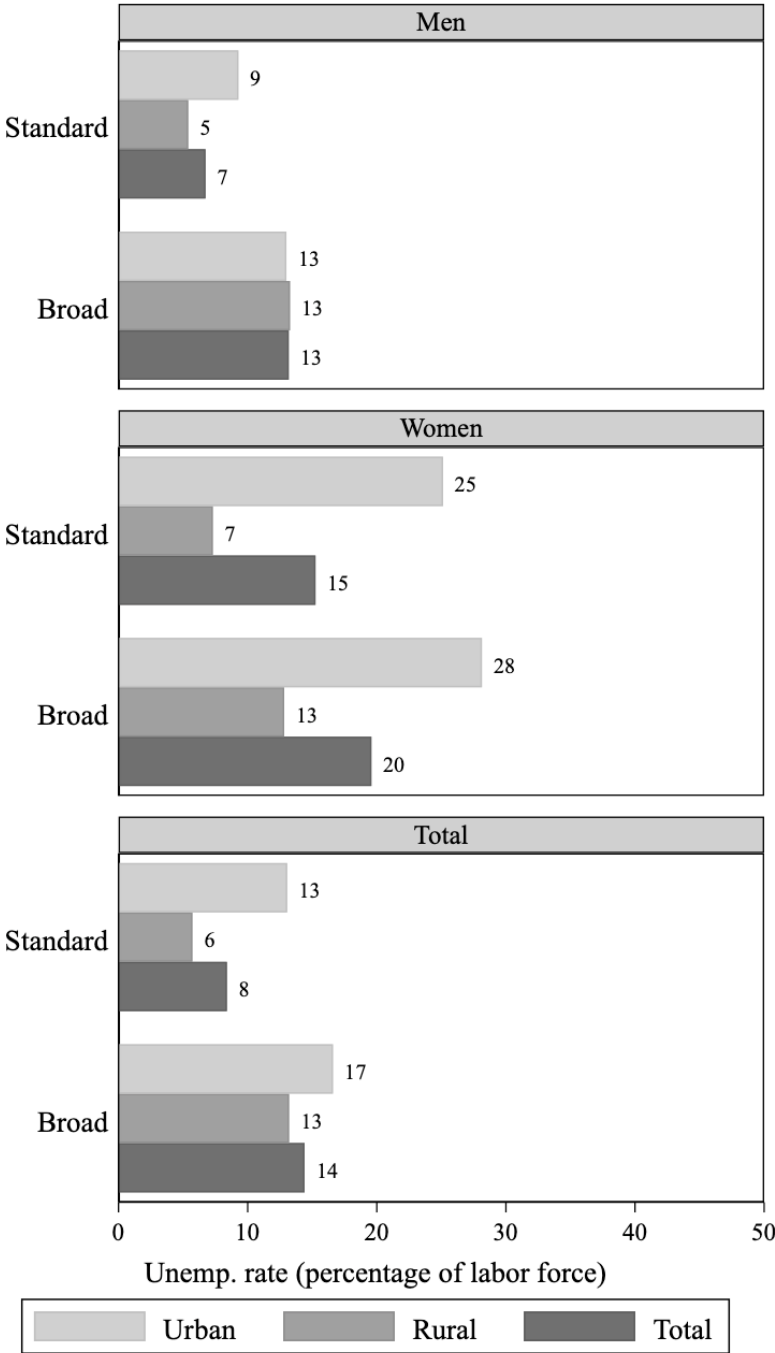
Figure 14. Employment and work rates (percentage, various definitions), ages 15-64, by sex and location, 2022



Source: Authors' calculations based on SLMPS 2022

For unemployment, we focus on the current (7-day) definitions, since that time frame is the most appropriate reference period for unemployment, as search refers to within the past four weeks. We also therefore focus on employment (rather than work) when defining the labor force. Unemployment rates are calculated as a percentage of the labor force. Figure 15 shows the unemployment rate (by the standard and broad definitions) by sex and urban/rural location in 2022. Sudan's total standard (search required) unemployment rate is 8%, while the broad unemployment rate is 14%. Unemployment rates are higher for women (15% under the standard definition and 20% under the broad definition) than for men (7% under the standard definition and 13% under the broad definition). Discouragement, and thus the difference between standard and broad measures, is much higher in rural than urban areas. In urban areas, the difference is 4 percentage points (13% vs. 17%) but in rural areas the difference is 7 percentage points (6% vs. 13%). Urban women have the highest unemployment rates, 25% under the standard definition and 28% under the broad definition.

Figure 15. Unemployment rate (percentage of the labor force, various definitions), by sex and location, 2022



Source: Authors' calculations based on SLMPS 2022
 Notes: Based on the current (7-day), market definition of the labor force

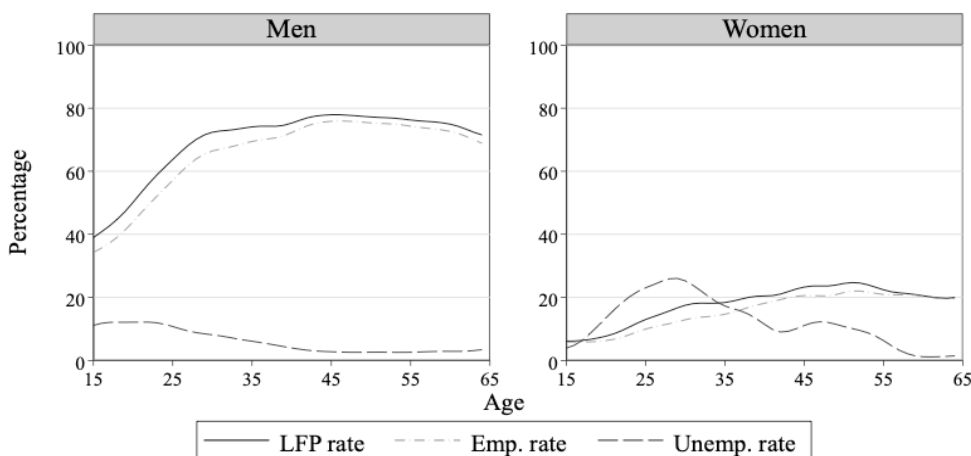
3.2 Patterns of participation, employment, and unemployment rates by age and education

We now turn to patterns of participation, employment, and unemployment by age and education. We focus on the current standard, market definition for these metrics. Figure 16 shows the labor force participation rate (percentage of the population), employment rate (percentage of the population), and unemployment rate (percentage of the labor force), by sex and age in 2022. Labor force participation rates and employment rates for both men and women follow a similar pattern by age.

For men, participation and employment increase sharply between ages 15 (from just below 40%) to 25 (slightly below 70% for participation and around 60% for the employment rate), with more modest increases until a peak at almost 80% at age 45. Rates drop slightly to a bit above 70% by age 64. For women, participation and employment are low, less than 10%, at age 15. They rise with age, with women’s participation peaking around 25% just before age 55 and employment peaking just above 20% at age 55. Both fall slightly to 20% by age 64.

Unemployment, in contrast, is primarily a youth phenomenon, particularly among men. Unemployment rates for men are above 10% from age 15 until around age 25, and then decline steadily between the ages of 25 and 45 to reach a very low level at older ages. Women’s unemployment rises substantially with age, from below 10% at age 15 to peak at more than 25% around age 30. Unemployment then declines somewhat through age 40, but fluctuates around 10% for ages 40-50 before declining for the oldest ages for women.

Figure 16. Labor force participation rate (percentage of the population), employment rate (percentage of the population), and unemployment rate (percentage of the labor force), ages 15-64, by sex and age, 2022



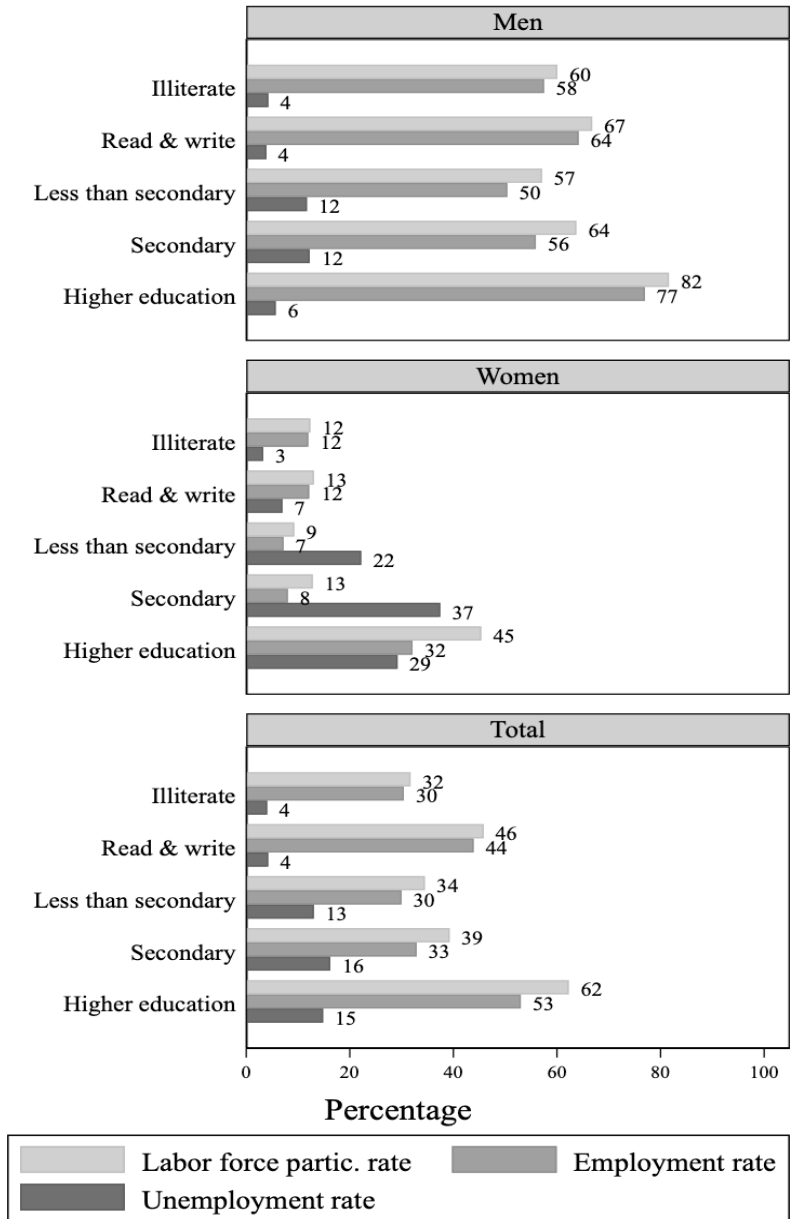
Source: Authors’ calculations based on SLMPS 2022

Notes: Lowess running mean smoother with bandwidth 0.4. Current standard, market definitions.

Labor force participation and employment are highest for those with higher education in Sudan. Figure 17 shows the labor force participation rate (percentage of the population), employment rate (percentage of the population), and unemployment rate (percentage of the labor force), by sex and education in 2022. The participation rate for those with higher education is 62% and the employment rate 53%. Among men, 77% of those with higher education are employed and among women, 32%. There are not, however, very clear patterns of participation by education at other levels, as other research has also noted (Ebaidalla and Satti 2021; Krafft, Nour, and Ebaidalla 2022). The group of men next-most-likely to participate and be employed after higher education is those who can read and write (64% employment rate); this may be because literacy facilitates employment or because they pick up additional literacy skills on the job. For women, 12% of illiterate and read and write women are employed, 7% of those with less than secondary, and 8% of those with secondary education.

Unemployment rates are higher for those with more education, which may reflect limited jobs requiring higher education, higher aspirations among the educated for employment, or the familial resources to queue in unemployment rather than taking whatever work may be available. The overall unemployment rate is 4% for those who are illiterate or read and write, 13% for less than secondary, 16% for secondary, and 15% for higher education. Both men and women with higher education have lower unemployment rates (6% for men, 29% for women) than those with secondary education (12% for men, 37% for women).

Figure 17. Labor force participation rate (percentage of the population), employment rate (percentage of the population), and unemployment rate (percentage of the labor force), by sex and education, 2022



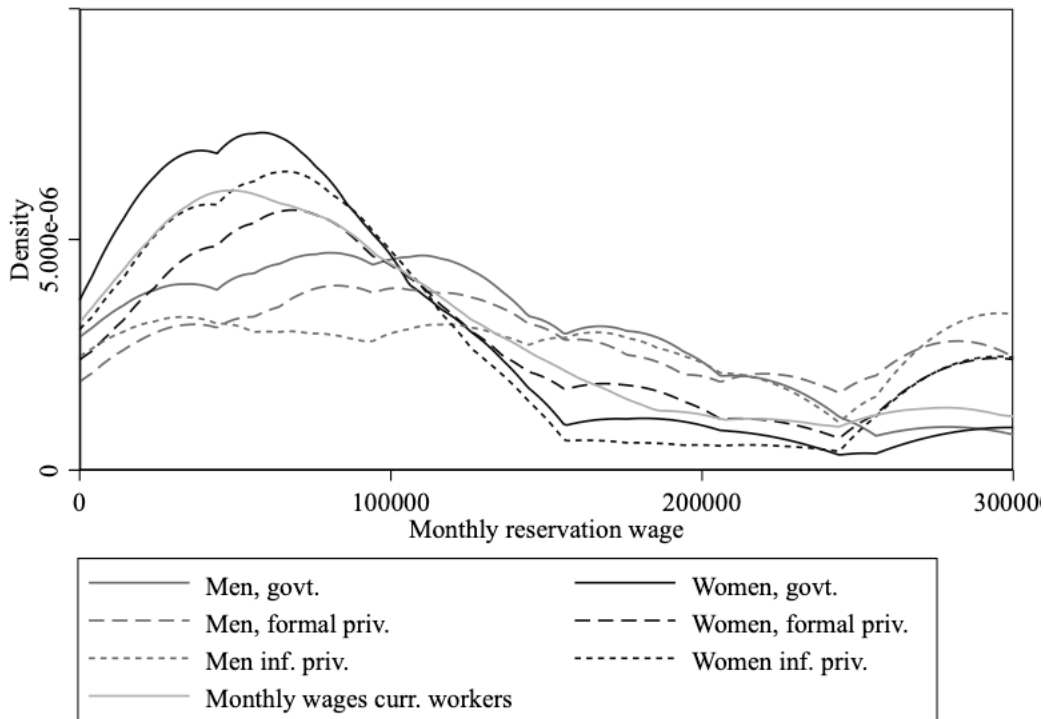
Source: Authors' calculations based on SLMPS 2022

Notes: Current standard, market definition.

3.3 *Reservation wages and acceptable occupations*

Figure 18 presents the distribution of monthly reservation wages (the minimum an individual would accept) for the unemployed (using the broad definition of unemployment). These were asked and are presented for a government job, a formal (socially insured) private sector job, and an informal private sector job. The figure also presents the distribution of monthly wages among current wage workers. For most groups and sectors, reservation wages are higher than actual wages. The median wage overall was 78 thousand Sudanese pounds per month, 91 thousand for men and 49 thousand for women. The median reservation wage for women for a government job was 60 thousand, slightly higher than women's median wage of 50 thousand in government but below the overall median in government of 66 thousand. Men's reservation wage of 100 thousand for a government job was higher than the median of 88 thousand men earned in the government sector. Men's reservation wages were lower, 120 thousand, for private formal jobs than informal ones, at 150 thousand. Although very limited in availability, private formal jobs pay more, 170 thousand for men, than informal jobs, which pay 91 thousand at the median. Women, in contrast, had lower reservation wages for informal jobs, at 70 thousand, than formal ones, at 100 thousand, however both of these were above their median private sector earnings in such jobs, at 90 thousand for formal and 46 thousand for informal jobs. Particularly for the more readily available informal private sector jobs, there are sizable gaps between prevailing wages and the wages the unemployed would accept.

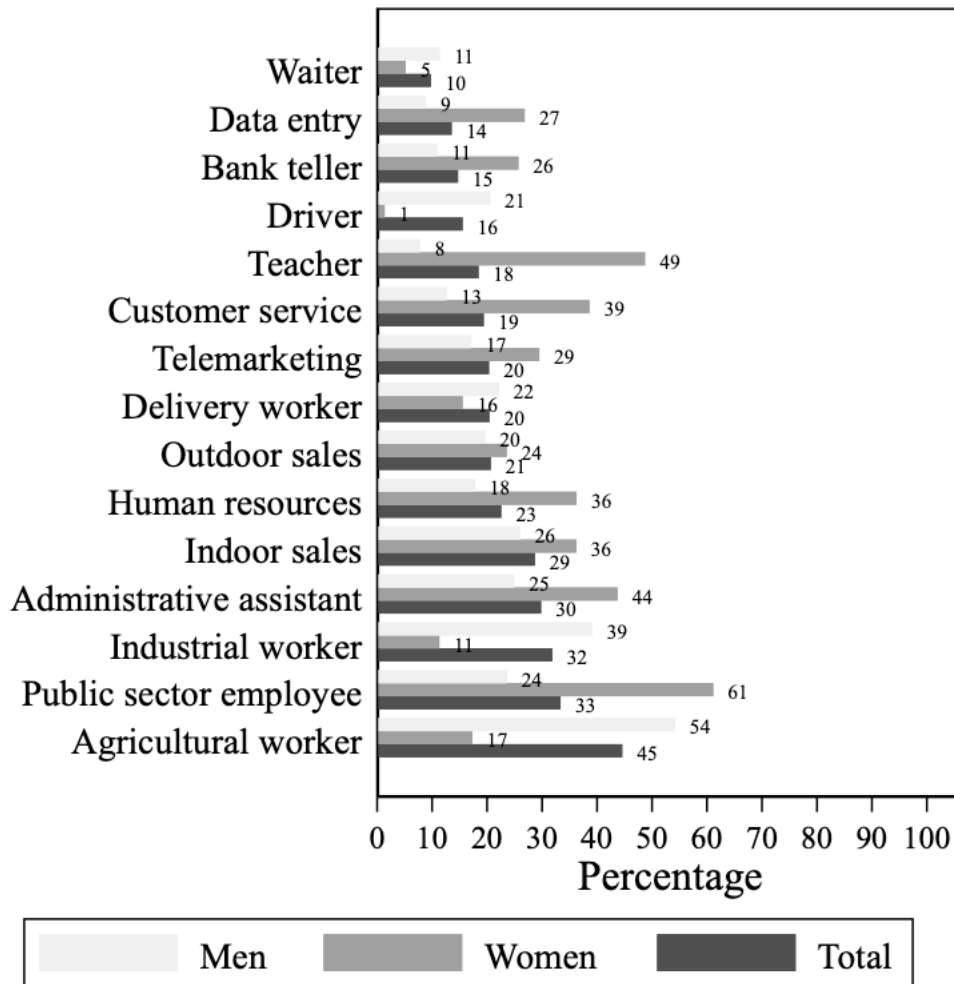
Figure 18. Monthly wages and reservation wages (in Sudanese pounds per month) by sex and sector, broad unemployment, ages 15-64



Source: Authors' calculations based on SLMPS 2022
 Notes: Kernel density, bandwidth 25,000 pounds. Winsorized at 300,000 pounds (near the 95th percentile)

Figure 19 shows unemployed men and women's willingness to accept a job for a number of occupations. Past research has identified reservation working conditions and willingness to accept limited occupations among the unemployed as an issue in other countries in the Middle East and North Africa (Assaad et al. 2021; Barsoum and Abdalla 2022; Groh et al. 2014). The job the unemployed would be most likely to accept is agricultural worker (45% overall, 54% of men and 17% of women), likely reflecting the types of jobs workers consider feasible. The next most acceptable job is public sector employee (33% overall, 24% of men and 61% of women), followed by industrial worker (32% overall, 39% of men and 11% of women). Both jobs that require substantial education and skills (data entry, bank teller, teacher) are less acceptable overall and for men who are unemployed (but often popular with women, as unemployed women tend to be more educated), along with jobs such as waiter and driver.

Figure 19. Willingness to accept job (percentage) by sex, broad unemployment, ages 15-64



Source: Authors' calculations based on SLMPS 2022

4 Structure of employment

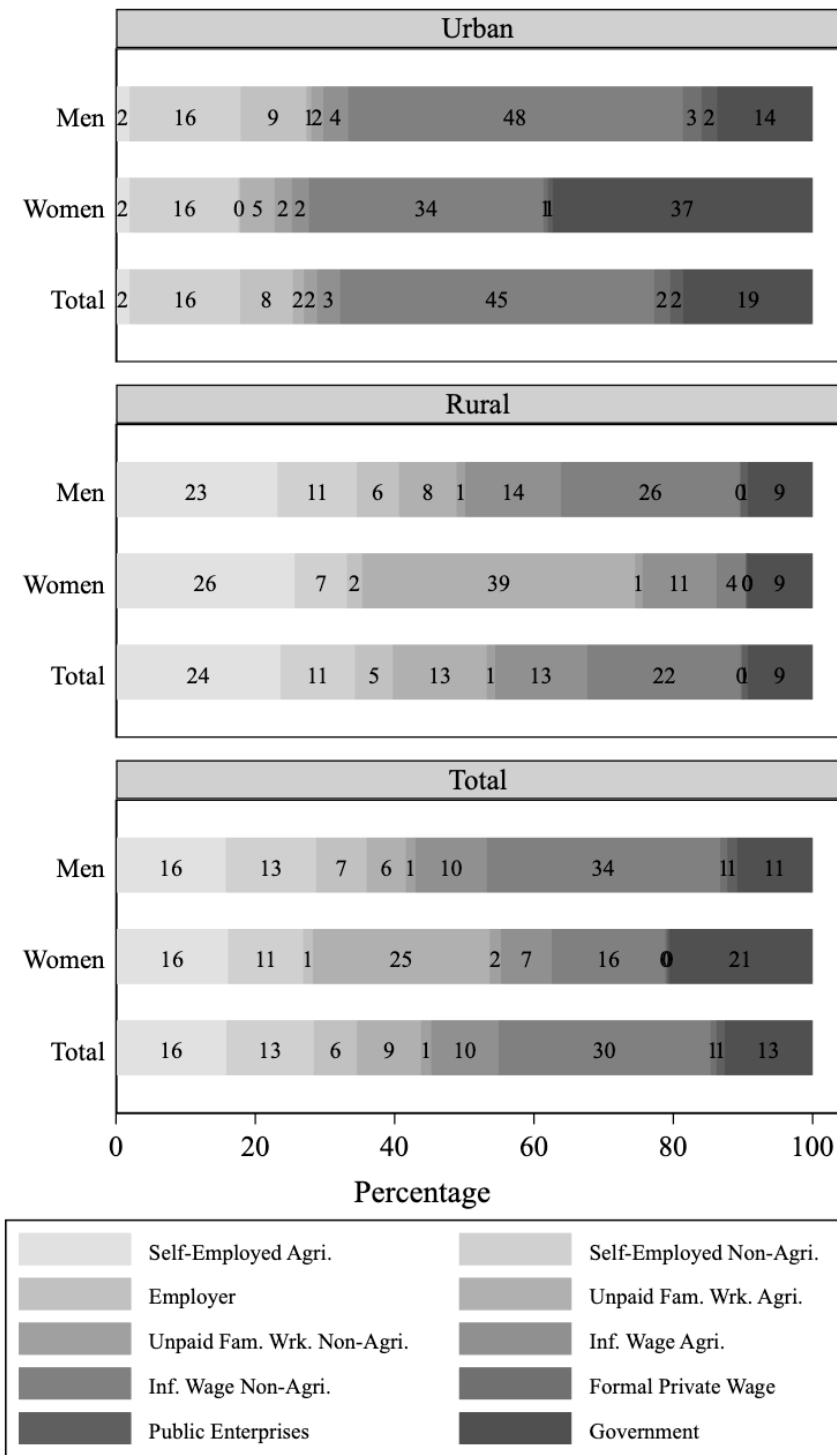
We now turn to characterizing employment, among those currently market employed (under the 7-day definition). The section starts with types of employment, and how these vary by education and sex, urban/rural location, as well as household wealth. We then turn to the economic activity and occupations of workers, before assessing the characteristics of private wage employment, including informality and irregularity, as well as firm sizes and benefits.

4.1 *Types of employment*

In discussing types of employment, we distinguish between non-wage types (unpaid family work; self-employment; acting as an employer employing others), and wage work, as well as the private and public sectors, and the agricultural versus non-agricultural nature of work. In the private wage segment, we distinguish between formal work (with social insurance) and informal work (no social insurance). We call this typology the institutional sector of work. Figure 20 shows the distribution of employment by institutional sector and sex in 2022. A sizeable share of employment is self-employment; 16% in agriculture and 13% in non-agriculture. A further 6% of workers are in fact employers of others. Unpaid family work is most common in agriculture (9% of employment) and rare in non-agriculture (1% of employment). A further 10% of employment is in informal wage work in agriculture and 30% of employment in informal wage non-agricultural work. Overall, 39% of employment is in agriculture, although this share of course increases if definitions other than current market employment are considered. The share of employment in agriculture is higher than in 2009 (36%) but lower than 2011 (45%) or 2014/15 (54%) (Ebaidalla and Satti 2021), which may be due to shifts between market and subsistence agricultural work or participation in the past seven days versus longer time frames.

There is very little formal private sector wage work (1%) or public enterprise work (1%), but 13% of employment is in government. Rural areas, unsurprisingly, have substantially more non-wage work and work in agriculture. Urban areas have little work in agriculture, but non-wage work is common (29% across types of non-wage work), as is informal wage non-agricultural work (45%) and government employment (19%). Women and men have similar chances of being in self-employment, with women more so in agriculture, and women are especially likely to be unpaid family workers in agriculture (25% vs. 6% for men). Employed women are less likely to be informal wage workers (24%) than men (44%). Women are, however, more likely to work in government when employed (21% vs. 11% for men).

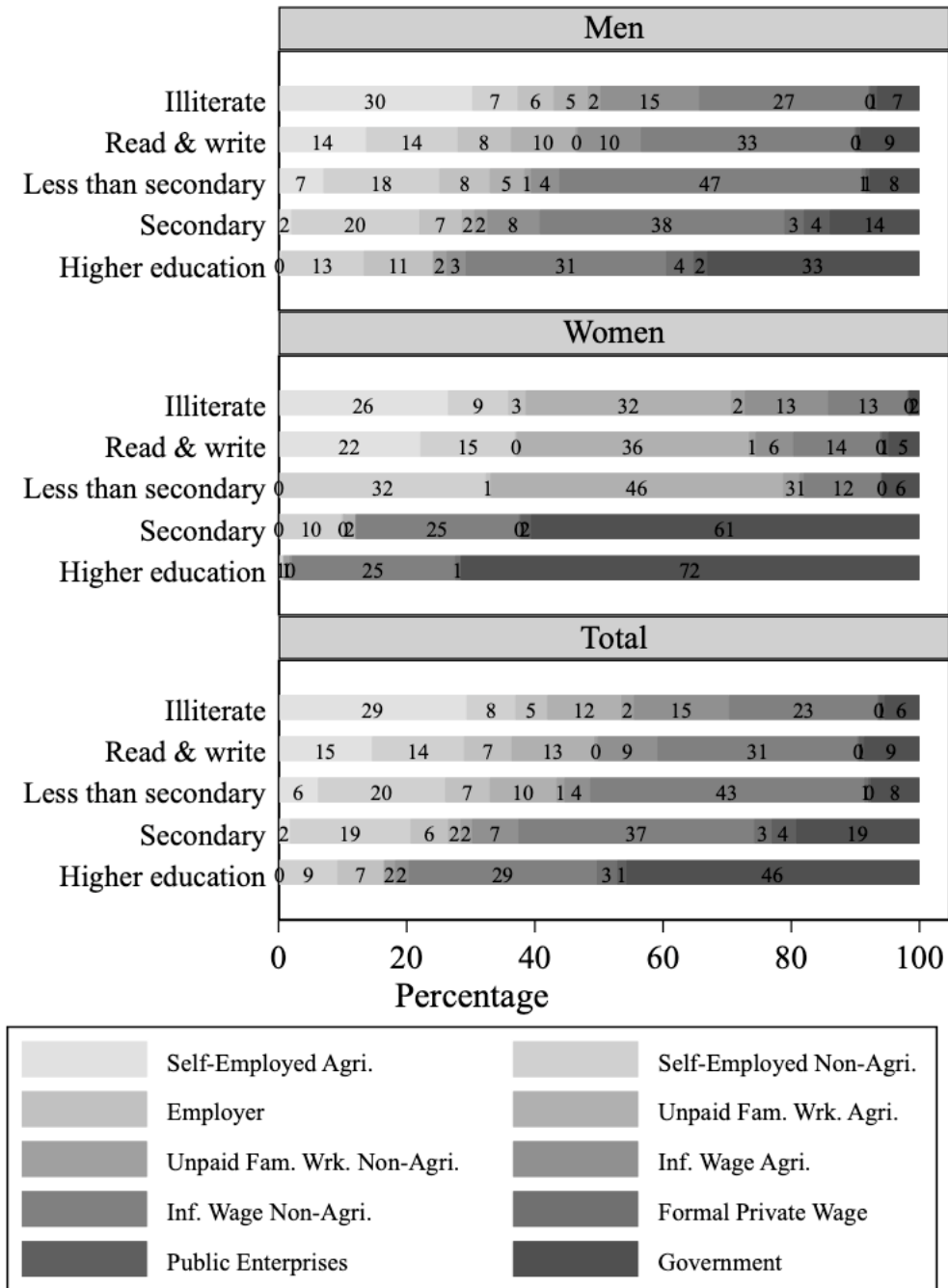
Figure 20. Distribution of employment (percentage) by institutional sector, location, and sex, employed individuals ages 15-64, 2022



Source: Authors' calculations based on SLMPS 2022

Figure 21 explores the distribution of employment across institutional sectors by education and sex. Self-employment in agriculture is particularly concentrated among those who are illiterate (29%) followed by those who can read and write (15%). Self-employment outside agriculture is more common for those who can read and write or have up through a secondary education (14-20% across those levels). Unpaid family work in agriculture is common for illiterate through less than secondary educated workers (10-13%). Informal wage work in agriculture is most common for the illiterate (15%). Informal wage work outside of agriculture rises at first with education, from 23% among the illiterate up to 43% of those with less than secondary before falling somewhat to 29% among those with higher education. Even among those with secondary or higher education only 3% have formal private wage employment. Although there is some government employment at lower levels of education (6-9%), secondary (19%) and higher education (46%) have the most government employment. This is particularly true for women; 61% of employed secondary educated women are in the government and 71% of employed higher educated women.

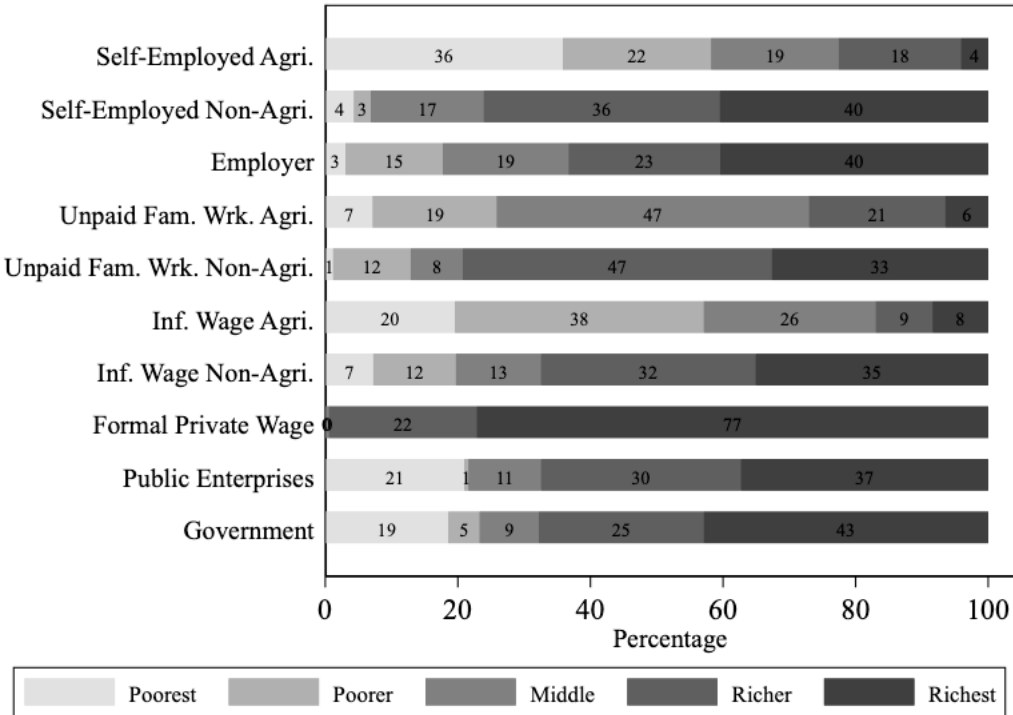
Figure 21. Distribution of employment (percentage) by institutional sector, education, and sex, currently employed aged 15-64, 2022



Source: Authors' calculations based on SLMPS 2022

Figure 22 shows the distribution of household wealth quintiles¹¹ for workers in each institutional sector. Self-employed agricultural workers are particularly likely to be in the poorest (36%) quintile of households. Self-employed non-agricultural workers and employers are much more likely to be in the richest quintile (40%). Unpaid family workers are more likely to be in households towards the middle of the wealth distribution for those in agriculture and towards the richer side outside of agriculture; these may be more successful family farms or businesses that absorb additional family labor. Informal wage workers in agriculture are most often from the poorer (20-39th percentiles) households (38%), followed by the middle (26%) and poorest (20%). Informal wage workers outside of agriculture are predominantly from the richest (35%) and richer (32%) households. The very small group of private formal wage workers is quite select, with 77% from the richest households. Public enterprise workers are most often from the richest households (37%) or next richest quintile (30%), and likewise 43% of government workers are from the richest quintile and 25% from the next richest quintile. There is, however, a sizeable share (19-21%) of public enterprise and government workers who are from the poorest quintile. In government, most of the poorest workers were in the armed forces.

Figure 22. Distribution of wealth quintile (percentage) by institutional sector, currently employed aged 15-64, 2022

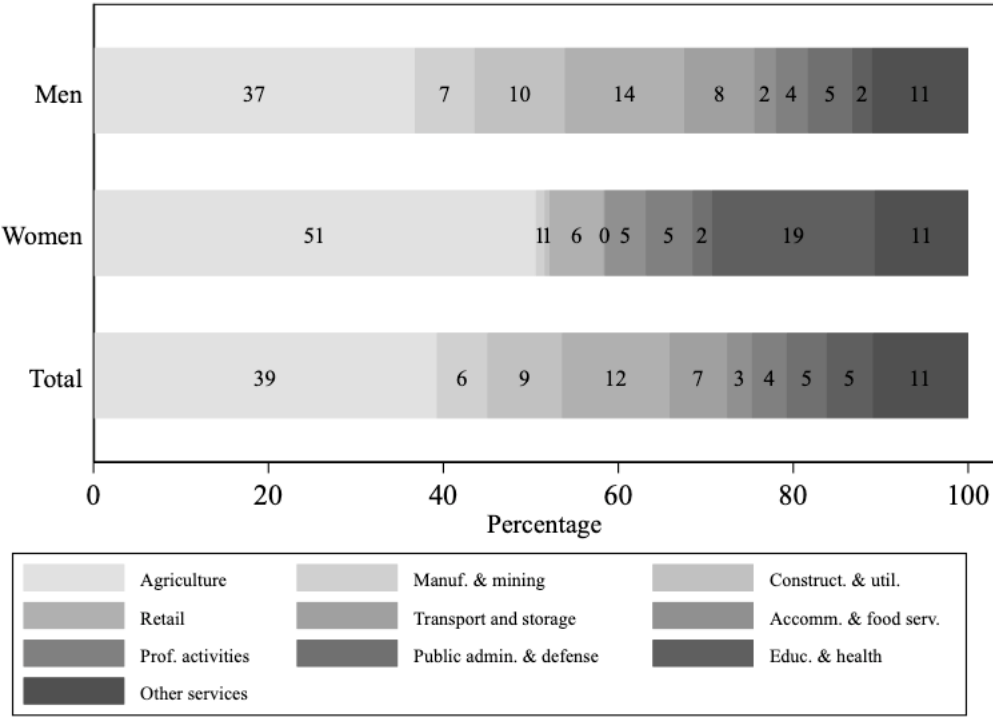


Source: Authors’ calculations based on SLMPS 2022

¹¹ Based on the distribution of a factor incorporating durable assets and housing conditions.

Economic activity in Sudan is dominated by agriculture. Figure 23 shows the distribution of employment by economic activity (industry). In Sudan, 39% of employment is in agriculture (51% for women and 37% for men). The next largest sector is trade and retail (12%), followed by other services (11%), and construction (9%). A further 7% of employment is in transportation and storage, and 6% in manufacturing and mining. Along with 5% in public administration and defense, there is a further 5% in education and health. Only 4% of employment is in professional activities and 3% in accommodation and food services. As well as in agriculture, women are over-represented in education and health (19%), as well as professional activities (5%) and accommodation and food services (5%), and under-represented in all other industries.

Figure 23. Distribution of employment (percentage) by economic activity and sex, currently employed, ages 15-64, 2022

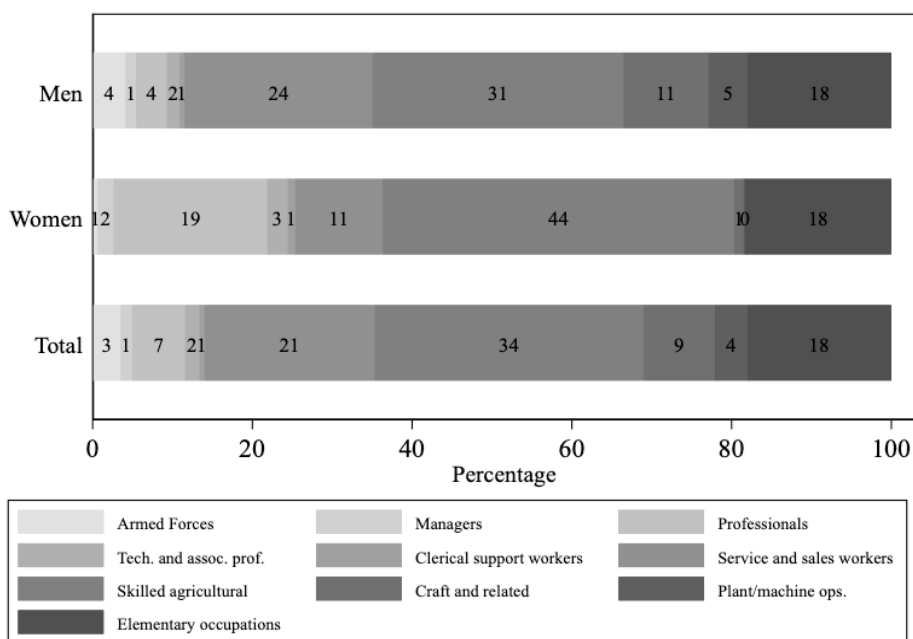


Source: Authors’ calculations based on SLMPS 2022

While economic activities characterize the firms or enterprises in which workers are employed, occupations characterize their jobs within those activities. Figure 24 presents the distribution of employment by occupation and sex in Sudan. The most common occupation is agricultural work (34%), followed by service and sales occupations (21%), and elementary occupations (18%). A further 9% of workers are craft and related trades workers, 7% professionals, and 4% plant and machine operators. Only 1% are managers, 2% technicians and associate professionals, and 1%

clerical support workers. Women are particularly likely to be professionals (18%) or agricultural workers (44%).

Figure 24. Distribution of employment (percentage) by occupation and sex, currently employed, 2022

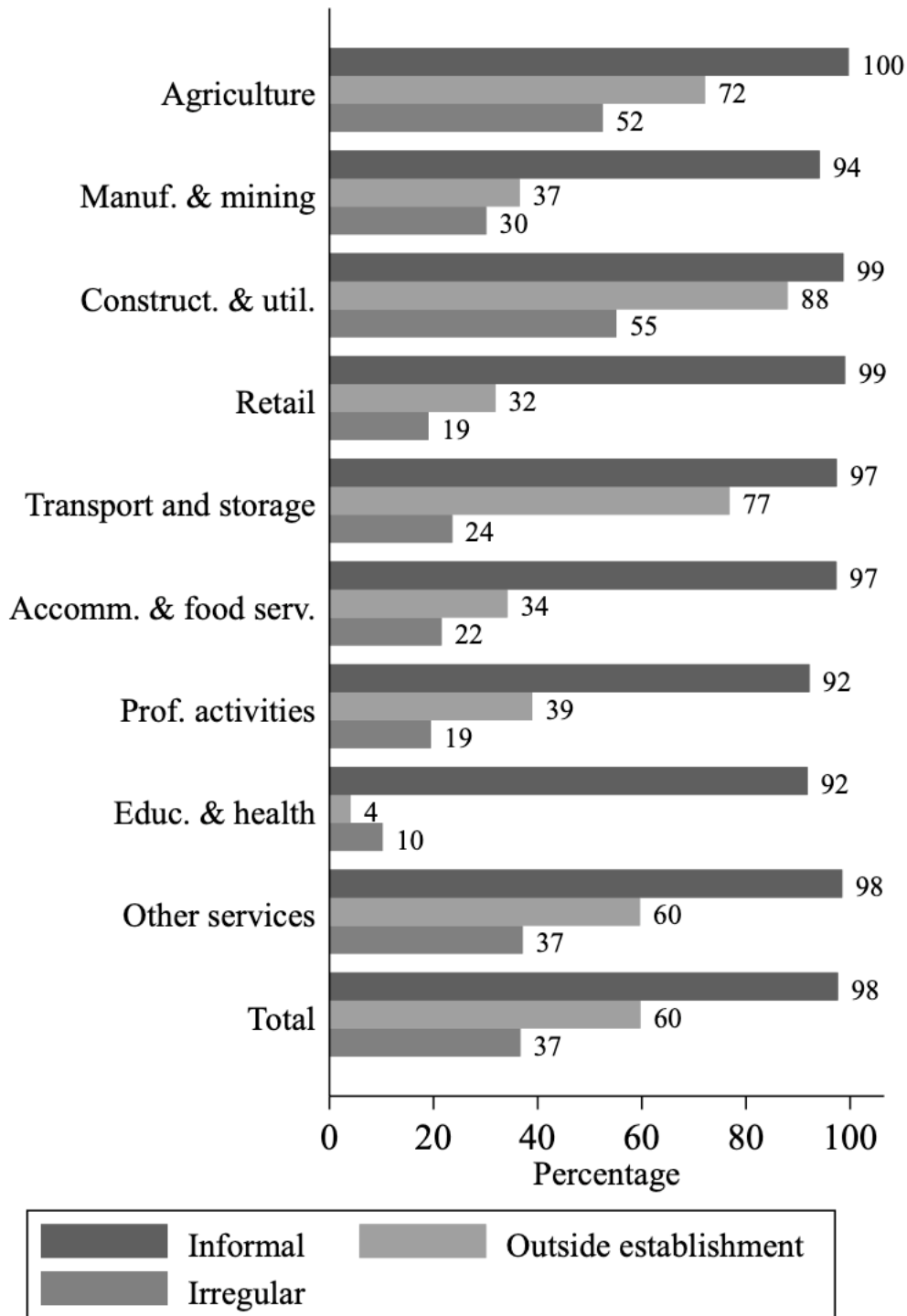


Source: Authors' calculations based on SLMPS 2022

4.2 Employment conditions for private sector wage workers

This sub-section examines working conditions for private sector wage workers. We specifically examine informality (lack of social insurance), working outside a fixed establishment, and irregularity (seasonal or casual work). Figure 25 presents these outcomes by economic activity. Informality in private sector wage work is near universal (98%). Only in professional activities and education and health (92% informal) and manufacturing and mining (94% informal) is there a small segment of formal employment. Thus, the vast majority of private sector wage workers lack social insurance benefits for old age and the associated legal protections and benefits that come with formal employment. Working outside a fixed establishment is also quite common (60% of private sector wage work). This is particularly true in construction (88%), transport and storage (77%), agriculture (72%), and other services (60%). Irregular work is also common (37%). This is particularly true in construction (55%), agriculture (52%), and other services (37%).

Figure 25. Informality, working outside establishments, and irregularity (percentages), by economic activity, private sector wage workers, currently employed, aged 15-64

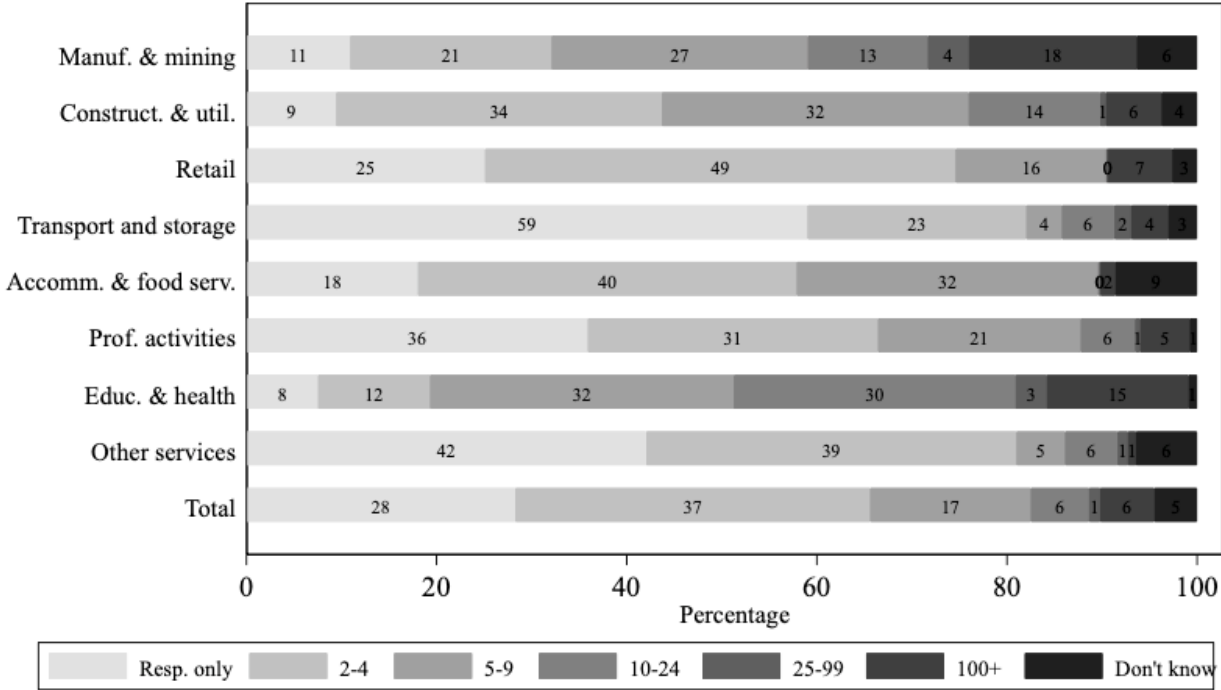


Source: Authors' calculations based on SLMPS 2022

Notes: Not showing public administration and defense, since there are <30 private sector wage workers in this economic activity. Informality defined as no social insurance.

Figure 26 explores the distribution of private sector wage non-agricultural employment by firm size and economic activity. Most employment is in microenterprises; 28% the respondent only, 37% 2-4 workers. A further 17% of employment is in firms with 5-9 workers and 6% in firms with 10-24 workers. Only 1% is in firms with 25-99 workers, and 6% in firms with 100 or more workers (includes “very large, don’t know), while 4% don’t know at all. The distribution of firm sizes in the private sector is almost entirely micro and small enterprises. There are slightly larger firms in manufacturing and mining, as well as education and health.

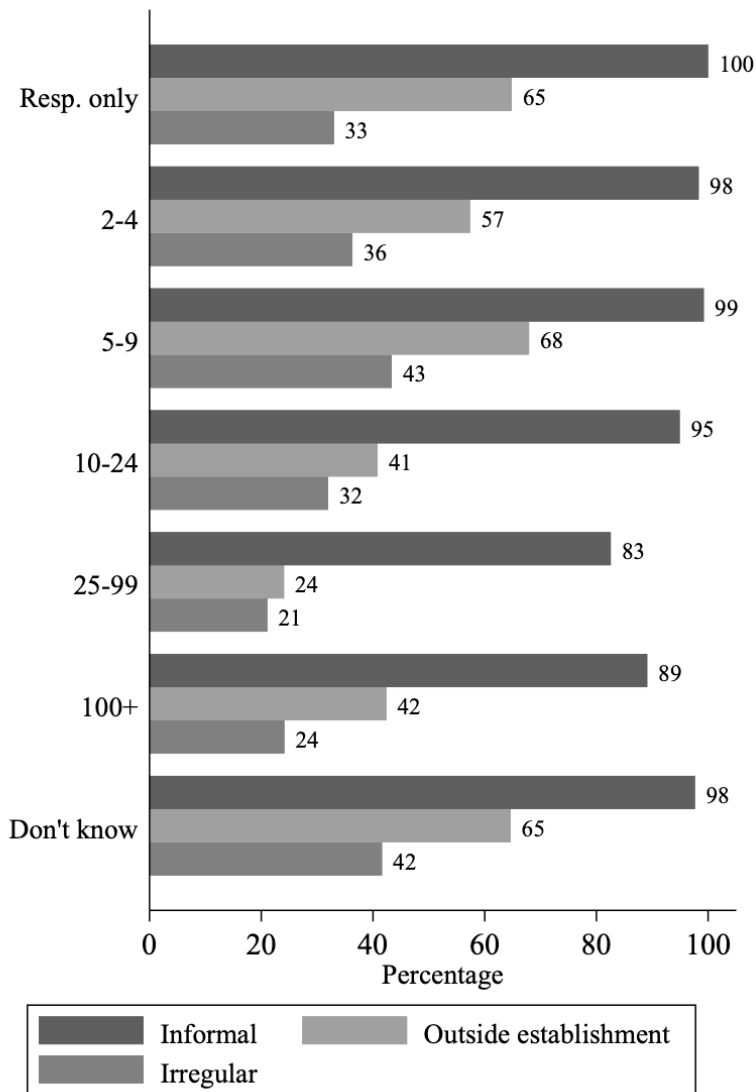
Figure 26. Distribution of private sector wage employment (percentage) by economic activity and firm size, non-agriculture, currently employed, aged 15-64



Source: Authors’ calculations based on SLMPS 2022
 Notes: Not showing public administration and defense, since there are <30 private sector wage workers in this economic activity.

Working conditions are better in the (few) larger firms. Figure 27 shows informality, working outside an establishment, and irregularity by firm size. Almost all microenterprises (respondent only; 2-4; 5-9) are similar in being 98-100% informal, 57-68% outside establishments, and 33-43% irregular. Informality then decreases to 95% at 10-24 workers, 83% for 25-99, and 89% for 100+. Working outside an establishment is also lower, at 41% for 10-24 worker firms, 24% for 25-99 worker firms, and 42% for 100+ worker firms. Irregularity is 32% for 10-24 worker firms, 21% for 25-99 worker firms, and 24% for 100+ worker firms. The very rare medium firms thus appear to have the best working conditions.

Figure 27. Informality, working outside establishments, and irregularity (percentages), by firm size, private sector wage workers, currently employed, aged 15-64

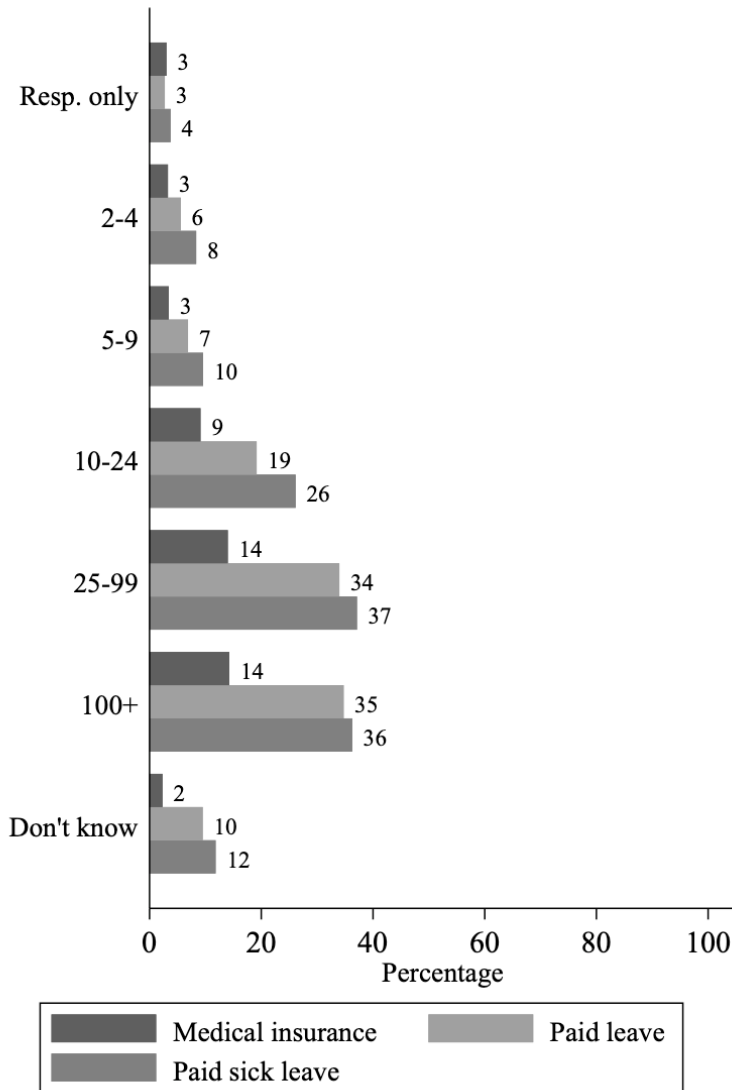


Source: Authors' calculations based on SLMPS 2022

Notes: Informality defined as no social insurance.

As well as very few workers having social insurance, correspondingly, few have medical insurance or the right to paid leaves or paid sick leaves. Figure 28 presents these benefits by firm size. Overall, only 2% of workers have employer-based medical insurance, 10% paid leave, and 12% paid sick leave. These benefits are rarest in micro firms, and still held by only a minority of workers in firms 10+. Benefits are again best for 25-99 worker firms, with 14% of workers having medical insurance, 34% paid leave and 37% paid sick leave (there are similar rates for firms with 100+ workers).

Figure 28. Employment-based medical insurance, paid leave, and paid sick leave, (percentages), by firm size, private sector wage workers, currently employed, aged 15-64



Source: Authors' calculations based on SLMPS 2022

5 Conclusions

During the period since Sudan's last labor market survey, in 2011, Sudan has experienced a number of economic and political shocks. The secession of South Sudan in 2011 was followed by a period of declining per capita GDP (World Bank 2023b). Political and economic struggles, including a lack of structural transformation, declining productivity, and rising rates of poverty persisted through 2018 (Ebaidalla and Satti 2021; Etang Ndip and Lange 2019). The protests that began in 2018 and led to the ouster of president Al-Bashir and the formation of civilian government

in 2019 created hopes of global economic re-engagement and recovery (Asare et al. 2020). In 2020, the global COVID-19 pandemic and associated closures and economic impacts created a new challenge for Sudan (Central Bureau of Statistics (CBS) and World Bank 2020; Krafft, Nour, and Ebaidalla 2022; Nour 2022a).

The October 2021 coup was followed by a period of political instability, although in mid-2022 conditions were sufficiently stable for SLMPS 2022 data collection to take place. Negative GDP growth and rampant inflation were major challenges over the period 2018-2022 (World Bank 2023b), as the repeated political and economic shocks compounded pre-existing structural challenges. In April of 2023, hostilities erupted between the armed forces and Rapid Support Forces militia, a conflict which had, as of August 2023, increased the number of forcibly displaced from Sudan to 4.5 million, including nearly a million newly displaced refugees (UNHCR 2023). Although the SLMPS 2022 data predate the most recent conflict, they capture the social, economic, and labor market impacts of a period of substantial political and economic upheaval.

The results of this paper highlight both shifts that are potentially the result of the recent shocks and longstanding structural issues. On the labor supply side, Sudan has a young and rapidly growing youth population (63% of the population is aged 0-24). The share of children and youth, as well as Sudan's TFR (4.9 births per woman) are more comparable to those in Sub-Saharan Africa than in MENA. Fertility stall, is, however, a demographic challenge that Sudan shares with other MENA countries (Krafft 2020; Krafft, Kula, and Sieverding 2021). Marriage remains nearly universal in Sudan. Marriage has even trended towards earlier ages, particularly for men, over time. Early marriage, before age 18, is common women, 30% of whom married early.

Sudan made appreciable progress in expanding education for cohorts born prior to 1980, however, progress subsequently stalled. As of 2022, the primary net enrollment rate was 56% and the secondary net enrollment rate was 23%. Enrollment and attainment are particularly low in rural areas. While enrollment in urban areas now slightly favors girls, the opposite is true in rural areas, and historical disparities in enrollment mean illiteracy is higher for women in both urban and rural areas.

While men's labor force participation has been declining steadily over time in Sudan, the drop in women's participation to 14% (using the current standard market definition) is a more recent development (Krafft, Assaad, and Cheung 2023). Women's participation may be more sensitive to the recent shocks in Sudan. Alternatively, women may be continuing to participate but in family businesses or subsistence agriculture. Rates of participation and employment for women rise substantially, particularly in rural areas, when using annual measures of market employment that include family businesses or adding subsistence work.

For both men and women, participation and employment rise with age and then plateau around age 45. Unemployment is primarily a youth phenomenon, as elsewhere in MENA (Assaad and Krafft 2016), although unemployment rates remain elevated into older ages for women. With the

possible exception of higher education, there are not appreciable differences in participation by education, as other research has noted (Ebaidalla and Satti 2021; Krafft, Nour, and Ebaidalla 2022).

The agricultural sector remains central in Sudan, providing 39% of current market employment. Shifts in the share of agriculture over time (Ebaidalla and Satti 2021) may reflect in part work over different time frames and shifts between market employment and subsistence work depending on economic conditions. Informal wage work outside of agriculture is also common (30%), as is non-wage, non-agricultural work. Informality is extremely high in private sector wage work (98%), such that the public sector is the near-exclusive provider of formal jobs. Private sector wage work is most often in microenterprises. Such work usually lacks benefits or protections and is often vulnerable not only in regard to informality, but also irregularity (37%) and work outside establishments (60%). In comparison, in Egypt as of 2018, 79% of private sector wage workers were informal, 48% worked outside establishments and 30% were irregular (Assaad, AlSharawy, and Salemi 2022).

In the aftermath of the numerous shocks that preceded the SLMPS 2022, Sudan's economy and labor market faced a number of challenges. Demographic pressures on labor supply, difficulties with enrollment, and gender inequality in participation and employment are long-standing issues that may have been exacerbated by political upheaval and the pandemic. The lack of structural transformation continues to be evident in Sudan's labor market, with disproportionately agricultural, microenterprise, and informal employment. Economic transformation, reducing vulnerable employment, and creating decent work for Sudan's young and growing population, have, however, become even more challenging in 2023. Ending the conflict and stabilizing the security and political situation will be essential pre-requisites to addressing economic and labor market challenges. Moreover, additional data collection and research is needed to understand the impact of the recent conflict on Sudan's society and economy and to inform efforts trying to ameliorate some of its harms.

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