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DISCUSSION PAPER SERIES

IZA DP No. 15406

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Janneke Pieters
Wageningen University and IZA

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IZA – Institute of Labor Economics

Schaumburg-Lippe-Straße 5–9
53113 Bonn, Germany

Phone: +49-228-3894-0
Email: publications@iza.org

www.iza.org

ABSTRACT

Inequalities in Job Loss and Income Loss in Sub-Saharan Africa during the COVID-19 Crisis[1]

We use high frequency phone survey data from Ethiopia, Malawi, Nigeria, and Uganda to analyze the impacts of the COVID-19 crisis on work (including wage employment, self-employment, and farm work) and income, as well as heterogeneity by gender, family composition, education, age, pre-COVID-19 industry of work, and between the rural and urban sector. We link phone survey data collected throughout the pandemic to pre-COVID-19 face-to-face survey data in order to track the employment of respondents who were working before the pandemic and analyze individual level indicators of job loss and re-employment. Finally, we analyze both immediate impacts, during the first few months of the pandemic, as well as longer-run impacts up to February/March 2021. We find that in the early phase of the pandemic, women, young, and urban workers were significantly more likely to lose their job. A year after the onset of the pandemic, these inequalities disappeared while education became the main predictor of joblessness. We find significant rural/urban, age, and education gradients in household level income loss. Households with income from non-farm enterprises were most likely to report income loss, in the short run as well as the longer run.

JEL Classification: J20, J10, I31

Keywords: COVID-19, employment, income, inequality, Africa

Corresponding author:
Janneke Pieters
Development Economics Group
Wageningen University
Hollandseweg 1
6706 KN Wageningen
The Netherlands

E-mail: janneke.pieters@wur.nl

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1. Introduction

The COVID-19 pandemic has severely disrupted economic activities world-wide. In 2020, real GDP declined by 1.8 percent in Sub-Saharan Africa (SSA) and by 3.2 percent globally, compared to a projected growth of 3.5 percent in SSA and 3.3 percent globally (International Monetary Fund, 2021). In addition, most countries, and especially African countries have been facing large exchange rate depreciations and rising energy and food prices in 2020 and 2021 (Anyanwu and Salami, 2021). Lakner et al. (2021) estimate that in 2020, the COVID-19 crisis increased the number of people below the poverty line by about 120 million in the world and 31 million in SSA. Projections by Mahler et al. (2021) show that while a global rebound is expected in 2021, poverty is expected to further increase in low-income countries, and at a much faster rate than was expected before the pandemic. For low-income countries, poverty is set to increase by 2.7 percent by 2021, compared to the pre-pandemic projection of a 0.2 percent increase (ibid.). These numbers for Sub-Saharan Africa were 2.5 percent compared to 1 percent (pre-pandemic projection).

Beyond these aggregate indicators, systematic evidence of the socio-economic impacts of COVID-19 on households and individuals in low- and middle-income countries (LMICs) is limited, especially for SSA. Egger et al. (2021) analyze phone survey data collected during April-June 2020 in nine LMICs[2], including nationally representative samples for seven countries, for which they estimate that 25 to 87% of households lost income and 29 to 49% experienced a loss of employment. Josephson et al. (2021) analyze the early socio-economic impacts of the pandemic in Ethiopia, Malawi, Nigeria and Uganda, where they estimate that 77% of the population lost income during the pandemic, while 60% of the adult population experienced either moderate or severe food insecurity.

Regarding the labor market impacts of the pandemic, the International Labour Organization (ILO) estimates that working hours in SSA declined by 7.3 percent in 2020.[3] The estimated working hour losses in Nigeria and Ethiopia, the two most populous countries in Africa, were 9.0 and 8.5 percent. For virtually all countries in Sub-Saharan Africa, however, the ILO estimates are not based on survey data, but are extrapolated from Google Community Mobility Reports and the Oxford Stringency Index (ILO, 2021). However, high frequency economic data are available for several African countries. To aid this effort and to inform policies intended to mitigate the effects of the pandemic. For 12 SSA countries with high frequency phone survey data available, Kugler et al. (2021) and Khamis et al. (2021a) document that 24 percent of workers stopped working in the period April-July 2020, ranging from 8% in Madagascar to 62% in Kenya. Kugler et al. (2021) further show that job loss in SSA was higher among women, young workers, highly educated workers, and urban workers, with a particularly significant urban/rural divide.

In this paper, we use high frequency phone survey data from Ethiopia, Malawi, Nigeria, and Uganda to analyze the impacts of the COVID-19 crisis on work (including wage employment, self-employment, and farm work) and income, as well as heterogeneity by gender, family composition, education, age, pre-COVID-19 industry of work, and between the rural and urban sector. These four countries represent 34 percent of the Sub-Saharan Africa population and have pre-existing face-to-face panel surveys from 2010 to 2019, which were used as a sample frame for the High-Frequency Phone Surveys (HFPS). The data allow us track the employment of respondents who were working before the pandemic and analyze individual level indicators, such as job loss and re-employment. We analyze both immediate impacts, during the first few months of the pandemic, as well as medium-run impacts up to February/March 2021.

We find significant inequalities in the labor market impacts of the COVID-19 pandemic. During the first months of the pandemic, women were more likely to lose their job than men and job loss was concentrated among young respondents and in urban areas. Our evidence suggests that the disproportionate job loss among women was not, as one might assume, primarily driven by increased childcare demands related to school closures. In urban areas, women with children age 0-4 were disproportionately affected, but not women with school-age children.

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[2] In Africa (Burkina Faso, Ghana, Kenya, Rwanda, Sierra Leone), Asia (Bangladesh, Nepal, Philippines), and Latin America (Colombia).

[3] This indicator represents the percentage of hours lost compared to the baseline (the latest pre-crisis quarter, i.e., the 4th quarter of 2019, seasonally adjusted), adjusting for population aged 15-64 (ILO 2021)

Assessing the impacts on the labor market up to February/March 2021, we find no significant gender, age, or rural/urban differences in job loss. Rather, education appears to be the key predictor of job status, with the least educated respondents being the most likely to be jobless in early 2021.

Regarding income changes in the first months of the pandemic, we find that urban households and households with children were more likely to lose income, while older household heads and tertiary education are associated with a significantly lower probability of income loss. Furthermore, income from wages was more secure than income from non-farm enterprises (NFE), and female headed households were more likely to lose NFE income than male headed households. Analysis of income loss up to early 2021 in Nigeria and Uganda shows that NFE income as well as income from domestic remittances were the most vulnerable sources of income in the medium term.

Our analysis complements existing evidence on the proportion and number of households in low-income countries affected by income loss and food insecurity during the pandemic (e.g., Egger et al. 2021, Josephson et al. 2021). This complements previously documented changes in employment rates in developing countries during the first half year of the pandemic (Kugler et al. 2021, Khamis et al. 2021a, Leyva and Urrutia 2022), and up to early 2021 (Khamis et al. 2021b, Alfonsi et al. 2022), as well as a vast body of research into the labor market impacts in high-income countries (Angelucci et al. 2020, Bartik et al. 2020 on the U.S., Farré et al. 2020 on Spain, among others).

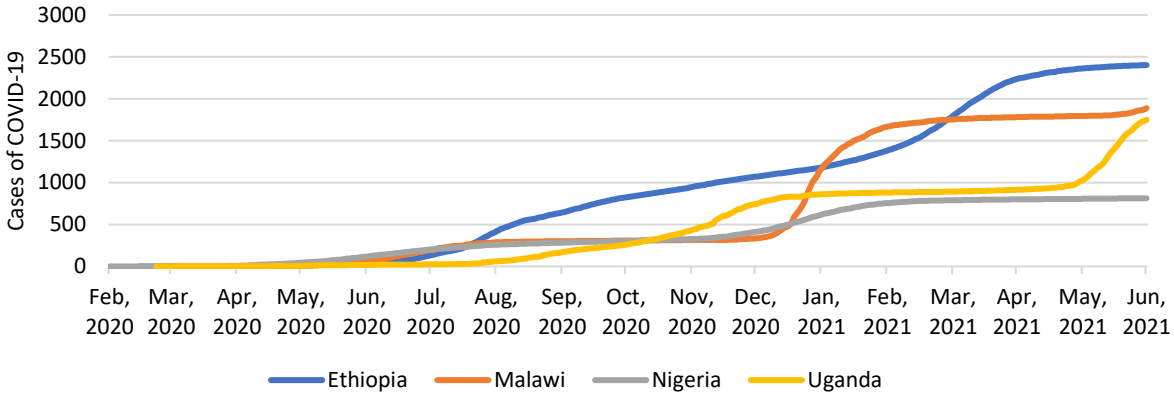
The rest of the paper is organized as follows: section 2 discusses the COVID-19 pandemic trends in Ethiopia, Malawi, Nigeria, and Uganda. Section 3 describes the data and descriptive statistics. Section 4 presents the methodology and results on labor outcomes in the first months of the pandemic as well as one year into the pandemic. Section 5 discusses the methodology and results on inequalities in impacts on household income. Section 6 concludes.

2. COVID-19 and government measures in Ethiopia, Malawi, Nigeria, and Uganda

On December 31st, 2019, China reported a cluster of cases of pneumonias of unknown cause in Wuhan, and subsequently identified a novel coronavirus (WHO, 2020). On January 13th, 2020, Thailand confirmed and reported the first case of the new disease, called COVID-19, outside China and the World Health Organization warned about a possible wider outbreak (WHO, 2020). On February 14th, 2020 the first case in Africa was confirmed: a person from Egypt who had contact with someone who had recently traveled to China, and about week later, nine countries from Africa reported cases, including Nigeria (Loembé et al., 2020). On March 11th, 2020, the WHO officially classified the COVID-19 outbreak as a pandemic and most countries began to impose restrictions and mitigation measures to prevent, and at the very least control, the spread of the virus (WHO, 2020).

Ethiopia reported 0.009 cases per million population on March 13th, 2020. However, in June 2020, the virus began to spread at an alarming rate (see Figure 1), reaching 2,402 cases per million population by the end of June 2021. In Malawi, the outbreak started a little later, in April 2020, with confirmed cases slowly rising before reaching 344.1 per million population by the end of 2020 and escalating in in early 2021. Nigeria had reported 0.005 cases per million population by the end of February 2020 and like Malawi, this number had reached 465 per million population by the end of 2020. However, in Nigeria, cases grew relatively slowly during the first half of 2021. Uganda had only a few confirmed cases until mid-August 2020, when cases began to rise, reaching 810.5 reported cases per million population by the end of the year. In the course of 2021, Uganda experienced an uptick in infections reaching 1,748.5 cases per million population by the end of June.

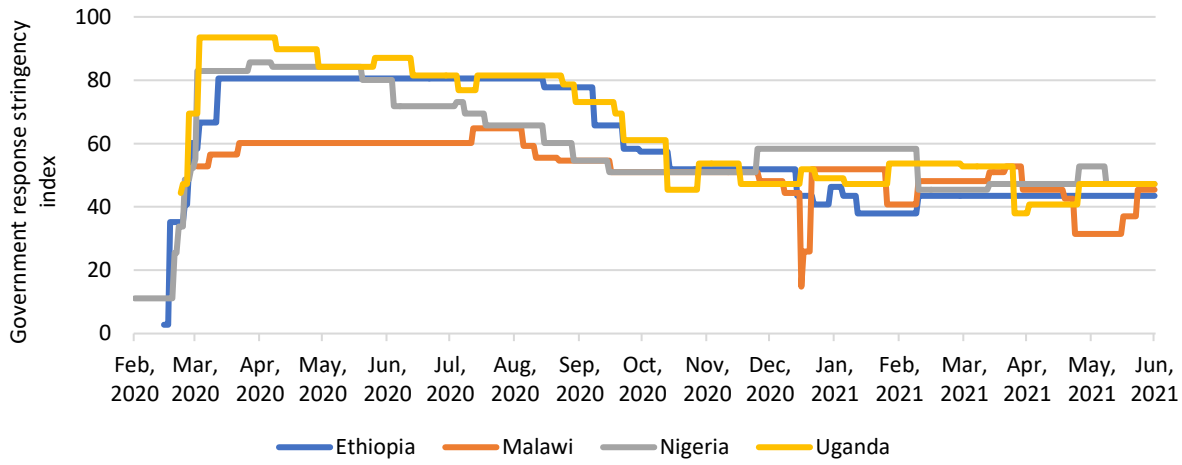
Figure 1: Total cases of COVID-19 per million population



Source: Our World in Data (2021)

To mitigate the spread of COVID-19, countries around the world introduced lockdown measures and Ethiopia, Malawi, Nigeria, and Uganda were no exception. Appendix B describes the government responses in each country. Figure 2 shows the Oxford's COVID-19 Government Response Stringency Index[4], a composite measure based on nine response indicators, which include school closures, workplace closures and travel bans, rescaled to a value from 0 to 100 (100 = strictest)[5] (Thomas, et al., 2020).

Figure 2: Government response stringency index



Source: Oxford COVID-19 Government Response Tracker (2021)

[4] The COVID-19 Government Response Stringency Index is calculated by the Oxford COVID-19 Government Response Tracker (OxCGRT), which collects publicly available information on 20 indicators of policy responses that governments have taken to respond to the pandemic, such as school closures and travel restrictions. It includes information on 180 countries. See more here: https://www.bsg.ox.ac.uk/research/research-projects/covid-19-government-response-tracker

[5] The nine indicators included are the following: (1) School closings, (2) Workplace closings, (3) Cancelling public events, (4) Restrictions on gatherings, (5) Closing of public transport, (6) Stay at home requirements, (7) Restrictions on internal movement, (8) International travel controls, and (9) Presence of public information campaigns. More details about the methodology can be found here: https://www.bsg.ox.ac.uk/sites/default/files/2020-12/BSG-WP-2020-032-v10.pdf

All four countries had implemented lockdown measures by the end of March 2020, however, the levels of stringency varied across countries. Malawi had the least stringent measures, as the government suggested that people stay home but did not implement a full lockdown, and public transportation was still running as usual throughout 2020. Uganda had the strictest measures, while Nigeria started with stringent measures, but eased restrictions relatively early.

In each of the four countries, the government took steps to support citizens through new or existing cash transfer or public works programs. An example is seen in the expansion of social programs, frontloading payments, and supporting in-kind food distribution programs (Gentilini et al. 2021). Job protection or business support policies were very limited, especially in comparison to similar programs implemented in high-income countries. This is due to the informal nature of the majority of jobs and businesses in these economies. In a study of households' coping strategies between April and September 2020 in the same four countries, Furbush et al. (2021) show that households mostly relied on savings and reduced food consumption to cope with health and economic shocks. Very few households reported receiving any kind of social assistance. Only in Uganda, only every fourth household reported received assistance (mostly in-kind) by August 2020.

3. Data and Descriptive Statistics

Our analysis combines Living Standards Measurement Study Integrated Surveys on Agriculture (LSMS-ISA) pre-COVID-19 surveys with several rounds of HFPSconducted during the pandemic in Nigeria, Ethiopia, Malawi, and Uganda. In this section, we describe the data sources and present summary statistics of key employment and income indicators.

LSMS-ISA pre-COVID-19 surveys

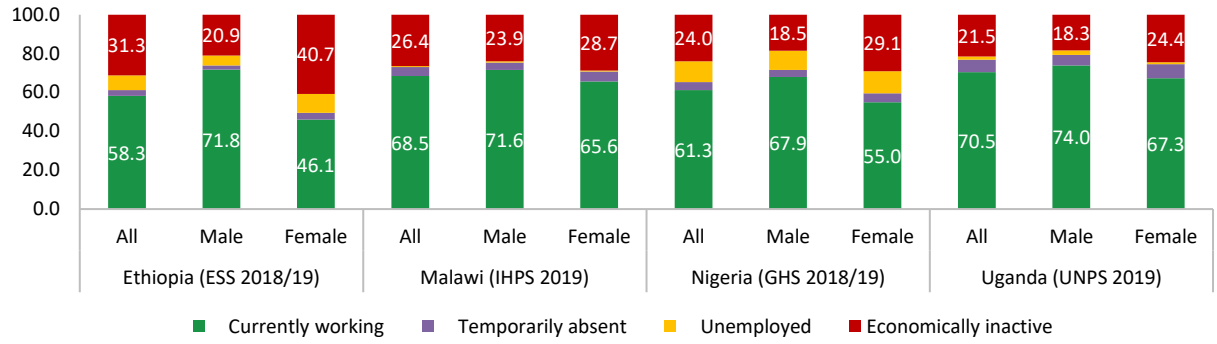
The LSMS-ISA project is an initiative funded by the Bill and Melinda Gates Foundation (BMGF) that supports governments in eight African countries: Ethiopia, Malawi, Mali, Niger, Nigeria, Tanzania, Uganda, and Burkina Faso. The goal is to generate several rounds of nationally representative panel surveys with a multi-topic approach, designed to improve the understanding of the links between agriculture, socioeconomic status, and non-farm income activities. This paper uses data from the latest rounds of LSMS-ISA surveys from four countries: Ethiopia (September/December 2018 and June/August 2019), Malawi (April 2019 to March 2020), Nigeria (July/August 2018 and January/February2019), and Uganda (March 2019 to February 2020).

In particular, we use respondents' industry of work from the LSMS-ISA data to complement the HFPS data for our analysis of the labor market impacts of COVID-19. Here, we also summarize the LSMS-ISA data on employment status disaggregated by gender to describe the pre-COVID-19 labor market in each of the four countries.

The pre-COVID-19 LSMS-ISA surveys show that labor force participation was between 58% and 70% before the onset of the pandemic (Figure 3); participation being highest in Uganda and lowest in Ethiopia. In all four countries, the labor force participation of women was below that of men and the gender difference was largest in Ethiopia, with 20% of men and 40% of women economically inactive.

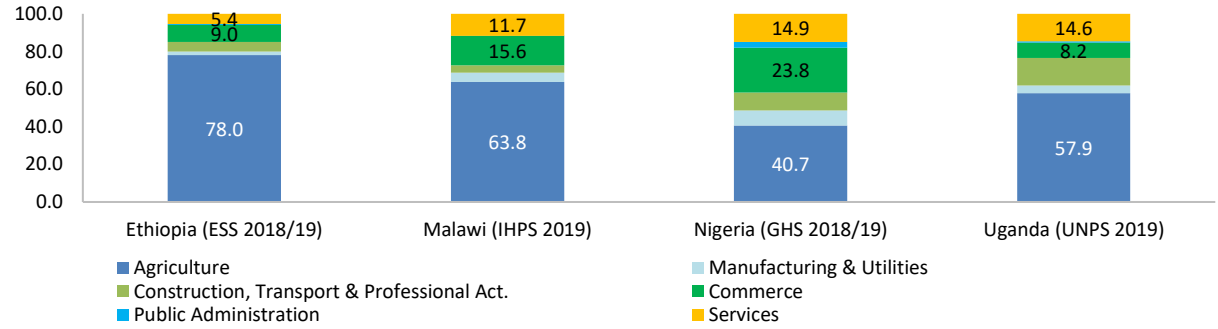
In all four countries, a large share of the working population is employed in the agricultural sector. Before the pandemic, Nigeria had the most diverse workforce, with four out of ten workers in the agricultural sector, and two out of ten in commerce (Figure 4). In Ethiopia, almost eight out of ten workers were in agriculture.

Figure 3: Economically active and inactive population by sex (% of population 15-64 years old)



Source: Pre-COVID-19 face-to-face LSMS-ISA surveys.

Figure 4: Working respondents by economic sector (% of population 15-64 years old currently working)



Source: pre-COVID-19 face-to-face LSMS-ISA surveys.

High-Frequency Phone Surveys

We use data from HFPS in Ethiopia, Malawi, Nigeria, and Uganda. The sampling frame for these phone surveys was the most recent nationally representative LSMS-ISA-supported national longitudinal household survey. This enables a methodologically sound comparison with the pre-COVID-19 survey data. We chose these four countries because the latest face-to-face survey was conducted in 2019.

These surveys have been designed to track the social and economic implications, as well as household behavioral responses to the pandemic, with sections on Knowledge, Behavior, Access to Services, Employment, Income Loss, Food Security, etc. The LSMS-ISA COVID-19 HFPS were implemented in Ethiopia, Malawi, Nigeria, and Uganda. In each country, the aim has been to conduct monthly phone interviews over a period of 12 months.

Phone surveys have the advantage of creating opportunities and learning experiences for the direct and timely analysis of developments in dynamic labor markets, however, there are several drawbacks as well. These include (i) selection bias since households that do not own a phone are automatically excluded; (ii) non-response bias that may arise particularly in longitudinal studies; (iii) heterogeneity in phone coverage across population groups and regions; and (iv) a limited scope for verifying the accuracy of answers. Phone surveys face restrictions with respect to the questionnaire design; since interview times are limited, phone surveys must therefore rely on short, simple questions with similarly short response options. In addition, interviews have to rely on data provided by one representative household member, usually the "household head", because it will be cumbersome to try to interview all household members. These drawbacks need to be actively considered when implementing the surveys and analyzing the data collected. However, these

potential issues also need to be weighed against the alternative of not conducting interviews during the crisis.

For each of the four countries, Appendix Table A1 presents characteristics of the sample of households included in the last face-to-face survey and compares it to the subsample of households that were included in the first round of the HFPS. The samples are similar in terms of household and household head characteristics, though there are some differences in household head education and in asset ownership, especially in Ethiopia. Furthermore, as Kugler et al. (2021) describe, household heads and their spouses are overrepresented relative to other household members in the HFPS and as a consequence, employment rates in the sample are higher than in the full population when only one respondent is interviewed. Using different weighting strategies to correct for potential bias, Kugler et al. (2021) show that sampling bias is of similar magnitude across gender, education, and urban/rural groups, so that the HFPS can accurately capture inequalities in employment impacts between these groups, which is the focus of our analyses. Still, in some countries, given that most of the respondents are heads of household, the HFPS may significantly overestimate employment for young workers compared to adults, thereby underestimating the employment penalty faced by youth that are not head of households. This is important to keep in mind as it can affect our estimates of inequalities by age groups. In summary, our results are best seen as reflecting the situation of household heads, rather than the general working age population in these countries.

For the analysis in this paper, we use HFPS data collected between April 2020 and March 2021. Due to differences in the timing of the surveys, this period covers 10 rounds for Ethiopia and Nigeria, 8 rounds for Malawi, and 5 rounds for Uganda. The dates of data collection in each country, sample size and average stringency index for each round are presented in Appendix Table A2.

Variables and descriptive statistics

Using the LSMS-ISA and HFPS data we construct several indicators to analyze early-phase and one-year labor market impacts and income loss. Descriptive statistics on all outcome indicators and household and respondent demographics are reported in Appendix tables A3-A4.

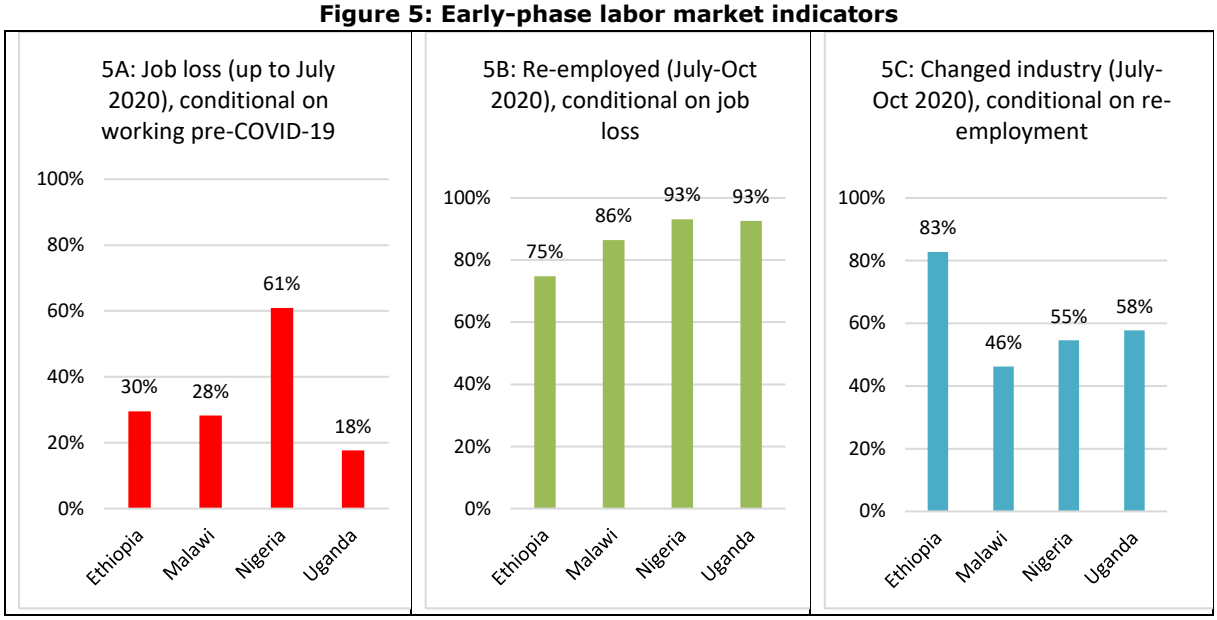
To measure the early-phase labor market impacts of the COVID-19 pandemic, we analyze three indicators: job loss, re-employment, and change of industry. Job loss captures whether respondents who were working before the pandemic (as self-reported, retrospectively, during the first HFPS round) lost their job between the start of the pandemic and July 2020. This is measured using all HPFS rounds implemented up to July 2020.[6] Note that job loss includes the loss of paid employment, but also loss of other types of work, including self-employment and family farming. For the sub-sample of respondents who lost their job during this period, the re-employment indicator captures whether they were working during at least one of the HFPS rounds between July and October 2020. And finally, for those who were re-employed, we construct an indicator for "changing industry" by comparing their industry of work in the last pre-COVID-19 face-to-face LSMS-ISA survey with their industry of work upon re-employment.[7] We distinguish between agriculture (including mining); manufacturing and utilities; construction, transport and communication, financial and business services; commerce; public administration; and other services.

The early-phase labor market indicators are summarized in Table A3 and Figure 5. Among respondents who worked pre-COVID-19 (81% of all respondents), on average 34% lost their job in the first four months of the pandemic. The rate of job loss was much higher in Nigeria (61%) compared to the other countries (18 to 30%). Re-employment was quite high in each country, with 75 to 93% entering work again at some point between July and October 2020. But a large share of re-employment involved a change in industry, especially in Ethiopia. These rates are particularly high given the fact that we distinguish only six industries.

[6] In each HFPS round, respondents were asked whether they worked during the past week. In round 1, respondents who worked at the time of the survey were *not* asked about their pre-pandemic employment status, so we assume that everyone employed at the time of the HFPS first round was also working before the pandemic. HFPS data for Latin America show that this assumption has minor effects on the job loss estimates, because few people began working immediately after the pandemic started (Khamis et al. 2021a).

For the four countries, 38 percent of respondents were re-employed in an industry that is different from the one in which they were working prior to the onset of the pandemic.

Figure 5: Early-phase labor market indicators



Source: Figure 5A is based on HFPS R1-3 for Ethiopia and Nigeria, R1-2 for Malawi, and R1 for Uganda. Figures 5B and 5C are based on HFPS R1-6 for Ethiopia and Nigeria, R1-4 for Malawi, R1-3 for Uganda. Figure 5C also uses pre-COVID LSMS-ISA surveys for industry of work.

To analyze the medium-run impacts on the labor market, we construct 3 additional indicators. First, one-year job loss captures whether the respondent was jobless at any point between the start of the pandemic and February/March 2021, based on all available HFPS rounds up to March 2021. The second indicator is joblessness in February/March 2021, which captures whether the respondent was jobless a year after the onset of the pandemic. And finally, we measure the total number of months without work during the first year of the pandemic.[8] As for the early-phase job loss indicator, the one-year indicators are all conditional on the respondent working before the pandemic, as self-reported in the first HFPS round. Although it is less clear to what extent the one-year indicators capture the impacts of the pandemic, as opposed to usual (seasonal) fluctuations in work, they allow us to assess how the labor market developed during the first full year of the pandemic.

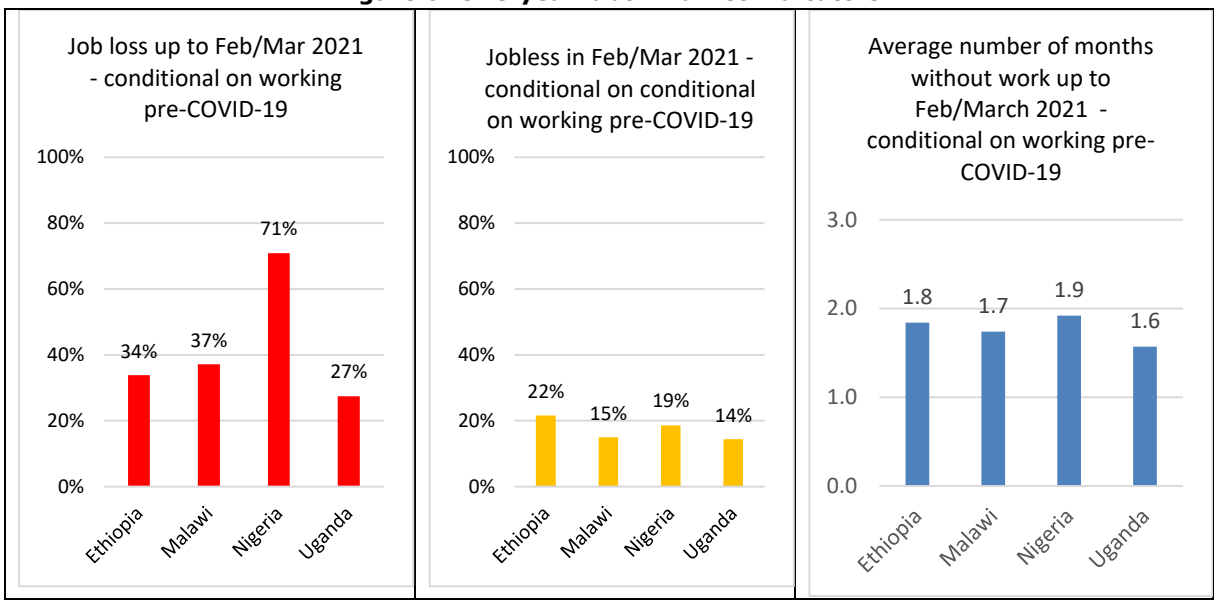
An important caveat is that there was substantial attrition in the HFPS in all countries. For the one-year labor market indicators we use only the sub-sample of respondents who participated in all of the HFPS rounds up to March 2021. In this balanced panel, we lose 52 percent of respondents from the early phase job loss sample (i.e., those surveyed in R1 who were working before the pandemic). However, attrition is not significantly related to early-phase job loss or income loss (see Appendix Table A5), which is somewhat reassuring that the one-year labor market indicators are not biased due to selective attrition. We do see that women - particularly women with young children – are less likely to be included in the medium-run sample, as well as younger respondents and respondents in households with multiple income sources. Summary statistics for the medium-run sample are reported in appendix table A4.

Figure 6 summarizes the one-year labor market indicators. Job loss over the full year (Figure 6A) ranged between 30 and 73%. In all countries except Ethiopia, the one-year rate of job loss is about ten percentage points higher than early-phase job loss. This indicates that while most job loss occurred in those first few months of the pandemic, it continued after July 2020. By February/March 2021, 14 to 23 percent of

[8] Unlike in Ethiopia and Nigeria where the surveys were conducted every month, in Malawi and Uganda the surveys were not conducted as frequently. Therefore, in Malawi and Uganda we used the rounds that were closer in timing to the Nigeria and Ethiopia surveys for months when there was no data collection. This assumption was applied for May 2020 in Malawi, and for May 2020 and July 2020 in Uganda.

respondents who were working pre-COVID-19 were out of work (Figure 6B) and on average, pre-COVID-19 workers were jobless for around 2 months during the first year of the pandemic (Figure 6C).

Figure 6: One-year labor market indicators



Source: Job loss and months without work are based on HFPS R1-10 for Ethiopia and Nigeria, R1-8 for Malawi, R1-11 for Nigeria and R1-5 for Uganda. Joblessness is based on the latest of these rounds per country.

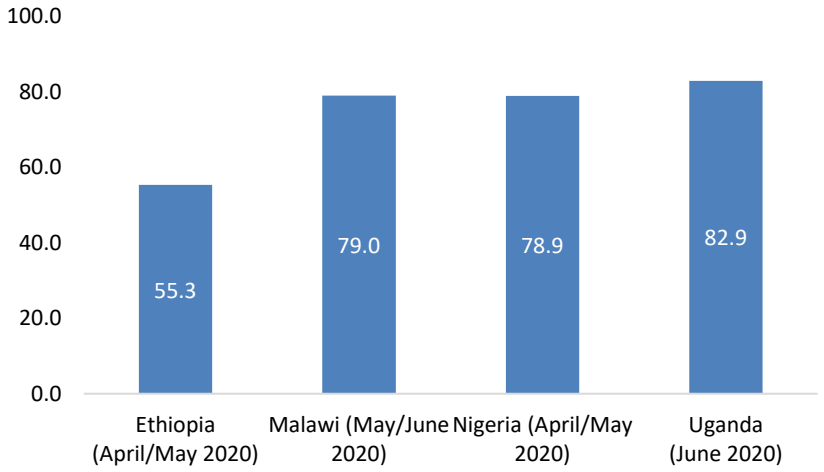
In addition to work status, the HFPS collected data on income loss. In the first HFPS round, respondents were asked whether household income had increased, stayed the same, or decreased since the onset of the pandemic. Figure 7 summarizes these results and descriptive statistics are included in appendix table A3. Approximately 80% of the households in Malawi, Nigeria, and Uganda and 46% in Ethiopia, reported a decrease in their total income following the COVID-19 outbreak. Around 40% of households in Ethiopia lost income from farming, compared to 60 to 73% in the other countries. The share of households that experienced a decrease in income from non-farming family enterprises (NFE) surpassed 80% in all the countries analyzed. Finally, almost 60% of households reported a reduction in wage income in Malawi, Nigeria, and Uganda, compared to 34% in Ethiopia. These numbers clearly indicate that all types of income sources were heavily affected and that NFE income was particularly vulnerable.

While respondents were asked to compare current and pre-COVID-19 income in the first HFPS round; in subsequent rounds, they were only asked to compare their current household income to income at the time of the previous interview, but not to income before the pandemic.[9] Two exceptions are Nigeria's HFPS Round 9 (in January 2021), which asked households to compare their income in the period August 2020-January 2021 to their income in the period August 2019-January 2020; and Uganda's HFPS Round 5 (in February 2021), when households were asked to compare their current monthly income to their average monthly income in the year before COVID-19. We use these data to analyze inequality in income loss over the one-year period after pandemic outbreak in Nigeria and Uganda.

[9] Furbush et al. (2021) show that the proportion of households reporting income loss relative to the previous HFPS round (typically about a month ago) declined in more recent HPFS rounds in the four countries that we analyze. They show that over time, NFE income losses remained most common and by August 2020, more than 50% of households still reported losing NFE income compared to the previous phone survey (ibid.).

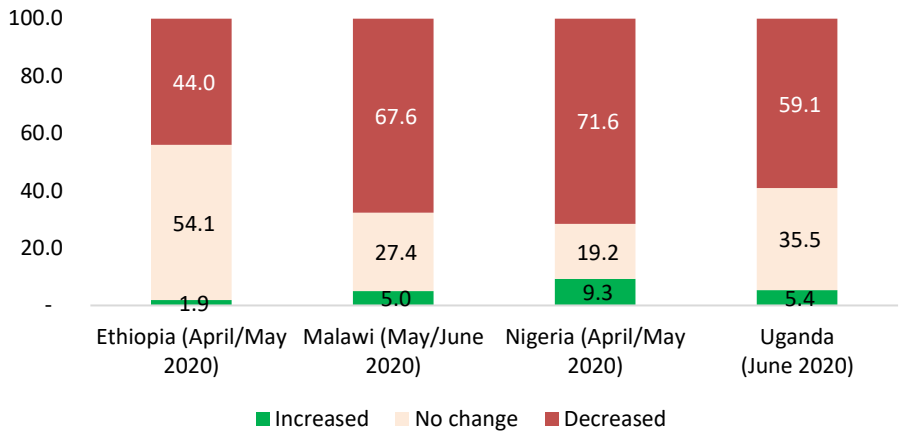
Figure 7: Changes in income after outbreak

7A: Share of households with a loss of income after outbreak



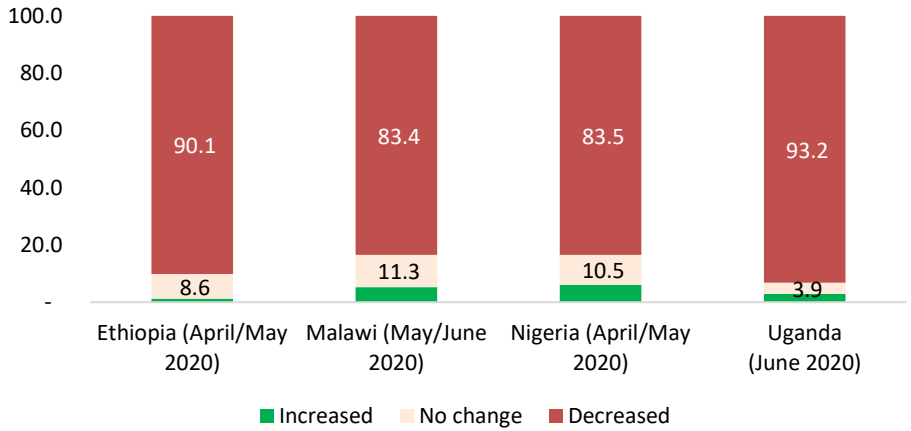
7B: Household farming, livestock, or fishing income

(as % of HHs with this source of income in the last 12 months)



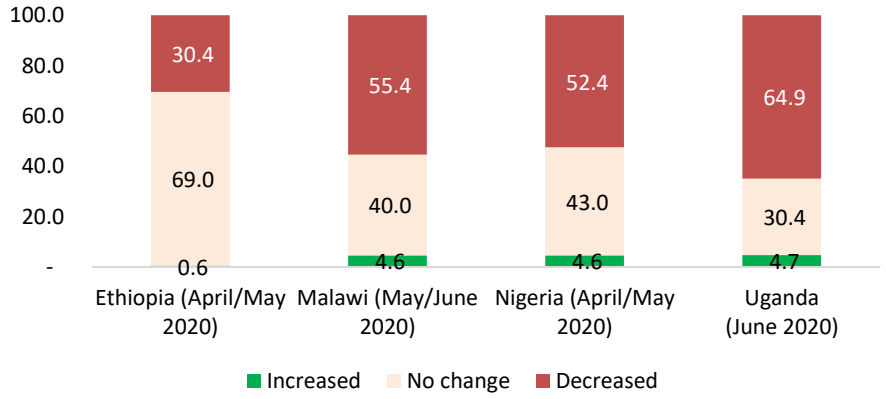
7C: Non-farm family business income

(as % of HHs with this source of income in the last 12 months)



7D: Wage employment income

(as % of HHs with this source of income in the last 12 months)



Source: HFPS Round 1.

4. Inequality in labor market impacts

Methodology

To shed light on how different groups were affected in terms of employment, we test whether changes in the early-phase and long-run labor market outcomes described above differ across types of workers and households. First, we regress the relevant work indicator on the respondent's gender, age, education level, family composition[10], urban vs rural location, and income diversification (whether the household had income from more than one type of source). We then additionally control for pre-COVID-19 industry of work, which is taken from the most recent face-to-face LSMS-ISA survey.

As described in the previous section, the samples are restricted to respondents who were working before the COVID-19 outbreak. To assess common patterns, we run OLS regressions on the pooled sample of respondents across the four countries, controlling for country fixed effects and with standard errors clustered by enumeration area. Estimation results for country-specific and rural and urban sub-samples are reported in Appendix Tables A6 to A11. In what follows, we first present and discuss results for early-phase labor market impacts, and then turn to the one-year labor market impacts.

Results: early-phase impacts

Estimation results for the early-phase labor market outcomes are reported in Table 1. In the early phase of the pandemic, women were significantly more likely to lose their job than men (column 1). This finding is in line with the gender difference in employment trends across 40 developing countries documented by Kugler et al. (2021), although the disadvantage for women is more pronounced in our sample.[11] Conditional on industry (column 2), the gender gap is slightly larger, suggesting it is driven by gender differences in job loss within (aggregate) industries. Again, this is in line with findings for other developing countries (Kugler et al. 2021).[12] The gender gap in job loss is driven by urban areas (Table A6), while there is no significant gender difference in the rural sample.[13]

Looking at the interaction terms of gender and children in column 1, we find no evidence that higher job loss among women is related to the presence of children. If anything, the gender gap in job loss is smaller among respondents with school-age children, suggesting job loss among women was not primarily driven by increased child-care demands related to school closures. In the urban sub-sample (Table A6), however, women with children age 0-4 were about 11 percentage points more likely to lose their job than men with young children. This seems to be driven mainly by the Nigerian sample. It is possible that care for very young children was most difficult to combine with work in urban areas, while formal or informal childcare was limited during lockdowns. It could also be that urban women were concentrated in specific activities that were more affected by lock-downs, such as hair-dressing and hospitality, which are not captured by our aggregate industries.

The disadvantage of female respondents in terms of job loss was further aggravated by a lower probability of re-employment (Table 1, columns 3-4). By October 2020, women were 14 to 20 percentage points less likely than men to be re-employed after job loss. Again, this gender gap is smaller among respondents

[10] The presence of children age 0-4 and age 5-18, as well as interaction terms with gender

[11] Other studies have also found disproportionate impacts on female workers. For example, Dang and Nguyen (2021) for China, Italy, UK and US; Farré et al. (2021) for Spain; and Casale and Posel (2021) for South Africa. Bluedorn et al. (2021) find that women's employment rates declined faster than men's in many advanced and emerging economies, although the gender gaps typically disappeared after three to six months. Likewise, Lee et al. (2021) show that in the US, the negative impact on employment was larger for women, but the gender gap had disappeared by November 2020.

[12] Alfonsi et al. (2022) show that differential impacts across detailed sectors (such as hairdressing, tailoring, and plumbing) account for a large share of the gender gap in job loss among highly skilled young urban workers in Uganda.

[13] In additional analyses, we found not effect of employment status (unpaid or self-employed worker versus employee) on job loss once we control for pre-COVID-19 industry. Including employment status does not affect the estimated gender gap.

with school-age children. Re-employed women were also much less likely to return to a different industry than re-employed men (columns 5-6). Women's lower mobility may be one of the reasons they are less likely to be re-employed at all. The gender gaps in re-employment and change of industry are also driven by the urban sub-sample (Tables A7 and A8).

We find that age is associated with a lower probability of job loss. As described above, the HFPS samples are more likely to overestimate employment among young people relative to older people. We are therefore likely underestimating the relative disadvantage of younger respondents. Older workers were less likely to be re-employed and to change industry, but these age effects are smaller and statistically insignificant once we consider the pre-COVID-19 industry.

We find no clear education gradient in early phase labor market outcomes. Respondents with a tertiary education were more likely to report job loss than those with no education or less than primary education. The association is smaller and insignificant once we control for the pre-COVID-19 industry, suggesting that highly educated workers were more affected due to their industries being harder hit (columns 1-2).[14]

There are strong rural-urban differences. Urban respondents were 6 to 9 percentage points more likely than rural respondents to lose their jobs and significantly less likely to be re-employed. These findings are similar if we control for the pre-COVID-19 industry and hence cannot be explained by relatively limited job losses in agriculture, which dominates in rural areas. The stronger impact on jobs in urban areas is in line with descriptive patterns across Sub-Saharan Africa as reported in Kugler et al. (2021, Table 3), but is more pronounced in our sample. It is driven by the Nigerian and Ethiopian sample (Tables A6 and A7).

Income diversification is negatively related to job loss, suggesting that the opportunity to reallocate work time to different economic activities undertaken by household members helped ensure employment. It is positively related to changing industry among those re-employed. Finally, workers in agriculture and commerce were least likely to report job loss, while manufacturing & utilities and public administration workers were most likely to report job loss (Table 1, column 2).[15] The pre-COVID-19 industry is not significantly related to re-employment, but agricultural workers were least likely to return to a different industry.

Results: one-year impacts

In this section we analyze heterogeneity in labor market outcomes beyond the first few months of the pandemic. The impacts of the pandemic may have evolved differently during the year, as governments lifted or adjusted restrictions, and as people (and their farms and businesses) adapted to the situation. The Nigerian government gradually lifted restrictions between June and October 2020, while most restrictions in Ethiopia and Uganda remained until October. By mid-November, restrictions in all countries were at their lowest level since April 2020 and they did not increase much again until June 2021. Nevertheless, job losses continued after July 2020 in Malawi, Nigeria, and Uganda (see Figure 6).

There is no significant association between gender, age, or rural/urban area and one-year job loss (Table 2, columns 1-2), nor with the probability of being jobless in February/March 2021 (columns 3-4). While coefficient signs in the columns 1 and 2 are the same as for early-phase job loss, they are not statistically significant. We also find no significant gender gap in the urban sub-sample (Tables A9 to A11). Urban respondents were jobless for around 0.2 additional months compared to rural respondents, but the

[14] There is similar reduction in the coefficient on tertiary education when we control for pre-COVID-19 employment status, in the smaller sample for which we have this information (results available from the authors). Hence the concentration in wage employment and in particular industries both account for the disproportionately job loss among highly educated workers.

[15] We use industry of work from the pre-COVID-19 face-to-face survey because the HFPS in Ethiopia did not collect data on industry of work. This means the sample is reduced to respondents who reported, in the HFPS, that they were working pre-COVID-19 AND who were working in the last face-to-face survey. Results in column 1 are similar if we limit the analysis to this more restrictive sample.

difference gets smaller and insignificant once we condition on pre-COVID-19 industry of work (columns 5-6).

An important result in Table 2 is that education is the key predictor of job status in February/March 2021 (columns 3-4): conditional on working pre-COVID-19, the least educated respondents are four to seven percentage points more likely to be jobless a year later compared to those with primary or higher education.[16] This is different from the early-phase results, where we found some evidence for a positive relationship between education and job loss. The education effects are similar between columns 3 and 4, indicating they are not driven by differential impacts across industries. Sub-sample results (Table A10) show that the education gradient is strongest in urban areas.

Overall, we find that disparities in the early-phase labor market impacts by gender, age, and rural/urban smoothed out after October 2020. Instead, education appears as the main dimension of inequality a year after the start of the pandemic, when joblessness was significantly higher among the least educated individuals.

[16] If we include, in columns 3-4, all respondents in the February/March HFPS round who were working pre-COVID-19 (instead of the subsample of respondents who participated in *all* HFPS rounds up to Feb/March 2021), the results are very similar (available from the authors).

Table 1: Early-phase labor market impacts

	JOB LOSS April-July 2020		RE-EMPLOYMENT July-Oct 2020		CHANGE INDUSTRY July-Oct 2020	
	(1)	(2)	(3)	(4)	(5)	(6)
Respondent is female	0.0821***	0.0995***	-0.197***	-0.144***	-0.123**	-0.104**
	(0.0239)	(0.0294)	(0.0533)	(0.0516)	(0.0567)	(0.0517)
Age	-0.000866**	-0.00134***	-0.00272***	-0.00146	-0.00239*	-0.00165
	(0.000438)	(0.000490)	(0.000866)	(0.000935)	(0.00127)	(0.00116)
Primary education	-0.00513	-0.0224	-0.0278	-0.0500**	-0.0734*	-0.130***
	(0.0155)	(0.0185)	(0.0213)	(0.0226)	(0.0429)	(0.0382)
Secondary education	0.0362	0.0128	-0.0236	-0.0296	0.00901	-0.114***
	(0.0225)	(0.0259)	(0.0224)	(0.0233)	(0.0477)	(0.0405)
Tertiary education	0.0620**	0.0407	-0.0216	-0.0310	0.144***	-0.0330
	(0.0256)	(0.0317)	(0.0262)	(0.0245)	(0.0448)	(0.0424)
Urban	0.0887***	0.0655***	-0.0697***	-0.0529***	0.0785**	-0.00334
	(0.0163)	(0.0184)	(0.0158)	(0.0180)	(0.0366)	(0.0380)
Children 0-4 present	-0.00387	-0.0122	0.0268*	0.0332*	0.0137	0.0212
	(0.0148)	(0.0178)	(0.0159)	(0.0182)	(0.0329)	(0.0305)
Female*Children 0-4	0.0218	0.00113	-0.0224	-0.0270	-0.0495	-0.0687
	(0.0280)	(0.0325)	(0.0414)	(0.0420)	(0.0607)	(0.0583)
Children 5-18 present	0.0314*	0.0444*	-0.0176	-0.0219	-0.00253	0.0138
	(0.0173)	(0.0227)	(0.0202)	(0.0229)	(0.0391)	(0.0363)
Female*Children 5-18	-0.0492	-0.0686*	0.128***	0.102**	0.0287	0.0221
	(0.0334)	(0.0385)	(0.0477)	(0.0501)	(0.0599)	(0.0559)
Income diversification	-0.0451***	-0.0434***	0.0226	0.00501	0.0717**	0.0471*
	(0.0162)	(0.0165)	(0.0169)	(0.0167)	(0.0300)	(0.0276)
Manufacturing & Utilities		0.0905***		0.00411		0.595***
		(0.0318)		(0.0391)		(0.0492)
Construction, Transport & Professional services		0.0480*		0.00594		0.372***
		(0.0277)		(0.0266)		(0.0558)
Commerce		0.0307		0.0163		0.238***
		(0.0193)		(0.0276)		(0.0526)
Public Administration		0.0818*		0.0368		0.363***
		(0.0480)		(0.0382)		(0.0729)
Other services		0.0575***		0.00441		0.429***
		(0.0201)		(0.0262)		(0.0449)
Constant	0.574***	0.571***	1.120***	1.072***	0.578***	0.390***
	(0.0300)	(0.0346)	(0.0548)	(0.0603)	(0.0905)	(0.0846)
Observations	5,193	3,860	1,755	1,299	1,158	1,158
R-squared	0.132	0.150	0.114	0.116	0.107	0.234
Sample mean dep. Var.						

Note: OLS estimation, standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. All estimations include country fixed effects. Job loss is captured for the period between April to July 2020 (R1-3 for Ethiopia and Nigeria, R1-2 for Malawi, and R1 for Uganda). It takes the value of one if the respondent reported that they did not work at the time of the survey but was working pre-pandemic. For re-employment and changes in industries we analyze data up to October 2020 (R1-6 for Ethiopia and Nigeria, R1-4 for Malawi, R1-3 for Uganda).

Table 2: One-year labor market impacts

	JOB LOSS up to Feb/Mar 2021		JOBLESS in Feb/Mar 2021		MONTHS WITHOUT WORK up to Feb/Mar 2021	
	(1)	(2)	(3)	(4)	(5)	(6)
Respondent is female	0.0534	0.0484	0.0250	-0.00777	0.0212	-0.0932
	(0.0517)	(0.0521)	(0.0428)	(0.0453)	(0.227)	(0.247)
Age	-0.000768	-0.000387	0.000686	-0.000119	0.00578	0.00285
	(0.000806)	(0.000931)	(0.000774)	(0.000852)	(0.00395)	(0.00444)
Primary education	-0.0209	-0.0192	-0.0494**	-0.0606**	-0.148	-0.209
	(0.0261)	(0.0303)	(0.0230)	(0.0260)	(0.122)	(0.143)
Secondary education	0.0381	0.0326	-0.0442*	-0.0476*	-0.0730	-0.137
	(0.0296)	(0.0360)	(0.0253)	(0.0273)	(0.143)	(0.156)
Tertiary education	0.0453	0.0447	-0.0725**	-0.0647**	0.0103	-0.213
	(0.0362)	(0.0420)	(0.0287)	(0.0323)	(0.177)	(0.183)
Urban	0.0245	0.0126	-0.00390	0.00210	0.183**	0.0959
	(0.0225)	(0.0248)	(0.0162)	(0.0184)	(0.0851)	(0.104)
Children 0-4 present	0.000256	0.0117	-0.0328*	-0.0338	-0.0691	-0.0457
	(0.0193)	(0.0232)	(0.0198)	(0.0210)	(0.106)	(0.121)
Female*Children 0-4	-0.000820	-0.0149	0.0529	0.0434	0.231	0.170
	(0.0400)	(0.0499)	(0.0358)	(0.0412)	(0.184)	(0.224)
Children 5-18 present	0.00165	0.00217	-0.00548	-0.00600	-0.256**	-0.222*
	(0.0274)	(0.0287)	(0.0199)	(0.0218)	(0.123)	(0.125)
Female*Children 5-18	-0.00551	0.0322	-0.0475	-0.00729	0.138	0.294
	(0.0624)	(0.0577)	(0.0405)	(0.0442)	(0.250)	(0.270)
Income diversification	-0.0499**	-0.0499**	-0.0198	-0.00910	-0.250***	-0.224**
	(0.0224)	(0.0232)	(0.0176)	(0.0185)	(0.0949)	(0.0944)
Manufacturing & Utilities		0.0922**		0.00272		-0.0593
		(0.0406)		(0.0350)		(0.174)
Construction, Transport & Professional services		0.0833**		-0.00806		0.342**
		(0.0357)		(0.0289)		(0.165)
Commerce		0.0388		-0.0306		0.0112
		(0.0303)		(0.0274)		(0.124)
Public Administration		0.0809		-0.0476		0.0339
		(0.0594)		(0.0511)		(0.198)
Other services		0.0565*		-0.0557**		0.253*
		(0.0310)		(0.0244)		(0.146)
Constant	0.751***	0.673***	0.209***	0.240***	1.942***	1.931***
	(0.0498)	(0.0573)	(0.0495)	(0.0534)	(0.242)	(0.271)
Observations	2,459	1,993	2,446	1,984	2,459	1,993
R-squared	0.161	0.167	0.013	0.015	0.018	0.014

Note: OLS estimation, standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. All estimations include country fixed effects. Job loss is captured for the period April 2020 to February/March 2021, based on HFPS R1-10 for Ethiopia and Nigeria, R1-8 for Malawi, R1-11 for Nigeria and R1-5 for Uganda. Columns 3 and 4 use the latest of these rounds per country. Columns 5 and 6 use the same rounds as columns 1-2. Samples include only respondents who were working pre-COVID-19.

5. Inequality in impacts on household income

In addition to job loss, households' income could have been affected by reduced business activity, a decrease in working hours, or factors not directly related to employment of the respondent, such as declining remittances or job loss by a household member. In this section we analyze how household demographics and reliance on different income sources are related to the probability of households' loss of income.

Methodology

First, we regress an indicator for household income loss on gender, age, and education of the household head, rural/urban location, and the presence of children (Table 3, column 1).[17] Second, we run the same regression but also including indicators for whether the household received income from farming, non-farm enterprises, wages, or remittances, in the year before the pandemic (Table 3, column 2).[18] By comparing results from these two analyses, we can assess the extent to which differences in income sources account for heterogeneity in income loss by household demographics. Third, we estimate how household characteristics are related to the probability of income loss for each income source (family farming, non-farm enterprises, wages, remittances from within the country, and remittances from abroad), within the subsample of households receiving income from the respective source (Table 3, columns 3-7). These analyses all focus on early-phase income loss based on the pooled data from the four countries' first HPFS rounds. We then run the same models for one-year income loss, pooling the data from Nigeria's Round 9 and Uganda's Round 5 (as discussed in section 3). The results are reported in Table 4.

Results: early-phase impacts

In the early phase, urban households and households with children were more likely to lose income, while age and tertiary education of the household head are associated with a significantly lower probability of income loss (Table 3, column 1). These results are similar (in some cases a bit smaller in magnitude) when we condition on income source indicators (column 2), suggesting they are not primarily driven by differences in the types of income sources households relied on.

Income sources do matter (column 2): there is a strong negative association between income from wages and income loss, suggesting that wage employment was an important factor protecting households from income loss, as a relatively secure source of income during the early months of the pandemic. Households with NFE income, on the other hand, were most likely to lose income, while income from family farming and domestic remittances are also associated with a higher probability of income loss.

The higher probability of income loss among urban households reflects a combination of their higher likelihood of losing NFE income and wage income (columns 4 and 5), although the urban coefficient is not statistically significant in those estimations. The presence of children increases the probability of income loss across all sources (for young children) or most sources (older children), but these effects are also not statistically significant (columns 3-7). Tertiary education of the household head reduces the probability of income loss because it is associated with a 0.26 lower probability of losing wage income (column 5). The negative effect of household head age on income loss is driven by a lower probability of losing wage income and domestic remittances (columns 5 and 6). Finally, while there is no significant association between the gender of the household head and the probability of total income loss, female-headed households are significantly more likely to report a loss of NFE income (column 4).

In general, the results illustrate that inequalities in early-phase income loss varied substantially across income sources. They also confirm that inequalities early-phase individual job loss, which was concentrated among young, urban, and female workers, does not translate into the same pattern of household level income loss inequalities.

[17] Income loss is a dummy variable that takes the value of one if the household reported income loss after the pandemic outbreak during the first round of the HFPS compared with income one year prior to the interview.

[18] Appendix Table A12 reports estimation results for rural and urban subsamples and by country.

Table 3: Probability of early-phase income loss, total income and by source

	LOST INCOME	LOST INCOME	LOST FARM INCOME	LOST NFE INCOME	LOST WAGE INCOME	LOST DOM. REMITTANCES	LOST REMITT. FROM ABROAD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female household head	0.0298	0.0174	0.0188	0.0710**	-0.0516	0.0370	0.0838
	(0.0318)	(0.0325)	(0.0498)	(0.0358)	(0.0442)	(0.0485)	(0.102)
Age of household head	-0.00109***	-0.00120***	-5.38e-05	-0.00106*	-0.00229***	-0.00216**	-0.000112
	(0.000366)	(0.000368)	(0.000559)	(0.000548)	(0.000788)	(0.000861)	(0.00198)
Primary education	-0.0192	-0.0208	-0.00854	0.00187	0.0257	0.0348	-0.0155
	(0.0172)	(0.0174)	(0.0304)	(0.0189)	(0.0228)	(0.0469)	(0.0520)
Secondary education	-0.00387	0.000941	0.0404	0.0198	-0.0389	0.0320	0.0816
	(0.0194)	(0.0194)	(0.0319)	(0.0217)	(0.0288)	(0.0513)	(0.0760)
Tertiary education	-0.0959***	-0.0590***	-0.00268	0.0292	-0.256***	0.00993	-0.0411
	(0.0209)	(0.0194)	(0.0328)	(0.0276)	(0.0370)	(0.0548)	(0.0942)
Urban	0.0222*	0.0298**	-0.00484	0.0224	0.0283	-0.0607*	-0.105*
	(0.0131)	(0.0135)	(0.0218)	(0.0143)	(0.0225)	(0.0346)	(0.0550)
Children 0-4 present	0.0331***	0.0233*	0.0131	0.0105	0.0325*	0.0383	0.0386
	(0.0124)	(0.0128)	(0.0185)	(0.0170)	(0.0178)	(0.0389)	(0.0613)
Female hh head*Children 0-4	-0.0368	-0.0223	-0.0186	0.0123	0.0347	-0.120**	0.114
	(0.0270)	(0.0245)	(0.0353)	(0.0251)	(0.0495)	(0.0492)	(0.0808)
Children 5-18 present	0.0560***	0.0321**	0.0126	0.0306	-0.0168	-0.000398	0.0618
	(0.0163)	(0.0158)	(0.0242)	(0.0225)	(0.0301)	(0.0389)	(0.0854)
Female hh head*Children 5-18	0.00141	0.00701	-0.00474	-0.0443	0.0931*	0.0480	-0.101
	(0.0370)	(0.0373)	(0.0533)	(0.0390)	(0.0538)	(0.0613)	(0.103)
Had farm income during previous 12 months		0.0354**					
		(0.0165)					
Had non-farm enterprises income during previous 12 months		0.190***					
		(0.0185)					
Had wage income during previous 12 months		-0.0923***					
		(0.0114)					
Had domestic remittances during previous 12 months		0.0446**					
		(0.0175)					
Had remittances from abroad during previous 12 months		0.0378					
		(0.0257)					
Constant	0.798***	0.683***	0.700***	0.817***	0.692***	0.809***	0.592***
	(0.0288)	(0.0308)	(0.0422)	(0.0419)	(0.0577)	(0.0735)	(0.156)
Observations	6,314	6,314	3,866	2,718	2,520	997	319
R-squared	0.083	0.140	0.040	0.023	0.116	0.117	0.074

Note: OLS estimation results, standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. All estimations control for country fixed effects. Samples in col. 3-7 include only households receiving the relevant type of income before the Covid-19 outbreak. *Source*: HFPS R1.

Table 4: Probability of one-year income loss, total income and by source, Nigeria and Uganda

	LOST INCOME	LOST INCOME	LOST FARM INCOME	LOST NFE INCOME	LOST WAGE INCOME	LOST DOM. REMITTANCES	LOST REMITT. FROM ABROAD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female household head	-0.0333	-0.0342	-0.0304	-0.0920*	-0.102	-0.0738	-0.193
	(0.0388)	(0.0396)	(0.0462)	(0.0484)	(0.0728)	(0.0699)	(0.277)
Age of household head	-0.000219	-0.000727	-0.000251	-2.56e-05	-0.000550	-0.00246*	0.00151
	(0.000683)	(0.000639)	(0.000782)	(0.000841)	(0.00107)	(0.00132)	(0.00500)
Primary education	0.00353	0.00959	0.0564*	0.0275	-0.0145	-0.00280	0.0606
	(0.0244)	(0.0244)	(0.0300)	(0.0343)	(0.0712)	(0.0630)	(0.230)
Secondary education	0.0400	0.0392	0.0166	0.0737**	0.0180	-0.0334	-0.00217
	(0.0277)	(0.0283)	(0.0302)	(0.0346)	(0.0624)	(0.0683)	(0.263)
Tertiary education	0.0450	0.0490	0.0864**	0.0672*	-0.0513	0.0114	0.0802
	(0.0310)	(0.0303)	(0.0351)	(0.0381)	(0.0683)	(0.0791)	(0.248)
Urban	0.0181	0.0202	0.0382	0.0145	-0.0325	-0.0123	-0.133
	(0.0264)	(0.0275)	(0.0250)	(0.0270)	(0.0322)	(0.0571)	(0.131)
Children 0-4 present	-0.0213	-0.0283	-0.0212	-0.0421	0.00211	-0.0185	-0.0158
	(0.0222)	(0.0217)	(0.0219)	(0.0277)	(0.0367)	(0.0653)	(0.172)
Female hh head*Children 0-4	0.0183	0.0195	0.0177	0.0291	0.0811	-0.0272	0.112
	(0.0423)	(0.0409)	(0.0501)	(0.0599)	(0.0981)	(0.114)	(0.344)
Children 5-18 present	-0.0101	-0.00906	-0.00183	-0.00278	-0.0430	9.84e-05	0.147
	(0.0324)	(0.0323)	(0.0327)	(0.0367)	(0.0461)	(0.0573)	(0.224)
Female hh head*Children 5-18	0.0908*	0.0935*	0.0507	0.116**	0.152	0.111	0.213
	(0.0499)	(0.0492)	(0.0564)	(0.0550)	(0.0991)	(0.111)	(0.334)
Had farm income during previous 12 months		0.0408					
		(0.0336)					
Had non-farm enterprises income during previous 12 months		0.115***					
		(0.0267)					
Had wage income during previous 12 months		0.0425					
		(0.0265)					
Had domestic remittances during previous 12 months		0.178***					
		(0.0315)					
Had remittances from abroad during previous 12 months		-0.0399					
		(0.0654)					
Constant	0.403***	0.264***	0.323***	0.398***	0.317***	0.598***	0.286
	(0.0531)	(0.0644)	(0.0553)	(0.0610)	(0.0847)	(0.0974)	(0.396)
Observations	2,888	2,888	2,227	1,752	827	599	65
R-squared	0.011	0.041	0.007	0.008	0.019	0.011	0.090

Note: OLS estimation results, standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. All estimations control for country fixed effects. Samples in col. 3-7 include only households receiving the relevant type of income before the pandemic. *Source*: HFPS Nigeria R9 (Jan 2021) and Uganda R5 (Feb 2021).

Results: one-year impacts

As explained above, given the nature of the HFPS data, we can analyze income loss after the first year of the pandemic only for Uganda and Nigeria.[19] The results for one-year income loss (Table 4) show that the only demographic factor significantly related to income loss is the interaction between female household head and children aged 5-18 (significant at the ten percent level). Compared to male-headed households, income loss was nine percentage points more likely in female-headed households with children age 5-18. In addition, income loss by early 2021 is associated with the different sources of income households relied on during the 12 months before HFPS R1. NFE income and income from domestic remittances are associated with higher probability of income loss. In the medium run, these were the most vulnerable sources of income, relative to farm income, wage income, and remittances from abroad.

6. Discussion and conclusions

In this paper, we analyze high frequency phone survey data from Ethiopia, Malawi, Nigeria, and Uganda to document the impacts of the COVID-19 crisis on employment and income. We focus on heterogeneity by gender, family composition, education, age, job industry, and between the rural and urban sector. For employment, we compare the early-phase impacts (up to July 2020) with the medium-term (up to February/March 2021).

By July 2020, job loss had affected 18 to 30% of respondents in Ethiopia, Malawi, and Uganda, and a striking 61% of respondents in Nigeria. In all countries, with the exception of Ethiopia, the rate of job loss continued to increase after July 2020. Even without necessarily losing employment, many households were affected in terms of income. Between March and June 2020, 46% of respondents in Ethiopia and more than 75% of respondents in Malawi, Nigeria, and Uganda reported a loss of household income. After one year into the pandemic, 41% of respondents in Nigeria and 49% in Uganda reported household income loss.

We find significant inequalities in the impacts of the pandemic on employment and income. In the early phase of the pandemic, job loss was relatively concentrated among urban, young, female workers. Within urban areas, women with young children were disproportionately affected. In the longer run, however, the pattern of inequality in employment looks different. By February/March 2021, gender, age, and urban location are no longer related to joblessness, while education appears to be a key predictor. A year after the onset of the pandemic, respondents with less than a primary education were significantly less likely to be working than respondents with more education.

We further find that in the early phase of the pandemic, households relying on non-farm enterprise income were most likely to report a decline in household income, while income from wage employment was relatively secure. Inequalities in the probability of losing income vary across sources. Women and young household heads were disproportionately affected in terms of NFE income, while wage income losses were relatively more likely in households with younger or less educated household heads. For total household income, early-phase income loss is strongly predicted by younger, less educated household heads, urban location, and the presence of children.

For Nigeria and Uganda, we also analyze the probability of income loss in early 2021 compared to pre-pandemic income. Households that received NFE income or income from domestic remittances before the pandemic were more likely to report income loss, so in the medium run these appear to be the most

[19] Early-phase results for the sample excluding Ethiopia and Malawi are similar (appendix table A15), except, young children and urban location are not statistically significant, the coefficient on female household head is larger and significant at the 10 percent level in models (1) and (2), and wage income is not significantly related to total income loss in model (2).

vulnerable income sources. We find no significant relationship between household demographics and the probability of income loss.

Our findings complement previous studies that have documented the extent of job loss and income loss in low- and middle-income countries, by tracing pre-COVID-19 workers up to a year after the start of the pandemic (similar to Alfonsi et al. 2022, who focus on highly educated urban workers in Uganda). The early-phase gender and rural/urban disparities in job loss in Ethiopia, Malawi, Nigeria and Uganda were more pronounced compared to patterns across a broader group of LMICs countries (Kugler et al. 2021). By February/March 2021, however, those disparities largely disappeared. Instead, lower education turned out to be the main predictor of joblessness in February/March 2021 among those who were working pre-COVID-19. This suggests that re-integration of the least educated inactive or unemployed persons into the labor force should be a priority for governments, as apparently the extended public works programs implemented in Ethiopia, Nigeria, and Uganda (Gentilini et al. 2020) have not been able to absorb this group.

The relative vulnerability of NFE income offers further guidance for policy design. A large share of households relies on this income generating activity making it very important for the economy and overall wellbeing. However, these enterprises are relatively difficult to target due to the small scale and informal nature of activities. It would be beneficial to provide easier procedures for registration to improve targeting possibilities in the future and to design safety net policies particularly targeted at NFEs during crises such as the pandemic.

Finally, this paper has illustrated how high-frequency phone surveys can be a valuable tool in capturing data on outcomes, such as employment status, that are prone to changes and fluctuations. These surveys can also complement face-to-face surveys on more structural characteristics of households and individuals.

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Appendix A

Table A1: Sample comparison between pre-Covid face to face surveys and HFPS Round 1

	Ethiopia		Malawi		Nigeria		Uganda	
	ESS 2018/19	HFPS R1	IHPS 2019	HFPS R1	GHS PH 2018/19	HFPS R1	UNPS 2019/20	HFPS R1
Sample size (successful interviews)	6,770	3,249	3,181	1,729	4,976	1,950	3,076	2,226
Average household size	4.2	4.7	5	5	5.5	5.5	4.9	5
Household head characteristics								
Female head (%)	31.7	31.1	29.6	29.3	18.6	18.6	34.2	33.3
Age	42.2	46.6	45.9	45.4	48.8	49.2	45.3	45.7
Literate (%)	58.8	49.3	74.2	76.4	74.4	74.4	76.7	77.1
Asset ownership								
Regular mobile phone	n.d	57.9	58.9	79.8	65.4	66	4	3.7
Television	33.3	20.7	15.2	16.4	45.1	48.1	26.1	26.4
Refrigerator	17	7.8	8	8.4	17.3	18.7	7.2	6.7
Car	1.9	1.9	2.5	2.9	9.6	9.4	0.3	0.3

Table A2: Data collection dates, HFPS Rounds

	Ethiopia				Malawi				Nigeria				Uganda			
	Start date	End date	Sample size	Average stringency index	Start date	End date	Sample size	Average stringency index	Start date	End date	Sample size	Average stringency index	Start date	End date	Sample size	Average stringency index
R1	04/22/20	05/13/20	3249	80.56	05/26/20	06/14/20	1729	60.19	04/20/20	05/11/20	1950	84.77	06/03/20	06/16/20	2224	84.26
R2	05/14/20	06/03/20	3107	80.56	07/02/20	07/20/20	1646	60.19	06/02/20	06/16/20	1820	83.98	07/30/20	08/19/20	2196	80.03
R3	06/04/20	06/26/20	3057	80.56	08/12/20	08/27/20	1624	64.81	07/06/20	07/20/20	1790	71.76	09/14/20	10/16/20	2175	75.45
R4	07/27/20	08/14/20	2878	80.56	09/12/20	10/01/20	1617	54.91	08/09/20	08/24/20	1789	66.90	10/27/20	11/17/20	2131	54.67
R5	08/24/20	09/17/20	2770	79.78	10/29/20	11/16/20	1589	50.93	09/07/20	09/21/20	1774	61.67	02/02/21	02/18/21	2121	47.22
R6	09/21/20	10/14/20	2703	72.76	12/10/20	12/29/20	1591	50.93	10/09/20	10/24/20	1762	51.62				
R7	10/19/20	11/10/20	2536	57.49	01/20/21	02/06/21	1556	51.85	11/07/20	11/23/20	1726	50.93				
R8	12/01/20	12/21/20	2222	51.85	02/23/21	03/15/21	1549	43.21	12/05/20	12/21/20	1723	50.93				
R9	12/28/20	01/22/21	2077	47.15					01/09/21	01/25/21	1706	58.33				
R10	02/01/21	02/23/21	2178	39.65					02/06/21	02/22/21	1699	58.33				

Table A3: Descriptive Statistics, early-phase analysis sample

	All observations			Ethiopia			Malawi			Nigeria			Uganda		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Working in last face to face LSMS-ISA survey	6,447	0.76	0.43	2,219	0.60	0.49	1,108	0.83	0.38	1,451	0.83	0.37	1,669	0.85	0.36
Working pre-COVID-19 (self-reported)	6,446	0.81	0.39	2,218	0.75	0.43	1,108	0.82	0.38	1,451	0.87	0.34	1,669	0.83	0.38
Job loss Apr-July 2020, cond. on working pre-COVID-19	5,214	0.34	0.47	1,661	0.30	0.46	910	0.28	0.45	1,258	0.61	0.49	1,385	0.18	0.38
Re-employed July -Oct, cond. on job loss	1,779	0.87	0.34	504	0.75	0.43	257	0.86	0.34	773	0.93	0.25	245	0.93	0.26
Changed industry July-Oct, cond. on re-emp.	1,165	0.59	0.49	221	0.83	0.38	143	0.46	0.50	607	0.55	0.50	194	0.58	0.50
Female	6,447	0.37	0.48	2,219	0.36	0.48	1,108	0.36	0.48	1,451	0.25	0.43	1,669	0.48	0.50
Age	6,446	42.24	14.41	2,218	38.05	13.17	1,108	40.11	13.49	1,451	46.28	14.31	1,669	45.72	14.85
Household head	6,447	0.83	0.38	2,219	0.86	0.34	1,108	0.82	0.38	1,451	0.84	0.37	1,669	0.77	0.42
No education	6,423	0.36	0.48	2,218	0.70	0.46	1,108	0.24	0.43	1,451	0.22	0.41	1,646	0.10	0.30
Primary education	6,423	0.38	0.48	2,218	0.19	0.39	1,108	0.66	0.47	1,451	0.26	0.44	1,646	0.53	0.50
Secondary education	6,423	0.17	0.37	2,218	0.06	0.24	1,108	0.04	0.19	1,451	0.27	0.45	1,646	0.29	0.46
Tertiary education	6,423	0.10	0.30	2,218	0.05	0.22	1,108	0.06	0.23	1,451	0.25	0.43	1,646	0.08	0.27
Urban HH	6,447	0.47	0.50	2,219	0.74	0.44	1,108	0.36	0.48	1,451	0.40	0.49	1,669	0.26	0.44
Any children 0 to 4 in HH	6,447	0.47	0.50	2,219	0.44	0.50	1,108	0.54	0.50	1,451	0.45	0.50	1,669	0.48	0.50
Any children 5 to 18 in HH	6,447	0.73	0.45	2,219	0.64	0.48	1,108	0.75	0.43	1,451	0.77	0.42	1,669	0.78	0.41
HH has a female head	6,412	0.26	0.44	2,209	0.30	0.46	1,106	0.22	0.42	1,451	0.17	0.38	1,646	0.33	0.47
Income diversification in HH	6,447	0.30	0.46	2,219	0.14	0.35	1,108	0.16	0.37	1,451	0.43	0.49	1,669	0.47	0.50
HH lost any income	6,314	0.72	0.45	2,207	0.55	0.50	1,106	0.79	0.41	1,376	0.79	0.41	1,625	0.83	0.38
HH had income from farming	6,314	0.60	0.49	2,207	0.28	0.45	1,106	0.78	0.42	1,376	0.75	0.43	1,625	0.79	0.41
HH had income from NFE	6,314	0.42	0.49	2,207	0.24	0.43	1,106	0.51	0.50	1,376	0.66	0.47	1,625	0.41	0.49
HH had income from wage employment	6,314	0.39	0.49	2,207	0.49	0.50	1,106	0.42	0.49	1,376	0.36	0.48	1,625	0.28	0.45
HH had domestic remittances	6,314	0.16	0.36	2,207	0.08	0.27	1,106	0.18	0.39	1,376	0.24	0.43	1,625	0.18	0.38
HH had remittances from abroad	6,314	0.05	0.22	2,207	0.07	0.25	1,106	0.07	0.26	1,376	0.05	0.21	1,625	0.02	0.13
HH lost farming income	3,802	0.62	0.49	624	0.44	0.50	858	0.67	0.47	1,031	0.71	0.45	1,289	0.59	0.49
HH lost NFE income	2,683	0.87	0.34	537	0.90	0.30	564	0.83	0.38	908	0.83	0.38	674	0.93	0.26
HH lost wage employment income	2,494	0.45	0.50	1,077	0.30	0.46	460	0.55	0.50	500	0.52	0.50	457	0.65	0.48
HH lost domestic remittances	997	0.70	0.46	176	0.39	0.49	200	0.74	0.44	330	0.72	0.45	291	0.83	0.38
HH lost remittances from abroad	319	0.66	0.47	148	0.59	0.49	81	0.78	0.42	62	0.61	0.49	28.00	0.86	0.36

Note: Job loss based on HFPS R1-3 for Ethiopia and Nigeria, R1-2 for Malawi, and R1 for Uganda. Re-employment and change in industry are based on HFPS R1-6 for Ethiopia and Nigeria, R1-4 for Malawi, R1-3 for Uganda. Other indicators based on R1.

Table A4: Descriptive Statistics, one-year analysis sample

	All observations			Ethiopia			Malawi			Nigeria			Uganda		
	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD	N	Mean	SD
Working in last f2f LSMS survey	2,945	0.82	0.38	318	0.60	0.49	525	0.86	0.35	1,293	0.83	0.37	809	0.87	0.33
Working pre-COVID-19 (self-reported)	2,945	0.84	0.37	318	0.74	0.44	525	0.83	0.38	1,293	0.87	0.34	809	0.84	0.37
Job loss up to July 2020, cond. on working pre-COVID-19	2,467	0.40	0.49	235	0.31	0.47	435	0.25	0.44	1,120	0.61	0.49	677	0.17	0.38
Job loss up to March 2021 – cond. on working pre-COVID-19	2,467	0.52	0.50	235	0.38	0.49	435	0.40	0.49	1,120	0.73	0.44	677	0.30	0.46
Jobless in March 2021 – cond. on working pre-COVID-19	2,454	0.17	0.37	235	0.23	0.42	422	0.16	0.37	1,120	0.17	0.37	677	0.14	0.35
Number of months without work Apr 2020- Mar 2021 – cond. on working pre-COVID-19	2,467	1.79	2.13	235	1.84	1.56	435	1.74	2.23	1,120	1.92	2.09	677	1.57	2.27
Female	2,945	0.29	0.46	318	0.29	0.45	525	0.23	0.42	1,293	0.25	0.43	809	0.42	0.49
Age	2,945	44.96	14.55	318	39.68	12.60	525	40.95	14.02	1,293	46.57	14.33	809	47.09	14.95
Household head	2,945	0.89	0.31	318	1.00	0.06	525	0.94	0.24	1,293	0.85	0.36	809	0.89	0.31
No education	2,936	0.24	0.43	318	0.68	0.47	525	0.25	0.44	1,293	0.21	0.41	800	0.11	0.31
Primary education	2,936	0.39	0.49	318	0.21	0.41	525	0.65	0.48	1,293	0.26	0.44	800	0.52	0.50
Secondary education	2,936	0.22	0.41	318	0.06	0.24	525	0.03	0.18	1,293	0.28	0.45	800	0.30	0.46
Tertiary education	2,936	0.15	0.35	318	0.05	0.21	525	0.06	0.25	1,293	0.25	0.43	800	0.07	0.26
Urban HH	2,945	0.38	0.48	318	0.60	0.49	525	0.32	0.47	1,293	0.41	0.49	809	0.27	0.45
Any children 0 to 4 in HH	2,945	0.47	0.50	318	0.50	0.50	525	0.52	0.50	1,293	0.44	0.50	809	0.46	0.50
Any children 5 to 18 in HH	2,945	0.74	0.44	318	0.65	0.48	525	0.72	0.45	1,293	0.77	0.42	809	0.76	0.43
HH has a female head	2,932	0.23	0.42	318	0.28	0.45	523	0.18	0.38	1,293	0.17	0.38	798	0.35	0.48
Income diversification in HH	2,945	0.35	0.48	318	0.13	0.34	525	0.16	0.37	1,293	0.42	0.49	809	0.44	0.50

Note: Job loss and months without work between Apr 2020-Mar 2021 are based on HFPS R1-10 for Ethiopia and Nigeria, R1-8 for Malawi, R1-11 for Nigeria and R1-5 for Uganda. Joblessness in Mar 2021 is based on the latest of these rounds per country. Other indicators based on R1.

Table A5: Attrition

	Respondent is included in one-year sample	
	(1)	(2)
Female (1=female, 0=male)	-0.0545**	-0.0493
	(0.0257)	(0.0303)
Age	0.00199***	0.00212***
	(0.000428)	(0.000420)
Primary education	0.00223	-0.0138
	(0.0162)	(0.0187)
Secondary education	0.0248	0.00388
	(0.0163)	(0.0203)
Tertiary education	0.00204	-0.0296
	(0.0226)	(0.0277)
Urban	-0.00940	0.00787
	(0.0145)	(0.0183)
Children 0-4 present	0.0222	0.0196
	(0.0162)	(0.0174)
Female*Children 0-4	-0.0690**	-0.0655*
	(0.0276)	(0.0350)
Children 5-18 present	-0.0301**	-0.0336*
	(0.0150)	(0.0177)
Female*Children 5-18	-0.00903	-0.0198
	(0.0293)	(0.0377)
Income diversification	-0.0321**	-0.0457***
	(0.0131)	(0.0150)
Job loss between Apr/July 2020	-0.00865	-0.0133
	(0.0127)	(0.0169)
Income loss	0.0209	0.0145
	(0.0150)	(0.0177)
Constant	0.829***	0.827***
	(0.0308)	(0.0326)
Observations	5,129	3,804
R-squared	0.318	0.309
Country fixed effects	Yes	Yes
Pre-COVID-19 industry dummies	No	Yes

Note: OLS estimation, standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Sample includes all HFPS R1 respondents who were working before the COVID-19 outbreak.

Table A6: Early-phase job loss, sub-sample estimation results

	(1)	(2)	(3)	(4)	(5)	(6)
	Urban	Rural	Nigeria	Ethiopia	Malawi	Uganda
Respondent is female	0.120***	0.0336	-0.0214	0.107***	0.226**	0.105**
	(0.0387)	(0.0532)	(0.0683)	(0.0382)	(0.111)	(0.0408)
Age	-0.00142	-0.000959	-0.000658	3.45e-05	-0.00116	-0.00137*
	(0.000934)	(0.000674)	(0.00129)	(0.00109)	(0.00148)	(0.000815)
Primary education	0.00564	-0.0436*	-0.0158	-0.0376	-0.0618	0.0486
	(0.0327)	(0.0256)	(0.0411)	(0.0306)	(0.0462)	(0.0312)
Secondary education	0.0300	-0.00737	0.0472	-0.0479	-0.00373	0.0531
	(0.0422)	(0.0319)	(0.0463)	(0.0514)	(0.139)	(0.0369)
Tertiary education	0.0322	0.0573	0.0568	-0.0612	0.0168	0.105**
	(0.0426)	(0.0418)	(0.0491)	(0.0729)	(0.0910)	(0.0457)
Urban			0.0666**	0.160***	-0.0352	0.0241
			(0.0318)	(0.0255)	(0.0404)	(0.0279)
Children 0-4 present	-0.0756**	0.0386	0.00334	-0.0784*	0.0404	0.0101
	(0.0292)	(0.0237)	(0.0340)	(0.0386)	(0.0361)	(0.0231)
Female*Children 0-4	0.111***	-0.0650	0.114	0.00596	-0.0827	-0.0224
	(0.0398)	(0.0475)	(0.0708)	(0.0473)	(0.0821)	(0.0497)
Children 5-18 present	0.0411	0.0385	0.0746*	0.00205	-0.00482	0.0841***
	(0.0341)	(0.0280)	(0.0435)	(0.0494)	(0.0514)	(0.0202)
Female*Children 5-18	-0.0856	-0.00430	-0.0619	-0.0309	-0.0583	-0.0904
	(0.0557)	(0.0528)	(0.0795)	(0.0616)	(0.112)	(0.0567)
Income diversification	-0.0389	-0.0486**	-0.116***	-0.0241	0.0582	-0.0336
	(0.0271)	(0.0221)	(0.0329)	(0.0383)	(0.0524)	(0.0213)
Manufacturing & Utilities	0.0871*	0.105**	0.106*	0.0975	0.117*	0.0555
	(0.0510)	(0.0463)	(0.0617)	(0.104)	(0.0662)	(0.0520)
Construction, Transport & Professional services	0.0425	0.0731*	0.0618	0.0813	0.0106	0.0991***
	(0.0372)	(0.0399)	(0.0510)	(0.0627)	(0.0715)	(0.0324)
Commerce	0.0193	0.0420	0.0930**	0.0597	-0.0942**	0.117***
	(0.0329)	(0.0297)	(0.0463)	(0.0434)	(0.0409)	(0.0324)
Public Administration	0.0530	0.129*	0.133*	0.145	-0.239***	-0.00955
	(0.0634)	(0.0754)	(0.0698)	(0.0910)	(0.0794)	(0.0972)
Other services	0.0656*	0.0629**	0.121**	-0.0989**	0.0388	0.116***
	(0.0342)	(0.0279)	(0.0497)	(0.0389)	(0.0526)	(0.0318)
Constant	0.660***	0.538***	0.513***	0.194***	0.285***	0.0615
	(0.0608)	(0.0486)	(0.0875)	(0.0269)	(0.0791)	(0.0540)
Observations	1,706	2,154	1,059	967	627	1,207
R-squared	0.134	0.168	0.043	0.058	0.052	0.042

Note: Standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Regressions in columns 1-2 include country fixed effects.

Table A7: Early-phase re-employment (conditional on job loss), sub-sample estimation results

	(1)	(2)	(3)	(4)	(5)	(6)
	Urban	Rural	Nigeria	Ethiopia	Malawi	Uganda
Respondent is female	-0.170***	-0.0411	-0.147**	-0.167	-0.137	-0.0717
	(0.0648)	(0.0488)	(0.0646)	(0.100)	(0.139)	(0.0725)
Age	-0.00407**	0.000665	0.000779	-0.00754***	-0.00102	6.81e-05
	(0.00171)	(0.000822)	(0.000840)	(0.00237)	(0.00236)	(0.000673)
Primary education	-0.0974***	-0.00540	0.00193	-0.115*	-0.124**	0.137
	(0.0363)	(0.0255)	(0.0232)	(0.0605)	(0.0595)	(0.163)
Secondary education	-0.0482	-0.0180	0.00711	-0.0700	-0.0252	0.142
	(0.0395)	(0.0283)	(0.0271)	(0.104)	(0.0795)	(0.169)
Tertiary education	-0.104**	0.0241	0.0225	-0.157	-0.0942	0.0215
	(0.0454)	(0.0254)	(0.0283)	(0.142)	(0.0813)	(0.192)
Urban			-0.00805	-0.205***	-0.0215	-0.0623
			(0.0198)	(0.0505)	(0.0649)	(0.0429)
Children 0-4 present	0.0426	0.0391*	0.0215	0.0579	0.155**	-0.0270
	(0.0299)	(0.0230)	(0.0204)	(0.0450)	(0.0722)	(0.0321)
Female*Children 0-4	-0.0752	0.00922	-0.0644	-0.0431	-0.0432	-0.0177
	(0.0554)	(0.0513)	(0.0645)	(0.104)	(0.118)	(0.0659)
Children 5-18 present	-0.00285	-0.0340	0.00143	-0.00477	-0.118*	0.00335
	(0.0336)	(0.0247)	(0.0275)	(0.0547)	(0.0639)	(0.0454)
Female*Children 5-18	0.110*	0.0188	0.139*	0.0642	0.192	0.0292
	(0.0600)	(0.0674)	(0.0841)	(0.102)	(0.140)	(0.0805)
Income diversification	0.0226	-0.00403	0.00528	-0.0110	-0.0800	0.0271
	(0.0281)	(0.0179)	(0.0156)	(0.0601)	(0.0748)	(0.0430)
Manufacturing & Utilities	0.0203	0.0186	-0.0145	-0.106	0.0602	-0.0619
	(0.0650)	(0.0315)	(0.0282)	(0.169)	(0.0978)	(0.106)
Construction, Transport & Professional services	0.0559	-0.00636	-0.0588*	0.240*	0.0703	-0.0108
	(0.0608)	(0.0270)	(0.0311)	(0.126)	(0.0893)	(0.0470)
Commerce	0.0741	-0.0313	-0.0326	0.0514	-0.0825	0.0558
	(0.0509)	(0.0252)	(0.0211)	(0.0781)	(0.106)	(0.0431)
Public Administration	0.0746	0.0198	-0.0224	0.0839		0.227
	(0.0746)	(0.0148)	(0.0297)	(0.173)		(0.144)
Other services	0.0449	-0.0166	-0.0487*	0.0388	0.0566	0.000366
	(0.0526)	(0.0303)	(0.0284)	(0.162)	(0.0763)	(0.0321)
Constant	1.143***	0.953***	0.937***	1.242***	1.012***	0.868***
	(0.0951)	(0.0588)	(0.0571)	(0.109)	(0.164)	(0.234)
Observations	671	628	637	296	164	202
R-squared	0.137	0.042	0.046	0.137	0.122	0.129

Note: Standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Regressions in columns 1-2 include country fixed effects.

Table A8: Changed industry July-October 2020, sub-sample estimation results

	(1)	(2)	(3)	(4)	(5)	(6)
	Urban	Rural	Nigeria	Ethiopia	Malawi	Uganda
Respondent is female	-0.150**	-0.0110	-0.155	-0.0898	0.0161	0.0397
	(0.0655)	(0.0798)	(0.0950)	(0.0693)	(0.205)	(0.193)
Age	-0.000868	-0.000377	-0.00174	0.00169	-0.00117	-0.000681
	(0.00166)	(0.00147)	(0.00150)	(0.00231)	(0.00326)	(0.00250)
Primary education	-0.0727	-0.109**	-0.0738	0.0657	-0.161	-0.374**
	(0.0592)	(0.0439)	(0.0509)	(0.0612)	(0.110)	(0.180)
Secondary education	-0.144**	-0.0135	-0.139***	-0.0982	0.171	-0.247
	(0.0634)	(0.0520)	(0.0502)	(0.111)	(0.181)	(0.149)
Tertiary education	-0.0174	0.0374	-0.0214	-0.0106	0.231	-0.162
	(0.0734)	(0.0496)	(0.0512)	(0.148)	(0.155)	(0.222)
Urban			-0.110***	0.260**	-0.0359	-0.0192
			(0.0394)	(0.100)	(0.105)	(0.114)
Children 0-4 present	0.000549	0.0412	0.00685	-0.0777*	0.0873	0.157**
	(0.0438)	(0.0415)	(0.0377)	(0.0418)	(0.107)	(0.0708)
Female*Children 0-4	0.102	-0.198***	-0.112	0.121	-0.215	-0.0796
	(0.0785)	(0.0749)	(0.105)	(0.104)	(0.165)	(0.123)
Children 5-18 present	-0.0224	0.0507	-0.00608	-0.00453	-0.103	0.189
	(0.0497)	(0.0523)	(0.0495)	(0.0569)	(0.116)	(0.135)
Female*Children 5-18	0.0979	-0.0946	0.0285	0.111	0.0503	-0.182
	(0.0709)	(0.0897)	(0.107)	(0.0794)	(0.192)	(0.188)
Income diversification	0.0283	0.0116	0.0596*	0.0435	0.125	-0.0215
	(0.0431)	(0.0354)	(0.0346)	(0.0613)	(0.116)	(0.0677)
Manufacturing & Utilities	0.255***	0.764***	0.856***	0.169*	0.442***	0.435***
	(0.0765)	(0.0459)	(0.0550)	(0.0897)	(0.127)	(0.145)
Construction, Transport & Professional services	0.0617	0.540***	0.667***	-0.0824	0.412***	0.293**
	(0.0944)	(0.0585)	(0.0602)	(0.121)	(0.147)	(0.126)
Commerce	-0.137**	0.483***	0.559***	-0.164*	0.195	0.0320
	(0.0636)	(0.0524)	(0.0527)	(0.0840)	(0.141)	(0.135)
Public Administration	-0.00529	0.599***	0.571***	0.182		0.520***
	(0.108)	(0.0848)	(0.0830)	(0.110)		(0.176)
Other services	0.0888	0.613***	0.664***	0.132*	0.317**	0.368***
	(0.0781)	(0.0479)	(0.0497)	(0.0636)	(0.128)	(0.0739)
Constant	0.663***	0.157	0.256**	0.598***	0.377	0.584***
	(0.115)	(0.103)	(0.0993)	(0.146)	(0.229)	(0.177)
Observations	560	598	604	219	143	192
R-squared	0.172	0.407	0.342	0.145	0.289	0.230

Note: Standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Regressions in columns 1-2 include country fixed effects.

Table A9: Job loss up to February/March 2021, sub-sample estimation results

	(1) Urban	(2) Rural	(3) Nigeria	(4) Ethiopia	(5) Malawi	(6) Uganda
Respondent is female	0.00743	0.0694	0.0635	-0.0355	-0.0387	0.0284
	(0.0690)	(0.0827)	(0.0721)	(0.182)	(0.144)	(0.0798)
Age	0.00157	-0.00134	0.00170	0.000905	-0.00166	-0.00202
	(0.00150)	(0.00114)	(0.00133)	(0.00340)	(0.00233)	(0.00160)
Primary education	0.0224	-0.0499	0.0341	-0.0901	-0.143*	-0.0116
	(0.0526)	(0.0376)	(0.0441)	(0.116)	(0.0767)	(0.0760)
Secondary education	0.0710	0.00136	0.0958**	-0.115	-0.411*	0.0334
	(0.0641)	(0.0450)	(0.0476)	(0.139)	(0.213)	(0.0931)
Tertiary education	0.0481	0.0575	0.0204	0.0591	-0.155	0.291***
	(0.0652)	(0.0541)	(0.0523)	(0.219)	(0.105)	(0.0952)
Urban			0.0384	0.0973	0.00519	-0.0469
			(0.0327)	(0.101)	(0.0585)	(0.0478)
Children 0-4 present	-0.0411	0.0361	0.0436	-0.0235	0.0226	-0.0157
	(0.0432)	(0.0298)	(0.0322)	(0.117)	(0.0655)	(0.0503)
Female*Children 0-4	0.167**	-0.107	0.0657	0.159	-0.427***	0.00266
	(0.0691)	(0.0719)	(0.0680)	(0.253)	(0.143)	(0.0794)
Children 5-18 present	-0.0109	0.00523	0.0266	-0.186	-0.0430	0.0514
	(0.0436)	(0.0398)	(0.0427)	(0.119)	(0.0665)	(0.0432)
Female*Children 5-18	0.0659	0.0187	-0.0498	0.183	0.435**	0.0277
	(0.0850)	(0.0880)	(0.0859)	(0.171)	(0.173)	(0.0740)
Income diversification	-0.0904**	-0.0278	-0.112***	-0.0698	0.0893	-0.0229
	(0.0381)	(0.0296)	(0.0334)	(0.0853)	(0.0772)	(0.0379)
Manufacturing & Utilities	0.101	0.0864	-0.0148	0.360**	0.314***	0.123*
	(0.0701)	(0.0610)	(0.0631)	(0.169)	(0.102)	(0.0659)
Construction, Transport & Professional services	0.102*	0.0712	0.0378	0.365*	0.0343	0.0521
	(0.0555)	(0.0505)	(0.0518)	(0.180)	(0.109)	(0.0501)
Commerce	-0.0154	0.0724*	-0.00429	0.130	-0.0194	0.146**
	(0.0525)	(0.0432)	(0.0416)	(0.145)	(0.0811)	(0.0595)
Public Administration	0.0122	0.188**	0.0522	0.423*		0.134
	(0.0758)	(0.0820)	(0.0684)	(0.215)		(0.245)
Other services	0.110**	0.0113	0.0453	-0.0474	0.0655	0.0745
	(0.0552)	(0.0436)	(0.0468)	(0.178)	(0.0732)	(0.0570)
Constant	0.622***	0.703***	0.571***	0.320*	0.490***	0.292***
	(0.102)	(0.0729)	(0.0862)	(0.155)	(0.131)	(0.104)
Observations	766	1,227	946	136	307	604
R-squared	0.184	0.166	0.028	0.150	0.100	0.052

Note: Standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Regressions in columns 1-2 include country fixed effects.

Table A10: Jobless in February/March 2021, sub-sample estimation results

	(1) Urban	(2) Rural	(3) Nigeria	(4) Ethiopia	(5) Malawi	(6) Uganda
Respondent is female	-0.00313	-0.00850	0.100	0.0246	-0.177	-0.0844
	(0.0677)	(0.0542)	(0.0755)	(0.161)	(0.107)	(0.0816)
Age	0.00234*	-0.00114	0.000317	-0.00315	0.00232	-0.000148
	(0.00123)	(0.00108)	(0.00111)	(0.00443)	(0.00232)	(0.00126)
Primary education	-0.115**	-0.0407	-0.0738**	-0.0259	0.000699	-0.0500
	(0.0491)	(0.0311)	(0.0369)	(0.107)	(0.0626)	(0.0499)
Secondary education	-0.133***	-0.00520	-0.0370	-0.0865	-0.308***	-0.0416
	(0.0483)	(0.0346)	(0.0378)	(0.0912)	(0.114)	(0.0593)
Tertiary education	-0.128**	-0.0387	-0.0816**	-0.308	0.0355	0.0245
	(0.0547)	(0.0383)	(0.0403)	(0.207)	(0.117)	(0.0953)
Urban			-0.0139	-0.0479	0.0934*	-0.0249
			(0.0222)	(0.119)	(0.0525)	(0.0370)
Children 0-4 present	-0.0186	-0.0489*	-0.0250	-0.0925	-0.0370	-0.0301
	(0.0274)	(0.0295)	(0.0260)	(0.100)	(0.0572)	(0.0359)
Female*Children 0-4	0.0125	0.0609	-0.0194	0.0966	0.0809	0.0651
	(0.0595)	(0.0593)	(0.0682)	(0.208)	(0.101)	(0.0577)
Children 5-18 present	-0.0624*	0.0382	-0.00827	0.0905	-0.0446	0.00856
	(0.0354)	(0.0304)	(0.0355)	(0.0567)	(0.0594)	(0.0409)
Female*Children 5-18	0.0112	-0.0165	-0.0416	-0.257*	0.0433	0.0719
	(0.0686)	(0.0551)	(0.0804)	(0.141)	(0.126)	(0.0769)
Income diversification	-0.0504*	0.0126	-0.0253	-0.0578	0.0520	-0.0210
	(0.0292)	(0.0236)	(0.0230)	(0.112)	(0.0655)	(0.0266)
Manufacturing & Utilities	0.0332	-0.00150	-0.0492	-0.284**	0.0887	0.0806
	(0.0526)	(0.0496)	(0.0499)	(0.132)	(0.105)	(0.0785)
Construction, Transport & Professional services	0.0352	-0.0391	-0.0377	0.0387	-0.0699	0.0297
	(0.0522)	(0.0374)	(0.0439)	(0.225)	(0.0998)	(0.0486)
Commerce	-0.0402	-0.0281	-0.115***	0.0295	-0.0176	0.0610
	(0.0450)	(0.0336)	(0.0359)	(0.104)	(0.0707)	(0.0405)
Public Administration	0.0337	-0.127**	-0.102**	0.460		-0.148*
	(0.0868)	(0.0534)	(0.0502)	(0.290)		(0.0809)
Other services	-0.00591	-0.0931***	-0.102***	-0.00725	-0.112	0.0306
	(0.0476)	(0.0301)	(0.0352)	(0.144)	(0.0692)	(0.0453)
Constant	0.197**	0.249***	0.264***	0.438*	0.133	0.196**
	(0.0783)	(0.0726)	(0.0762)	(0.246)	(0.134)	(0.0862)
Observations	762	1,222	946	136	298	604
R-squared	0.047	0.020	0.041	0.091	0.068	0.015

Note: Standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Regressions in columns 1-2 include country fixed effects.

Table A11: Months without work until February/March 2021, sub-sample estimation results

	(1) Urban	(2) Rural	(3) Nigeria	(4) Ethiopia	(5) Malawi	(6) Uganda
Respondent is female	0.0964	-0.280	0.580	-0.303	-0.750	-0.489
	(0.359)	(0.319)	(0.398)	(0.618)	(0.693)	(0.509)
Age	0.0192**	-0.00601	0.00620	-0.000804	0.0269**	-0.0118*
	(0.00811)	(0.00553)	(0.00657)	(0.0166)	(0.0133)	(0.00695)
Primary education	-0.149	-0.333*	-0.125	0.203	-0.185	-0.514
	(0.258)	(0.175)	(0.173)	(0.381)	(0.334)	(0.391)
Secondary education	-0.212	-0.152	-0.0124	-0.153	0.206	-0.537
	(0.277)	(0.177)	(0.191)	(0.456)	(0.800)	(0.372)
Tertiary education	-0.518*	0.0613	-0.00942	-1.093	-0.937**	-0.394
	(0.295)	(0.230)	(0.203)	(0.802)	(0.417)	(0.624)
Urban			0.258*	0.0851	0.219	-0.290
			(0.133)	(0.381)	(0.304)	(0.233)
Children 0-4 present	-0.0107	-0.115	-0.0562	-0.0440	0.0336	-0.0463
	(0.176)	(0.167)	(0.150)	(0.313)	(0.272)	(0.316)
Female*Children 0-4	0.556	-0.0186	0.329	-0.0312	0.0254	0.114
	(0.337)	(0.298)	(0.401)	(0.853)	(0.679)	(0.394)
Children 5-18 present	-0.567***	0.0112	-0.219	0.130	-0.599	-0.0485
	(0.196)	(0.167)	(0.180)	(0.323)	(0.379)	(0.238)
Female*Children 5-18	0.148	0.452	-0.0905	0.230	1.029	0.348
	(0.380)	(0.349)	(0.473)	(0.415)	(0.867)	(0.495)
Income diversification	-0.375**	-0.155	-0.401***	0.0816	-0.212	-0.0504
	(0.170)	(0.113)	(0.129)	(0.345)	(0.302)	(0.167)
Manufacturing & Utilities	0.428	-0.447**	0.166	-1.371**	-0.460	0.270
	(0.287)	(0.221)	(0.245)	(0.563)	(0.390)	(0.542)
Construction, Transport & Professional services	0.644**	0.227	0.354	0.794	-0.253	0.523
	(0.252)	(0.227)	(0.242)	(0.985)	(0.498)	(0.319)
Commerce	-0.0163	0.0393	-0.0243	-0.224	-0.0964	0.0628
	(0.199)	(0.158)	(0.166)	(0.350)	(0.391)	(0.314)
Public Administration	0.0912	0.201	-0.0334	1.173		-0.440
	(0.304)	(0.265)	(0.227)	(0.764)		(0.613)
Other services	0.503**	0.127	0.327*	-0.410	0.0295	0.225
	(0.210)	(0.207)	(0.191)	(0.579)	(0.320)	(0.333)
Constant	1.628***	2.095***	1.574***	1.735**	1.319*	2.712***
	(0.444)	(0.358)	(0.417)	(0.710)	(0.687)	(0.447)
Observations	766	1,227	946	136	307	604
R-squared	0.058	0.015	0.048	0.072	0.058	0.020

Note: Standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, * p<0.1. Regressions in columns 1-2 include country fixed effects.

Table A12: Probability of early-phase income loss, sub-sample estimation results

	Urban	Rural	Nigeria	Ethiopia	Malawi	Uganda
	(1)	(2)	(3)	(4)	(5)	(6)
Female household head	-0.00730	0.0525	0.00255	-0.00551	-0.0273	0.101**
	(0.0333)	(0.0476)	(0.0524)	(0.0471)	(0.0701)	(0.0468)
Age of household head	-0.00185***	-0.000806	-0.000896	-0.00175**	-0.000777	-0.00122**
	(0.000687)	(0.000519)	(0.000862)	(0.000649)	(0.000976)	(0.000499)
Primary education	-0.0439*	0.000305	0.0101	-0.0229	-0.0370	0.0388
	(0.0235)	(0.0202)	(0.0319)	(0.0264)	(0.0301)	(0.0322)
Secondary education	0.00156	0.00203	0.0615*	-0.0137	-0.188*	0.0387
	(0.0273)	(0.0221)	(0.0337)	(0.0346)	(0.0999)	(0.0343)
Tertiary education	-0.0579**	-0.0700**	-0.0533	0.00828	-0.0932	-0.0575
	(0.0266)	(0.0285)	(0.0381)	(0.0506)	(0.0660)	(0.0533)
Urban			-0.00618	0.0379	0.0592*	0.0674***
			(0.0248)	(0.0269)	(0.0306)	(0.0246)
Children 0-4 present	0.0308	0.0214	-0.000419	0.0597***	0.0273	-0.0172
	(0.0192)	(0.0169)	(0.0265)	(0.0209)	(0.0308)	(0.0265)
Female*Children 0-4	-0.0152	-0.0327	0.110*	-0.0303	-0.0771	-0.0267
	(0.0389)	(0.0285)	(0.0641)	(0.0418)	(0.0581)	(0.0292)
Children 5-18 present	0.0241	0.0418	-0.00807	0.0576**	-0.0176	0.0603**
	(0.0200)	(0.0262)	(0.0292)	(0.0239)	(0.0299)	(0.0283)
Female*Children 5-18	0.0303	-0.0245	0.0244	-0.0200	0.115	-0.105**
	(0.0421)	(0.0495)	(0.0645)	(0.0607)	(0.0703)	(0.0466)
Had farm income during	0.0186	0.0720**	0.0930***	-0.0622*	0.0627	0.0894***
previous 12 months	(0.0211)	(0.0318)	(0.0308)	(0.0310)	(0.0394)	(0.0243)
Had non-farm enterprises income	0.214***	0.152***	0.0820***	0.322***	0.0375	0.242***
during previous 12 months	(0.0235)	(0.0204)	(0.0245)	(0.0185)	(0.0269)	(0.0177)
Had wage income during	-0.167***	-0.00813	-0.0498**	-0.207***	-0.108***	0.0780***
previous 12 months	(0.0156)	(0.0171)	(0.0231)	(0.0240)	(0.0239)	(0.0137)
Had domestic remittances	0.0116	0.0690***	-0.0276	-0.0115	0.0263	0.183***
during previous 12 months	(0.0220)	(0.0228)	(0.0291)	(0.0432)	(0.0294)	(0.0196)
Had remittances from abroad	0.0434	0.0232	-0.0455	0.0768**	0.0141	0.0801***
during previous 12 months	(0.0335)	(0.0382)	(0.0636)	(0.0343)	(0.0426)	(0.0282)
Constant	0.755***	0.633***	0.729***	0.576***	0.798***	0.573***
	(0.0421)	(0.0564)	(0.0652)	(0.0328)	(0.0714)	(0.0583)
Observations	3,006	3,308	1,376	2,207	1,106	1,625
R-squared	0.186	0.096	0.048	0.162	0.044	0.146

Note: OLS estimation results, standard errors clustered at EA level in parentheses. Regressions in columns 1-2 include country fixed effects. *** p<0.01, ** p<0.05, * p<0.1. *Source*: HFPS R1

Table A13: Probability of early-phase income loss, Nigeria and Uganda

	LOST INCOME	LOST INCOME	LOST FARM INCOME	LOST NFE INCOME	LOST WAGE INCOME	LOST DOM. REMITTANCES	LOST REMITT. FROM ABROAD
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Female household head	0.0686*	0.0658*	0.00996	0.0366	-0.0517	0.0662	0.220
	(0.0357)	(0.0362)	(0.0612)	(0.0412)	(0.0916)	(0.0629)	(0.203)
Age of household head	-0.00117**	-0.000990**	9.62e-05	-0.00141**	-0.00328**	-0.00243**	-0.000710
	(0.000487)	(0.000482)	(0.000712)	(0.000691)	(0.00132)	(0.00115)	(0.00380)
Primary education	0.0228	0.0249	0.00491	0.00903	0.0554	0.0484	-0.0469
	(0.0239)	(0.0241)	(0.0342)	(0.0258)	(0.0539)	(0.0556)	(0.154)
Secondary education	0.0459*	0.0511**	0.0614*	0.0248	-0.0171	0.0482	0.131
	(0.0246)	(0.0244)	(0.0326)	(0.0257)	(0.0546)	(0.0558)	(0.181)
Tertiary education	-0.0851**	-0.0577*	0.00303	0.0239	-0.300***	-0.00843	0.00326
	(0.0336)	(0.0310)	(0.0399)	(0.0339)	(0.0580)	(0.0639)	(0.202)
Urban	0.0203	0.0254	-0.00318	-0.000645	0.0379	-0.0478	-0.203**
	(0.0165)	(0.0173)	(0.0295)	(0.0184)	(0.0319)	(0.0412)	(0.0969)
Children 0-4 present	-0.00308	-0.00991	-0.0161	-0.0141	-0.00433	0.00742	0.0388
	(0.0196)	(0.0192)	(0.0246)	(0.0197)	(0.0328)	(0.0447)	(0.128)
Female hh head*Children 0-4	-0.0110	-0.000232	0.00226	0.0666*	0.110	-0.00635	0.127
	(0.0316)	(0.0301)	(0.0492)	(0.0354)	(0.0690)	(0.0604)	(0.187)
Children 5-18 present	0.0548***	0.0300	0.0189	0.0394	0.0108	0.0322	-0.0181
	(0.0209)	(0.0220)	(0.0312)	(0.0270)	(0.0535)	(0.0502)	(0.192)
Female hh head*Children 5-18	-0.0429	-0.0424	-0.0151	-0.0681	0.0194	-0.0369	-0.205
	(0.0348)	(0.0374)	(0.0652)	(0.0527)	(0.108)	(0.0757)	(0.242)
Had farm income during previous 12 months		0.0818***					
		(0.0198)					
Had non-farm enterprises income during previous 12 months		0.169***					
		(0.0176)					
Had wage income during previous 12 months		0.0172					
		(0.0178)					
Had domestic remittances during previous 12 months		0.0707***					
		(0.0218)					
Had remittances from abroad during previous 12 months		-0.0238					
		(0.0446)					
Constant	0.789***	0.597***	0.693***	0.851***	0.739***	0.803***	0.672**
	(0.0432)	(0.0483)	(0.0568)	(0.0479)	(0.0953)	(0.0855)	(0.326)
Observations	3,001	3,001	2,384	1,617	983	621	90
R-squared	0.020	0.069	0.022	0.028	0.113	0.036	0.160

Note: OLS estimation results, standard errors clustered at EA level in parentheses, *** p<0.01, ** p<0.05, *<0.1. All estimations control for country fixed effects. Samples in col. 3-7 include only households receiving the relevant type of income before the Covid-19 outbreak. *Source*: HFPS R1 Nigeria and Uganda.

Appendix B

Government responses to the COVID-19 pandemic

In **Ethiopia**, preparations towards containing the COVID-19 outbreak began in January and February of 2020, and a national response was declared after Ethiopia's first reported case on March 13th, 2020. Measures included compulsory quarantine and a public awareness campaign (OECD, 2020). On April 8th, the Prime Minister declared a state of emergency, which resulted in school closures, the closure of nightclubs and entertainment outlets, and social distancing measures. In addition, all people entering Ethiopia from abroad were subject to a mandatory 14-day quarantine at designated hotels at the traveler's expense. The state of emergency expired in early September 2020, and some restrictions on travel and sports events have been lifted (IMF, 2020). However, by the end of January 2021, Ethiopia experienced another surge in infections, which was higher than the initial peak in August 2020. Nevertheless, new cases have been steadily declining after peaking again in early April 2021 (IMF, 2021). The crisis revealed vulnerabilities in the economy, including weak exports, low productive capacity, and low economic diversification (including a large contribution of air transportation to exports). In addition, Ethiopia experienced an increase in social unrest, which started the second semester of 2020, which has led to thousands of deaths and displaced 1.7 million people. The authorities postponed the elections twice due to the pandemic and the social unrest, initially from August 29th, 2020, to June 5th, 2021, and later to July 2021, when they were finally held (IMF, 2021).

In **Malawi**, President Peter Mutharika declared a State of Disaster on March 20th, 2020, even though the country had not registered any cases at the time. A few weeks later, on April 2nd, 2020, Malawi recorded its first three cases of COVID-19, leading the government to suspend all formal meetings, gatherings, and conferences (Water Aid, 2020). On April 4, the government instituted a partial lockdown of the country, with essential services continuing to function and critical businesses working in shifts, while schools were closed and group meetings and public functions were restricted to a maximum of 100 people (IMF, 2020). At the same time, the authorities instituted mitigation measures, such as sanitation at ports of entry and inspection of emergency goods (Republic of Malawi, 2020). All international flights to Malawi were suspended except those carrying essential health & other supplies and those returning Malawian citizens or residents. A two-week mandatory self-quarantine period was applied on people arriving from areas with high rates of infection. These measures, combined with spillovers from the global slowdown, border closures, and economic disruption in neighboring countries have slowed domestic economic activity (IMF, 2020). In early 2021, Malawi faced a more severe second wave of COVID-19 cases. The total cases per million people increased from 344.1 in December 2020 to 1,888.5 in June 2021 (IMF, 2021). To reduce contagion, Malawi has intensified screening of travelers, testing and contact-tracing, and continues to promote prevention measures (United Nations, 2021).

In 2020, **Nigeria** was simultaneously and severely hit by COVID-19 pandemic as well as the associated sharp decline in oil prices. In response to the pandemic, the country implemented a range of measures, including the closure of international airports, public and private schools, universities, stores and markets, and the suspension of public gatherings (IMF, 2020). At the federal level there was no declaration of a state of emergency, but most states shut down all non-essential businesses, public transportation, and state borders by early April 2020. The lockdown did not apply to those providing essential services, such as food distributors and retailers, including market stalls selling food and groceries, as they were allowed to operate for four hours every 48 hours (HRW, 2020). A first phase of economic reopening started on May 4th, 2020, and by June 2020, most offices were allowed to reopen. However, a comprehensive list of restrictions remained in place, including a nighttime curfew, a ban on non-essential inter-state passenger travel, partial and controlled interstate movement of goods and services, and the mandatory use of face masks or other coverings in public (IMF, 2020). Restrictions were further lifted further by early September 2020, including the reopening of airports for local flights "based on close monitoring", reopening of schools for returning students in secondary schools first, and the lifting of the ban on interstate travel. The nationwide curfew was maintained from 10 pm to 4 am while the use of facemasks in public places also remained mandatory and non-compliance punishable by law (Ibrahim, Ajide, & Julius, 2020). In December 2020, Nigeria entered a second wave of the pandemic, with daily new cases doubling the peak of the first

wave at end-January. In response, restrictions on mass gatherings were reinstated. Schools, however, resumed on January 18 after being shut down again in mid-December (IMF, 2021).

In **Uganda**, the first case of (COVID-19) was identified on March 20th, 2020. This was preceded by a Presidential address made on March 18th, 2020, where the authorities declared restrictions, including the closure of the borders with some countries, closure of schools, a ban on religious gatherings of any form, closing of non-essential business operations, and travel restrictions both internally and internationally. (Ministry of finance, planning and economic development, 2020). Starting in late May 2020, Uganda gradually relaxed the restrictions, including reopening schools for candidate classes, universities, and other tertiary institutions for all final year students (IMF, 2020). International commercial flights resumed on October 1st, 2020. However, in May 2021, Uganda experienced a new wave of COVID-19 infections and deaths. In response, a partial lockdown introduced in early June 2021 was extended by the President to a full lock-down, beginning on June 18th, 2021. This was partially relaxed at the end of July 2021.