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https://www.worldbank.org/en/data/interactive/2020/11/11/covid-19-high-frequencymonitoring-dashboard

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1 Introduction

The global coronavirus pandemic (COVID-19) dramatically slowed economic activity as governments implemented lockdown measures, individuals reacted by reducing both their mobility and economic activity, and firms' production processes were disrupted. These broader shifts in the economy affected both firms' demand for labor and workers' ability and willingness to work. In developed countries where data are readily available, labor market impacts varied considerably across countries, depending on initial economic and labor market conditions and variations in policy responses. Unfortunately, however, most of the countries with post-crisis data are high-income countries, and there is little systematic knowledge about the labor market impacts of the crisis in developing countries. Understanding how the pandemic affected labor markets in the developing world is crucial as governments and other actors continue to develop responses.

This paper has three main objectives. The first is to provide evidence from high-frequency phone surveys (HFPS) on the magnitude of the initial labor market consequences of the crisis. The second is to provide a detailed description of the nature of the HFPS data. Finally, the paper aims to evaluate the consistency of the HFPS data with other sources of data. Our analysis complements other methods and estimates, and regular revisions will be important to track labor market developments over time. The measures derived from the HFPS data differ from macroeconomic projections, particularly in Sub-Saharan Africa, and therefore provide important additional insights into the initial impacts of COVID-19 in developing countries.

Our paper is the first to report cross-country results on labor market outcomes from the HFPS data. We use data on 39 of the 52 countries contained in the December 1st vintage of the harmonized data. The data contain 6 countries in Europe & Central Asia, 7 in East Asia & Pacific, 12 in Latin America & the Caribbean, 2 in Middle East & North Africa, and 12 in Sub-Saharan Africa. Surveys were started in April 2020 and have been carried out in several waves since then. Survey timelines and methodologies including questionnaires were not identical across all regions and countries, but the World Bank's Data for Goals group undertook considerable effort to develop a harmonized data set to facilitate cross-regional and cross-country comparisons.

In addition to harmonization, a further methodological challenge is the limited representativeness of the surveys overall and within countries, as they were conducted via phone and used different sampling methodologies. In particular, most countries in Sub-Saharan Africa used a sampling frame based on a previous survey and explicitly sought to interview household heads, while surveys in Latin America and the Caribbean used random digit dialing to collect data (Table 3). This complicates comparisons of individual-level characteristics such as employment across regions. Because of the challenges regarding non-representative sampling of individuals, we report results under two different weighting methods. We rely on the household weights in the HFPS data for our main results and complement them with another weighting method as a robustness check. As a robustness check, we add an additional individual-level adjustment to the weights based on the World Bank's Global Monitoring Database (GMD).[2] Using this method, we assign an inverse probability weight to each individual observed in the data to make the distribution of individual characteristics (age, gender, education, and urban status) more aligned with the GMD.[3] In the robustness check, we examine how outcomes compare when we rely only on the household weights in the HFPS data and our second weighting method and generally find similar results.

We first report results on high-level measures of work stoppage based on questions that ask respondents whether they were working pre-pandemic and whether they were working at the time of the survey. We find that work stoppage was common. Taking a simple average across countries, 34% of respondents reported stopping work. The average across countries

[2] Part of the World Bank's harmonized survey repository, the GMD is a collection of globally harmonized household surveys that allow for cross-country and over-time analyses of representative samples.

[3] A further complication is that we cannot observe each of these variables for all countries in the HFPS data. We therefore use the widest available set of characteristics for adjustment.

in our data is 21% in the EAP region, 29% in the ECA region, 48% in the LAC region, 45% in the MENA region, and 26% in the SSA region. The cross-country average is 19% for low-income countries, 37% for lower-middle-income countries, 41% for upper-middle-income countries, and 26% for high-income countries. (We note that the set of countries in our data is not representative of regions or country income groups.)

In addition to work stoppage, we examine other measures of the labor market effects of COVID-19 available from the HFPS data. We find that a substantial share, 20% of wage workers, report partial or no payments for work performed in the LAC region where this information was collected. In some countries, up to 21% of respondents report changing jobs during the pandemic (on average 9% report changing jobs), another sign of disruptions and a possible coping mechanism. Taking the simple average across countries, 22% of agricultural workers reported stopping work as opposed to 40% for industry and 38% for services. Examining broader measures of income loss, we find that a high share of respondents reported total income loss (62%), as well as loss from farming (62%) and non-farming (75%) family businesses, and wage incomes (49%), conditional on having a specific source of income.

To better understand what the HFPS data are saying about the initial impacts of the crisis on labor market outcomes, we examine the relationship between HFPS measures of economic impact and external measures of crisis impact. We find that work stoppage in the HFPS data exhibits the expected negative relationship with GDP growth projections in the LAC region. In contrast, we find that work stoppage is weakly and positively correlated with GDP growth projections in the SSA region. Furthermore, we see the same pattern when it comes to household farm income reductions: The expected negative correlation in LAC and a positive correlation in SSA. We hypothesize that GDP growth projections may not be accurately capturing income changes in the agriculture sector and the informal economy, with informal labor market arrangements and self-employment, which are prevalent in many countries in the SSA region. This also highlights that the HFPS data, despite their limitations, are an important complement to macroeconomic projections. In particular, they can help identify household impacts "on the ground" that may not be picked up by GDP growth projections in low-income contexts. Looking at labor market statistics, we compare our labor market measure from the HFPS with official ILO employment data and also find that differences between the HFPS and ILO data for the countries for which both data were available exist when measuring some features of the labor market.

The findings highlight the value of the substantial effort to collect, harmonize, and compare phone survey data across countries, both to better understand the nature of the COVID19 shock, as well as its effects on different sectors and countries. Our findings that the phone surveys contribute additional information are consistent with Heath et al. (2021), who find that in urban Ghana interviews conducted on the phone and in-person led to differences in measures of employment, hours and days worked for the self-employed. The phone survey data, while far from perfect, contribute valuable new information on how households in a broad cross-section of developing countries were affected by this severe shock.[4]

The remainder of this paper proceeds as follows. Section 2 provides a review of the related literature and the background on the COVID-19 pandemic and the pre-pandemic labor market situation of the countries studied. Section 3 introduces the high-frequency phone survey data, the process of selecting the sample, and the weighting method. Section 4 reports results on the labor market impact of the pandemic, compares our estimates to other projections of economic and labor market activity and also provides a robustness check for the weighting method employed. Section 5 concludes.

[4] Even in developed countries, the Economist (2020) highlighted that data from other sources and official data sources do not always map perfectly with each other. However, these data provide valuable information to find turning points and one could pick up different patterns in the economy earlier than is possible with official data sources.

2 Literature and Background

2.1 Related Literature

Our work contributes to the recent and growing literature examining the labor market impacts of the COVID-19 pandemic around the world. Most analysis of early labor market impacts has focused on high-income countries, including Australia (Guven, Sotirakopoulos and Ulker, 2020), Austria (Bamieh and Ziegler, 2020; Gulyas and Pytka, 2020), Italy (Casarico and Lattanzio, 2020), Canada (Jones, Lange, Riddell and Warman, 2020), Denmark (Mattana, Smeets and Warzynski, 2020), the European Union (Pouliakas and Branka, 2020), Germany (Alipour, Falck and Schüller, 2020), Greece (Betcherman et al., 2020), Israel (Miaari, Sabbah-Karkabi and Loewenthal, 2020), Japan (Kikuchi, Kitao and Mikoshiba, 2020; Morikawa, 2020), the Netherlands (Hassink, Kalb and Meekes, 2020; von Gaudecker et al., 2020*a*,*b*), the Republic of Korea (Aum, Lee and Shin, 2020), Singapore (Kim, Koh and Zhang, 2020), Sweden (Hensvik, Barbanchon and Rathelot, 2020*a*; Juranek, Paetzold, Winner and Zoutman, 2020), the United Kingdom (Costa Dias et al., 2020; Crossley, Fisher and Low, 2021; Etheridge, Tang and Wang, 2020; Wadsworth, 2020), and the United States (Adams-Prassl, Boneva, Golin and Rauh, 2020; Angelucci et al., 2020; Avdiu and Nayyar, 2020; Baek, McCrory, Messer and Mui, 2021; Bartik et al., 2020*a*,*b*; Beland, Brodeur and Wright, 2020; Cheng et al., 2020; Chetty et al., 2020; Coibion, Gorodnichenko and Weber, 2020; Cowan, 2020; Dalton, Handwerker and Loewenstein, 2020; Dingel and Neiman, 2020; Forsythe, Kahn, Lange and Wiczer, 2020; Gallant, Kroft, Lange and Notowidigdo, 2020; Hall and Kudlyak, 2020; Hensvik, Barbanchon and Rathelot, 2020*b*; Kong and Prinz, 2020; Marinescu, Skandalis and Zhao, 2020; Mongey, Philossoph and Winberg, 2020; Murray and Olivares, 2020; Petroulakis, 2020; Yasenov, 2020). Overall, the findings of these individual country studies provide evidence of major initial labor market impacts along a number of dimensions in developed countries. For instance, for the United States the crisis led to widespread job losses, in particular for low-wage workers (Chetty et al., 2020), a collapse in job vacancies with some sectoral differences (Forsythe, Kahn, Lange and Wiczer, 2020) and increases in unemployment insurance (UI) claims (Kong and Prinz, 2020). In the European context, for the Netherlands, von Gaudecker et al. (2020*b*) find differences across sectors and occupations, similar to the disproportionate effect on low-wage workers noted by Chetty et al. (2020) for the United States, but they also find that the impact of government support on unemployment was far less than in the US and UK context.

Compared to the voluminous literature from high-income countries, there is scant evidence from the developing world on the labor market impacts of COVID-19, largely due to lack of data. Studies in high-income countries use a variety of data sources, ranging from surveys to government administrative data sets, from private sector transactions to data from social media and search engine companies. With some exceptions, work in developing countries needs to rely on survey evidence that would have to be collected for the specific purpose of studying the crisis and addresses specific questions. Recent work has found substantial impacts on employment and energy consumption in India (Beyer, Bedoya and Galdo, 2020; Deshpande, 2020; Dhingra and Machin, 2020; Lee, Sahai, Baylis and Greenstone, 2020), on family businesses in Nigeria (Avenyo and Ndubuisi, 2020), and simulated aggregate consumption in Uganda (von Carnap et al., 2020). While these papers consider individual countries and various specific situations in these countries, our data allow us to consider a much wider set of countries and to compare countries to each other.

Several sets of papers offer regional or even global assessments of the impacts of the crisis on different dimensions, often based on firm surveys, simulations, or Google search or mobility data. For example, Adian et al. (2020) find that small and medium enterprises in 13 countries were more affected by the crisis than larger firms. Apedo-Amah et al. (2020) confirm this using data from a wider set of countries, and also find that most adjustments occurred on the intensive margin of hours reductions or temporarily work stoppage. Bachas, Brockmeyer and Semelet (2020) simulate the shock on firms using administrative data from 10 countries and predict an annual payroll reduction of 5%-10%.

A smaller set of global studies explicitly considers distributional effects. Bargain and Aminjonov (2020) document that poorer regions across nine countries in Latin America and Africa were less likely to comply with stay-at-home orders, and therefore more likely to spread the disease. Dang, Huynh and Nguyen (2020) use surveys from China, Italy, Japan, Korea, and the United Kingdom to analyze the unequal effects of the pandemic by income level. They find that the poor are most likely to reduce savings and least likely to engage in behavioral change. Decerf, Ferreira, Mahler and Sterck (2020) provide global mortality and poverty estimates and estimate that the average number of additional years spent in poverty due to COVID-19 will be about 15 times greater than the number of lives lost. Busso, Camacho, Messina and Montenegro (2020) focus on social assistance to households in Latin America and find a substantial coverage gap in the 2nd and 3rd quintiles. Similarly, Lustig, Pabon, Sanz and Younger (2020) report evidence on the impact of lockdowns and expanded social assistance in Argentina, Brazil, Colombia, and Mexico. They conclude that impacts were worst for households in the middle of the ex-ante per capita income distribution.

At least two studies examine real-time private sector data to document impacts. Abay, Tafere and Woldemichael (2020) use Google Search data to estimate the demand for various services in 182 countries and find substantial contraction in demand for services such as retail trade, restaurants, and hotels. Meanwhile, Sampi and Jooste (2020) use Google Mobility data for nowcasting economic activity in the Latin America & the Caribbean region and find that it predicts falls in industrial production.

Several related papers consider the ability of different workers to work from home in a wide set of countries. Garrote Sanchez et al. (2020) examine the EU and find that jobs most at risk account for 30 percent of all EU employment and tend to be filled by lessskilled workers. Gottlieb, Grobovˇsek, Poschke and Saltiel (2020) find that only about 20 percent of urban workers can work from home in poorer countries, versus 37 percent in rich countries. Hatayama, Viollaz and Winkler (2020), using a different sample of 53 surveys, confirm that more developed countries have a greater share of jobs amenable to working from home.

Delaporte and Peña (2020) study working from home in Latin American and Caribbean countries and estimate that the share of workers that can work from home varies from 7 percent in Guatemala to 16 percent in the Bahamas. Another set of global studies considers policy responses to the pandemic and their consequences. Alon, Kim, Lagakos and VanVuren (2020) develop a macroeconomic model and conclude that blanket lockdowns are less effective in developing countries. Maloney and Taskin (2020) analyze the determinants of social distancing and economic activity across countries. They conclude that much of the social distancing behavior was voluntary rather than a result of repressive restrictions. Azevedo et al. (2020) and Psacharopoulos, Collis, Patrinos and Vegas (2020) focus on school closures. They estimate significant negative effects on years of schooling adjusted for quality, which will significantly depress future earnings of affected cohorts. Demirgüç-Kunt, Lokshin and Torre (2020) estimate the effects of non-pharmaceutical interventions across countries in Europe & Central Asia and find that countries that implemented restrictions sooner had better short-term economic outcomes. Similarly, the International Monetary Fund (2020) concludes that mitigation measures have been successful in bringing down infections and set the stage for an eventual recovery from the downturn.

The analysis most closely related to this paper is International Labour Organization (2020), which specifically monitors labor market impacts, in particular the effect of workplace closures, working hours losses and labor income losses derived from labor force surveys. These reports find that a large share of the world's workers live in countries with workplace closures (with a peak of 97 percent in April 2020). In their analysis, working-hour losses are high and translate into substantial losses in labor income. This work complements that analysis in two ways. First, it looks at a wide variety of labor market outcomes, including work stoppage, income loss, income and job changes. Second, this study considers a larger set of developing countries, particularly in Sub-Saharan Africa, that are not reporting labor statistics during the pandemic. Considering the literature as a whole, this paper makes three main contributions. First, it considers developing countries instead of developed countries, which have been the focus of most existing studies. Second, it compares the labor market impacts across a variety of developing countries spanning multiple regions. This paints a richer and more accurate picture of how the crisis affected workers than existing global or regional studies based on firm data, in large part because the phone survey data include informal sector workers who make up a large share of workers in low-income contexts. Finally, the paper compares measures derived from the HFPS data to measures published by the International Monetary Fund (2020) and the International Labour Organization (2020) to understand the early labor market effects of the crisis in the context of official macroeconomic and labor market data. The comparison reveals that labor market outcomes based on the high frequency phone survey data differ markedly from standard macroeconomic measures of growth, especially in Sub-Saharan Africa.

2.2 Background: The COVID-19 Pandemic

Coronavirus disease 2019 (COVID-19) is an infectious disease caused by severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). During the first half of 2020, COVID-19 spread globally: by November 2020, 216 countries and territories have reported cases. COVID-19 is highly infectious. Its symptoms include fever, cough, shortness of breath, difficulty breathing, chills, muscle pain, headache, sore throat, and reduced sense of taste or smell. It can cause a wide spectrum of diseases ranging from mild illness to moderate and severe pneumonia, respiratory failure, and death. By mid-January 2021, there have been 93 million confirmed cases and 2 million deaths worldwide.

Columns 5-8 of Table 1 show the number of confirmed cases, the number of confirmed cases per million, the number of deaths, and the number of deaths per million on May 31 (the midpoint of our surveys) in the countries included in our data. The table suggests that measured by the number of deaths, the pandemic was not very severe in the East Asia & Pacific and the Sub-Saharan Africa countries included in our data. It was most severe in some of the Latin America & the Caribbean countries, particularly in Ecuador, Peru, and Mexico, while the Europe & Central Asia countries in our data experienced moderate outbreaks, apart from Romania which was hit particularly hard.

2.3 Background: Government Responses and Economic Impacts

Governments around the world have responded to COVID-19 by implementing lockdowns and mobility restrictions to slow the spread of the virus. The pandemic itself and government restriction policies have disrupted normal economic activity in a multitude of ways, impacting virtually all major parts of the economy. Consumption was reduced, investment activities have in some cases been slowed down, import and export relationships have become strained. Both the demand and supply sides of labor markets have been heavily impacted in many countries. Table 2 shows measures of government responses to the pandemic, including the economic support index, the stringency index, and the workplace closing index published by the Oxford COVID-19 Government Response Tracker (OxCGRT).[5] On average, countries in the ECA and LAC regions provided the most economic support, though at the same time the stringency of lockdowns and workplace closings ordered by the government were also quite severe in the LAC region. SSA countries provided the least economic support, but they also had the least stringent lockdowns and workplace closing measures on average.

The overall economic impact of the pandemic has been severe: Columns 9-11 of Table 1 show the International Monetary Fund's estimate of the economic impact of the pandemic in the countries included in our data. Column 9 shows the October 2019 World Economic Outlook (WEO) projection for 2020 GDP change, Column 10 shows the same projection from the October 2020 WEO, and Column 11 shows the difference. For every country in our data,

[5] The OxCGRT data for the three indices were averaged for the period January 1 to May 31, 2020. The OxCGRT measures aim to analyze the government responses to the pandemic. These indicators are compiled to measure the various policies, such as school closures and restrictions, across more than 180 indicators, resulting in several indices and sub-indices. The economic support index records measures of income support and debt relief from 0 to 100. The stringency index records the strictness of 'lockdown style' policies that primarily restrict people's behavior from 0 to 100. The workplace closing index, a subindex, records the closing of workplaces from 0 to 3. In each of these indices, a higher number implies more restrictions.

the projection has worsened by at least 4 percentage points, and in many cases by much more. The Latin America & the Caribbean region saw the biggest negative economic impact according to the IMF, with decreases in projections ranging from 5.5 percentage points in Guatemala to 17.6 percentage points in Peru.

It is useful to understand what labor markets and in particular employment trends looked like in the set of countries that we study pre-pandemic. Columns 12 –14 of Table 1 show the International Labour Organization's pre-pandemic 1st quarter of 2020 and 2nd quarter 2020 data for the countries that have both quarters available and the change between the two quarters. For the subset of countries of the HFPS that have ILO employment data available for the two quarters, the range shows very small increases in employment (0.73) to large declines (-23.98).

3 Data and Methods

3.1 High-Frequency Phone Survey Data

We use harmonized data from the World Bank's High Frequency Phone Surveys (HFPS). The surveys have been harmonized both ex ante and ex post in the data production stage, but differences across countries remain in terms of questionnaire and sampling design. The data used from the surveys cover 12 countries in the Sub-Saharan Africa (SSA) region, 12 countries in the Latin America & the Caribbean (LAC) region, 7 countries in the East Asia & Pacific (EAP) region, 6 countries in the Europe & Central Asia (ECA) region, and 2 countries in the Middle East & North Africa (MENA) region. Currently no countries in the South Asia (SA) region are included. Eight countries are low income, 17 are lower middle income, 10 are upper middle income and 4 are high income. Going forward, more countries will be added to the HFPS data, including several in South Asia. We analyze the first wave of data for each country, for waves collected between April and July 2020. Table 3 shows information on the set of countries included, the month data were collected, the number of survey respondents, the survey sampling, and the availability of some key variables. The final sample size for countries ranges from 692 (Paraguay) to 5,346 (Vietnam). The mean number of respondents is 1,666, while the median is 1,288.

3.2 Variable Definitions

We begin by examining whether workers stopped working after the pandemic set in. Workers are classified as having stopped work if they answered yes to the question "Was the respondent working before the pandemic?" (working pre-pandemic) and no to the question "Did the respondent work in the last week?" (currently working). However, surveys in most countries did not ask respondents if they were working before the pandemic if they reported that they are currently working. Hence, it is not possible to estimate the number of workers prior to the crisis. This in turn means that it is not possible to construct the share of workers who were working prior to the pandemic that stopped working, because the denominator is unknown. We therefore approximate the share of workers who stopped working by dividing the number of people who stopped working by the sum of the number of people who stopped working and those that were currently employed at the time of the survey. In the LAC countries, however, the questionnaires asked respondents about their past work and whether they were currently working or not. Across the 12 LAC countries where both measures can be constructed, the two measures have a correlation of 0.99, suggesting that this approximation is highly accurate.

In addition to stopping work, we consider several other variables from the HFPS surveys to measure economic impacts. These include *partial or no payment for work performed among wage workers* ("For the work that you did in the last week, will you be paid/were you paid?"), *changing jobs* ("Has the respondent changed jobs since the beginning of the pandemic?"), as well as *income change* ("Has your household income changed since the pandemic started?"). For income change, we consider four income sources: (i) total; (ii) family farming, livestock, or fishing; (iii) non-farm family business; and (iv) wage employment. Table 4 summarizes the questions used and our variable definitions.

3.3 Representativeness and Weighting

The HFPS surveys are not nationally representative at either the household or individual level. Only households where a member owned a phone, had access to electricity and mobile network coverage as well as was willing to participate were interviewed. To partially address this, most surveys adjusted the household sample weights to account for the non-random selection of households.[6]

Questions of representativeness at the individual level are more serious, because many surveys drew their sample from an existing pre-pandemic survey, and these explicitly sought to interview heads of households or their spouses. For these surveys, we therefore mainly observe the labor market outcomes of household heads. We observe data on relation to head in 20 countries, which unfortunately excludes the surveys from LAC, which did not collect this information. In these 20 countries, 67 percent of the sample are heads (vs 23 percent in the GMD), 18 percent are spouses (vs 17 percent in the GMD), and 11 percent (vs 44 percent in the GMD) are children. To the extent that heads have different labor market outcomes than others in the households, the phone surveys that explicitly sought to interview heads will present a biased picture of labor market outcomes.

Selection bias in labor market outcomes is a particular concern when comparing labor market outcomes in Sub-Saharan Africa to those in Latin America & the Caribbean, for two reasons.[7] First, the surveys in LAC were conducted through random digit dialing rather than

[6] The only surveys that did not use household weights were those from Poland and South Sudan.

[7] Within-household decisions, such as between the head and non-head of the household, on labor market participation and labor supply may also be important. There may also be differences in the labor supply elasticities between the household heads and non-household heads. As McKenzie (2004) in his study of a sharp economic contraction points out, labor supply is generally considered to be more elastic for women and young adults than prime-age males. One would expect a larger supply response from these groups, especially if they are non-household heads. This in turn could have an effect on potentially underestimating the employment effects in SSA, with data based mainly on household heads, presumably prime-age males.

recontacting households interviewed in an existing survey. The latter sampling strategy usually sought to re-interview household heads while the former did not. As mentioned above, this means that the surveys outside LAC are highly skewed towards heads. Second, the surveys in the LAC region use an additional reweighting procedure to construct individual weights. These weights essentially adjust for survey non-response and calibrate the sum of weights to match those from pre-crisis survey or census data. For surveys outside LAC, household weights are used with no comparable adjustment for individual weights. Therefore, comparisons of individual outcomes like labor market impacts between the RDD surveys in LAC and the recontact surveys in SSA should be interpreted with care.

As a robustness check, we attempt to make individual-level outcomes observed in the HFPS data more representative of the broader population by applying inverse probability weights estimated using the Global Monitoring Database (GMD). The GMD is a harmonized database of household surveys used for official poverty measurement. For each country, we use the most recent available year from the GMD to estimate inverse probability weights based on age, gender, living in an urban area, and level of education where available. Using this type of inverse probability weighting is well-established in the statistics and economics literature.[8] In some countries, the urban and/or education indicators are not available. In these cases, we rely on the set of available variables for weighting. (Table 3 shows the available weighting variables for each country.) We pool the HFPS and GMD data, and run a probit regression of an indicator to estimate the probability for being in the HFPS data on the available set of weighting variables from the GMD, weighted by the survey-based household weights. The inverse of the estimated probability is the weight. This gives greater weight to observations that appeared in the HFPS sample despite having a low predicted probability of being included in it. This procedure only corrects for selection bias due to the few observed variables used to estimate the probability. In Section 4.5, we examine robustness and find

[8] See, for example, Horvitz and Thompson (1952), Woolridge (2002, 2007), Busso, DiNardo and McCrary (2014), and Li, Morgan and Zaslavsky (2018).

that this correction generally makes little difference between our main results based on HFPS household weights and our weighting system based on GMD data.

3.4 Sample Definition

In order to arrive at the analytical sample summarized in Table 3, we implement several filters. First, we drop several countries for various reasons. We exclude the Central African Republic and the Democratic Republic of Congo, because the surveys were carried out exclusively in the capital cities. We exclude Argentina, Cambodia, the Arab Republic of Egypt, Iraq, Mozambique, Sierra Leone, Somalia and the Republic of Yemen because the survey data for these countries have not been approved for public disclosure. Second, we limit our analysis to the first survey wave in each country and the months of April to July. We exclude the Philippines because the Wave 1 data are from August. Finally, we limit our sample to respondents ages 15 to 64 and drop observations with missing age. We exclude Chad and Senegal because age is not available in the data.

3.5 Other Data

In addition to the HFPS data, we use several data sets to describe pandemic severity, macroeconomic and labor market projections, and for weighting purposes.

Pandemic severity data. To describe pandemic severity, we use data from the University of Oxford's Our World in Data (OWID) COVID-19 data set. Specifically, we use May 31 (the midpoint of our surveys) data on the number of cases, the number of cases per million, the number of deaths, and the number of deaths per million. The original source of the OWID COVID-19 case and death data is the European Centre for Disease Prevention and Control (ECDC) which collects data on countries around the world.

Macroeconomic projections. To relate our findings to macroeconomic projections on the economic impact of COVID-19, we use data from the IMF's World Economic Outlook (WEO).

To measure the pandemic's impact on the macroeconomic outlook of countries, we compare October 2019 projections with October 2020 projections. This allows us to describe changes in outlook due to the pandemic. The specific GDP measure that we use is the annual percent changes of constant price gross domestic product, where the base year is country-specific, according to WEO.

Labor market projections. To relate our findings to other labor market projections on the economic impact of COVID-19, we use data from the International Labour Organization's (ILO's) ILOSTAT, the employment-to-population ratio in percent, the number of persons who are employed as a percent of the total working age population, based on country labor force surveys, restricted to the group ages 15 years or older. The quarterly data for quarter 1 and quarter 2 of 2020 allow us to describe the change in employment at similar time points to the HFPS measure of the labor market.

4 Results

4.1 Disruptions to Work in the High-Frequency Phone Surveys

We start by examining the impact of the pandemic on work stoppages in different countries. As discussed in Section 3.2, we count a respondent as having stopped work if she was working pre-pandemic but no longer working the week preceding the interview. Figure 1 shows the share of respondents who report stopping work during the pandemic by country.

Panel (a) of Figure 1 groups countries by region, highlighting EAP countries in blue, ECA countries in red, LAC countries in green, MENA countries in yellow, and SSA countries in purple. Taking a simple average across countries, 34% of respondents reported stopping work. The average across countries in our data is 21% in the EAP region, 29% in the ECA region, 48% in the LAC region, 45% in the MENA region and 26% in the SSA region. (We note that the set of countries in our data is not representative of regions.) There is significant variation, even within regions. For example, within the LAC region, at the lower end 30% stopped working in Chile and 36% in Costa Rica, while at the higher end 59% stopped working in Peru and 69% in Bolivia. In the SSA region estimated shares are as low as 8% in Madagascar and 11% in Burkina Faso and shares as high as 50% in Nigeria and 62% in Kenya.

Upper-middle-income countries (41% on average) and lower-middle-income countries (37%) had the most work stoppage. High-income countries had 26% of respondents on average stop work, followed by low-income countries at 19%. (We note that the set of countries in our data is not representative of country income groups.)

In the LAC countries, respondents were also asked about whether they were planning to return to work if they stopped working. For these countries, we break down the overall share of workers who stopped working by whether they were planning to return to work in Panel (c) of Figure 1. It suggests that the majority of workers who stopped working were planning to return to work, though there is some variation across countries.

In addition to stopping work altogether, we examine measures of reduced payment. Figure 2 shows the share of respondents reporting partial or no payments for work performed among wage employees. This question on partial or no payments for work performed is available mostly in countries in the LAC region. The share reporting partial or no payments in this region ranges from 17% in Chile to 30% in Peru. This indicates that in addition to stopping work, reductions in pay due to reduced economic activity was an important challenge to workers. The workers nominally kept their jobs but were not receiving the full payment for the work performed, either possibly due to some furlough type of arrangements or employers delaying or reducing the pay in response to the crisis. Workers may also have adjusted working hours, but with the HFPS data we cannot measure reduced working hours
directly.

The large disruption in the labor market is also apparent from the high share of workers changing jobs during the pandemic (Figure 3). Where data are available, job changing ranged from 2% to 21% in the SSA region and 4% to 14% in the LAC region. This could be an indication that some of the jobs that workers changed from were affected by the pandemic while the jobs that workers changed to were either new jobs or some type of self-employment or in sectors that were differentially affected by the crisis.

4.2 Heterogeneity by Sector and Employment Type

To examine the heterogeneity of labor market disruptions by sector, we divide workers into three broad sectors: Agriculture, Industry, and Services. Agriculture includes the "Agriculture, Hunting, Fishing, etc." sector, Industry includes the "Mining", "Manufacturing", and "Construction" sectors, and Services includes the "Public Utility Services", "Commerce", "Transport and Communication", "Financial and Business Services", "Public Services", and "Other Services, Unspecified" sectors. We do not have data on both pre-pandemic and current sector of employment in every country. In some countries, respondents were only asked about pre-pandemic sector if they stopped working. Therefore, we start by assigning the observed pre-pandemic sector to respondents if they stopped working.[9] Then for workers for whom we could not assign a pre-pandemic sector, we assign their current sector if it is available. For this analysis, we drop 12 countries for which we do not have pre-pandemic sector or any current sector information, leaving information on 27 countries.

Figure 4 shows the share of workers who stopped working in each of the broad sectors: Agriculture in Panel (a), Industry in Panel (b), and Services in Panel (c). We can observe that workers were more likely to stop working in services (taking a simple average across countries, 38% stopped working) and industry (40%) than in agriculture (22%). This is likely because these sectors require more face-to-face interactions. But nevertheless,

[9] For workers who were not asked to report their pre-pandemic sector and did change jobs, we code pre-pandemic sector as missing.

disruptions are also significant in agriculture. We have sector information for more LAC countries than other regions but like for overall work stoppage (Figure 1), it is apparent that LAC countries experienced the most disruption according to the HPFS measure, while the EAP region experienced the least disruption, even in the services sector. To the extent that data are available, SSA countries experienced significant disruptions for industry and services, but less so for agriculture.

Figure 5 shows an additional dimension of heterogeneity, considering the self-employed vs employees. This variable is mostly recorded in the LAC and ECA regions only. It appears that stopping work is somewhat more common among the self-employed (46%, taking a simple average across countries) than among employees (39%).

4.3 Measures of Income Loss

In addition to stopping wage work and payments for wage work, the HFPS data allow us to examine broader measures of household income. Because these indicators are measured at the household level, they are less influenced by the non-representative nature of the sample of respondents in some countries. We examine four income categories: total household income, farm income, non-farm income, and wage income. Results are reported in Figure 6.

Panel (a) suggests that total income loss was most prevalent in some SSA countries (Ghana, Nigeria, and Malawi), as well as some countries in the LAC region (Peru and Ecuador were the most affected). It appears that labor market disruptions have translated into widespread income loss in all countries, including high-income countries with stronger social security systems and public assistance programs. It is notable that in many countries, particularly in the EAP region, many more respondents report income loss than stopping work.

Panel (b) suggests significant drops in farm income across a broad set of LAC and SSA countries, as well as some countries in the EAP region. Drops in income from family farming suggest that the economic impacts of COVID-19 go beyond formal labor markets and the formal economy, including in many countries where these less formalized sectors are a significant share of economic activity. Based on Panel (c), other types of family businesses were hit even harder, especially in the LAC and SSA regions. This is consistent with the sectoral heterogeneity in stopping work observed in Section 4.2 where we found that agriculture, industry, and services were all hit significantly, though the latter two sectors fared even worse than agriculture. Finally, Panel (d) suggests, consistent with Figures 1 and 2 that wage income losses were severe, especially in the LAC region, followed by some SSA countries. To understand the information content and internal validity of our different measures of labor market disruption, in Figure 7 we plot the relationship between four measures of income loss (total, farming, non-farming, and wage income) and stopping work. It appears that there is a broad positive relationship between each of the income measures and stopping work, although in general a higher share of respondents report household income loss than work stoppage. Furthermore, the relationship between work stoppage and wage income is much stronger than work stoppage and total income. This is consistent with income loss applying to all members of the household, and also with the finding that beyond stopping work, workers experience other disruptions, including reduced or no pay for work performed and changing jobs. Overall, however, the results suggest internal consistency between the prevalence of declines in household wage income and work stoppage, despite the latter being measured using a non-representative sample.

4.4 Relationship with Macroeconomic Projections and ILO Employment Data

The labor market measure "stopped working" from HFPS differs in many cases from macroeconomic projections. Figure 8 shows the relationship between the HFPS-based measure of the loss of work and the change in the International Monetary Fund's (IMF) World Economic Outlook (WEO) GDP projection for each country. The change in the WEO projection is the difference between the October 2019 and the October 2020 projections of

2020 GDP growth. Panel (a) suggests that the relationship goes in the expected direction in the LAC region: countries where the WEO projection has worsened more show higher shares of stopping work, with some notable outliers. At the same time, Panel (b) suggests that there is no relationship between the WEO's projection change for countries in the SSA region. An important caveat when comparing the stopping work measures in the LAC and SSA regions is that sampling frames were different in different regions (Table 3 shows information on the sampling frames in each country). In particular, surveys in SSA countries focused on household heads. We do a number of things to deal with this concern. First our weights are to some extent able to make our sample more representative at the individual level. Second, and more importantly, in Section 4.3 we showed that stopping work measures are consistent with household-level income loss measures. The subsequent panels of Figure 8 also demonstrate that these broader measures of income are related to the WEO change in the same way as stopping work in the LAC region, but also do not show a strong relationship with the WEO change in the SSA region.

Panels (c)-(h) show the same relationship between different income components (farming, non-farming, and wage income) and suggest a similar pattern of consistent relationships in the LAC region but weak and inconsistently signed relationships in the SSA region. This suggests that HFPS-data may be picking up economic impacts that are not typically incorporated into macroeconomic projections. However, the non-representative nature of the sample in SSA may also influence the comparison between the rate of work stoppage and the WEO GDP growth projections, meaning that further investigation is needed.

One piece of additional evidence comes from firm surveys that were fielded by the World Bank, which show that firm survey measures of labor demand also do not line up well with macroeconomic projections of GDP growth. To assess labor demand from the firm side, we draw on aggregate country estimates of the share of firms that laid off workers and the share of firms that reduced wages, hours, or granted leave to employees from a recent policy research working paper (Apedo-Amah et al 2020). Figure 9 shows that these measures of labor demand are not associated with changes in the WEO's GDP projections for 2020. This suggests that labor market impacts and ultimately other measures of household welfare during the pandemic are not fully captured by GDP projections in the developing world. This could be because of the differences in time horizons, as the macroeconomic projections pertain to the entire year while the household and firm surveys measure initial impacts in the spring of 2020. Other potential reasons for discrepancies include the significant informality in the labor market in developing countries, and the difficulty that GDP projections face in incorporating the role of labor market institutions and labor market policy responses to the pandemic.

Interestingly, both household and firm survey measures of business revenues are more aligned with projected GDP growth. Using recent firm survey data and the HFPS question "Has the revenue from that business decreased since the pandemic started?", the two panels of Figure 10 show that when available, business sales and revenue data are more correlated with the downward adjustment of the WEO GDP projections. This suggests that GDP projections are better at capturing the impact of the pandemic on business operations, which are more likely to be at least somewhat formalized or interact more closely with the formal economy.

Another important external source of information comes from the labor market indicators reported by the ILO. These indicators are based on national labor force surveys which ascertain labor market outcomes for all adults in the household and are based on larger samples than the phone surveys, which we employ for our analysis. We therefore compare the phone survey measure, the share of stopped working, with the ILO employment-topopulation ratio data available for the same time frame, quarter 1 and quarter 2 of 2020.[10]

Comparing the phone survey measure, the share of stopped working, with the ILO employment-to-population ratio data available for the same time frame, unfortunately only

[10] The data come from the ILO collection STLFS Short-term labor force indicators, updated December 3, 2020.

12 of the HFPS countries that have the share of stopped working variable for this period overlap with the quarterly ILO data, which also are limited in terms of current availability. Figure 11 shows that most of the countries seem to have higher values for the labor market change measured by the HFPS data than for the labor market changes measured by the ILO data, although the two measures are strongly correlated (0.74).[11]

The phone survey data seem to pick up some of the changes faster and more immediately than official employment statistics. In particular, the ILO definition of employment classifies those who are not working but expect to go back to work, for example because of vacation, as employed. Under normal circumstances this is a small share of workers, but the phone survey data from LAC mentioned above suggests a large share of workers fell into this category immediately following the onset of the pandemic. This suggests that the measure of stopping work in the phone surveys may better capture the full extent of labor market disruption than the official ILO concept of employment in the immediate aftermath of the crisis, despite legitimate concerns about the representativeness of the phone survey samples. This provides additional evidence that the HFPS phone survey is useful in measuring initial impacts and captures dimensions missed by other sources of data.

Finally, we compare the WEO macroeconomic growth projections with the ILO's reported information on employment changes in Figure 12. The ILO measure and the WEO measure of change for this comparison include 26 countries, 12 overlapping with the HFPS phone survey and 14 that are not, which are all developing countries. Here, again it seems that the WEO GDP projections show a different pattern than the ILO employment change. For example, Georgia and Chile have similar changes in GDP growth projections despite the latter having much greater employment loss in the ILO data. This is a further indication that WEO GDP projections are not necessarily picking up employment outcomes on the ground. The HFPS phone survey data in particular appear to be reflecting short-term employment

[11] Looking at measure of stop work for specific broad sectors, industry and services, a very similar picture emerges as for the general stop work measure; however, the country subset is even smaller.

changes that might take more time to appear in the official firm and labor force surveys, national statistics and therefore in macroeconomics and employment projections.

4.5 Robustness: Alternative Weighting

In our main estimates, we use the HFPS survey weights. Figure 13 shows scatterplots for six key measures (share stopped working, share with partial or no payments, share changed job during the pandemic, shared with reduced consumption, share with hungry adults, and share selling assets) when we use additional inverse probability weights to adjust for individuallevel representativeness relative to the GMD vs using only the HFPS survey weights.

With the exception of job changes, the panels of this figure suggest that the results are quite robust to using either of the weighting methods. The correlation is generally very high, over 0.95 for all the outcomes studied. This suggests either that the labor market outcomes of heads were generally consistent with the outcomes of children, or that the limited set of demographic characteristics used to reweight the estimates is unable to adjust effectively for these differences. Distinguishing between these two potential explanations is an important topic for further research.

5 Conclusion

COVID-19 had a severe negative impact on labor markets in all regions. The estimates based on high-frequency phone survey data suggest that in all countries, work was severely reduced. Work stoppage, reduced working hours, and the overall economic impacts of the pandemic led to substantial income loss. Further disruption was apparent through partial or no payment of wage workers and job changes.

To better understand the HFPS measures of work stoppage and income loss, we compare them with changes in GDP growth projections and ILO quarterly employment estimates.

Macroeconomic projections do not capture the full impact on households, particularly in Sub-Saharan Africa. HFPS and firm survey data on reduction in business revenues, while only available for a limited set of countries, show a more positive correlation with economic prospects captured by the WEO's GDP projection. This suggests that the impact of the pandemic on labor markets and households may not be fully captured by the GDP projections, particularly in low-income and lower-middle-income countries and in SSA. This may result from a high level of informality that is not fully reflected in GDP projections.

HFPS data are a valuable source of information to monitor the impacts of COVID-19 in developing countries. High-frequency phone surveys can shed light on aspects of the economic impact of the pandemic that are difficult to capture using more traditional data. They can be conducted more quickly than GDP statistics, which often rely on projections in real time and are significantly revised in subsequent years. Moreover, phone surveys can uncover dimensions of heterogeneity, as well as information on coping mechanisms and potential implications on the lives of respondents that are not captured by official economic statistics.

Of course, HFPS survey data have limitations too. Particular care and effort must be taken when comparing and harmonizing surveys from different countries. Further, the surveys are not nationally representative, as they can only reach phone owners and in many countries greatly over-represented heads. However, we see that measures of stopped work in the phone surveys are more consistent with reductions in household wage income, estimates of demand reduction in firms, and ILO employment estimates than GDP growth projections. Also, the initial round of the phone surveys contained few variables found in traditional face-to-face household surveys implemented before the crisis. As a result, the reweighting procedure could only utilize a few variables and did not have a large effect on the results. Despite these limitations, harmonized data from phone surveys appear to contribute valuable new information on how households in a broad cross-section of developing countries were affected by this severe shock. This is in line with recent findings by Heath et al. (2021) that comparing interviews conducted on the phone and in-person led to differences in measures of employment, hours and days worked for the self-employed in Ghana.

The rapid deployment of phone surveys to measure the socio-economic impacts of COVID19 was only possible because of an extraordinary effort around the globe. To be better prepared for such rapid deployment in future emergencies, National Statistics Offices can invest now to improve the speed of deployment and quality of data. Investments in statistical infrastructure (e.g., the preparation of representative sampling frames for phone surveys), physical infrastructure (e.g., setup of phone centers) as well as human capital (e.g., establishment of capable units designing, implementing and disseminating results from phone surveys) will be needed. The establishment of such Emergency Observatories can be a game-changer for policy making, as well as policy analysis and research, in the future.

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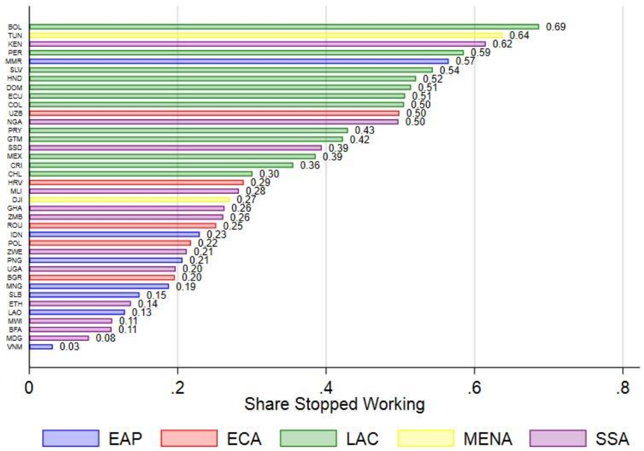
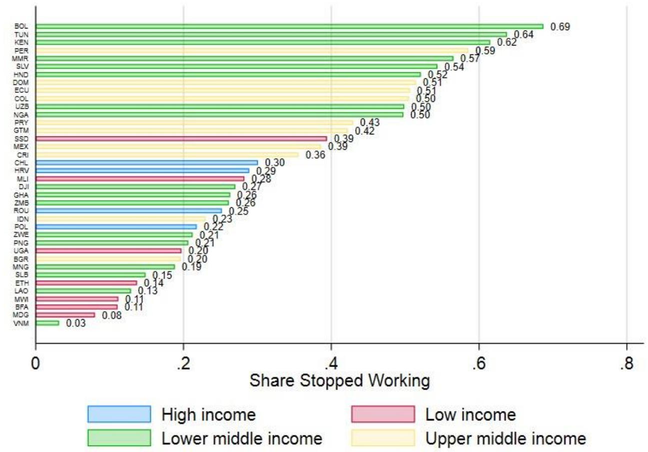
Figure 1: Share Stopped Working By Country

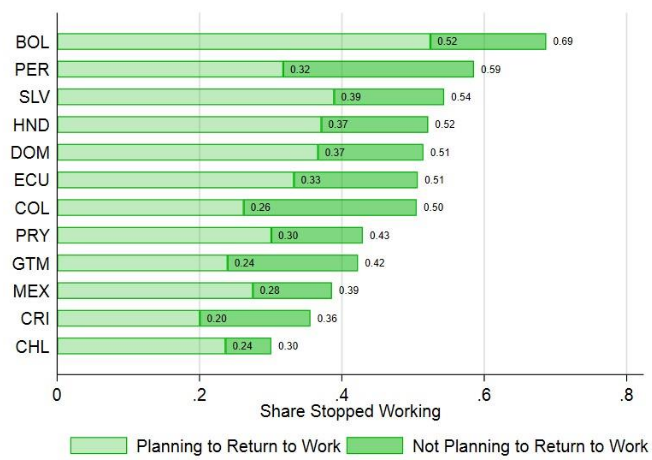
(a) By Region



(b) By Income

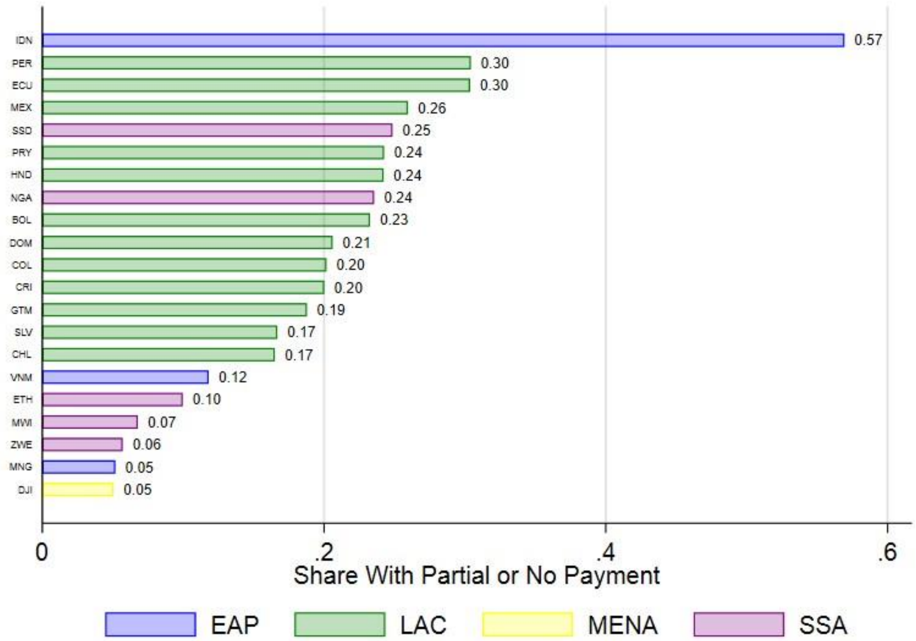


(c) Planning to Return to Work



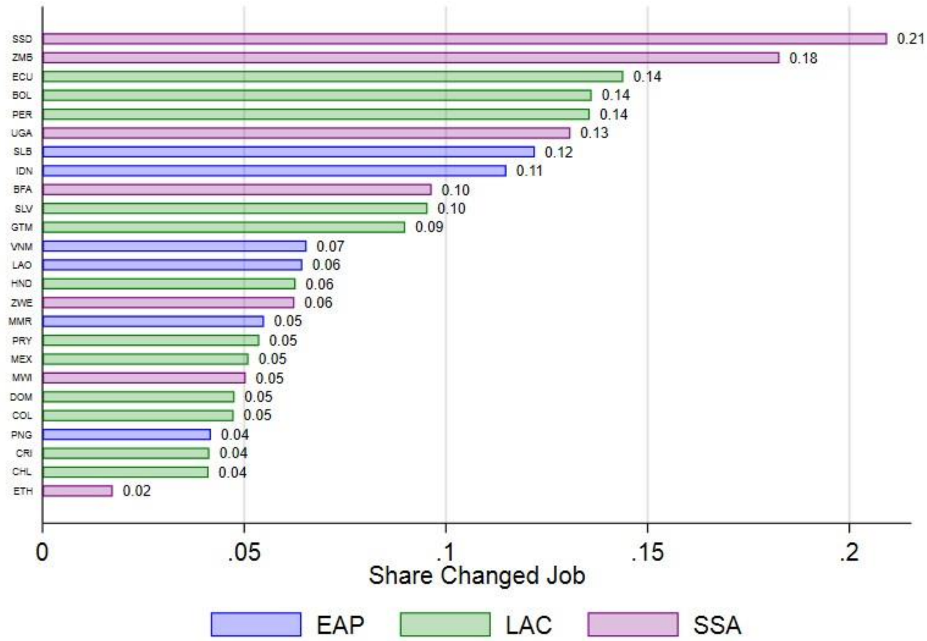
Notes: Figure shows the share of respondents who report stopping work in the high-frequency phone survey in each country, grouping countries by region (Panel (a)) and by income (Panel (b)). In Panel (a), East Asia & Pacific (EAP) is in blue, Europe & Central Asia (ECA) is in red, Latin America & the Caribbean (LAC) is in green, Middle East & North Africa (MENA) is in yellow, and Sub-Saharan Africa (SSA) is in purple. In Panel (b), high-income countries are in blue, lower middle-income countries are in green, upper middle-income countries are in yellow, and low-income countries are in red. Panel (c) breaks down stopping work by whether the respondent plans to return to their job (only available in the LAC region).

Figure 2: Share of Wage Workers With Partial or No Payments



Notes: Figure shows the share of wage workers who report receiving partial or no payments for work performed, in the high-frequency phone survey in each country, grouping countries by region. Where available, the regions are indicated as East Asia & Pacific (in blue), Europe & Central Asia (in red), Latin America & the Caribbean (in green), Middle East & North Africa (in yellow), and Sub-Saharan Africa (in purple).

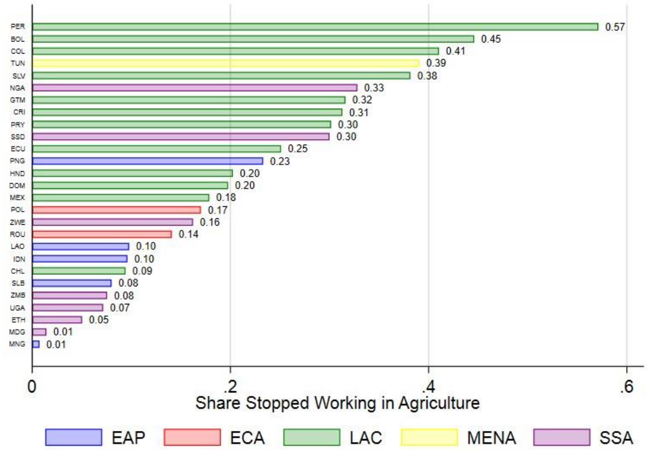
Figure 3: Share Changed Job During the Pandemic



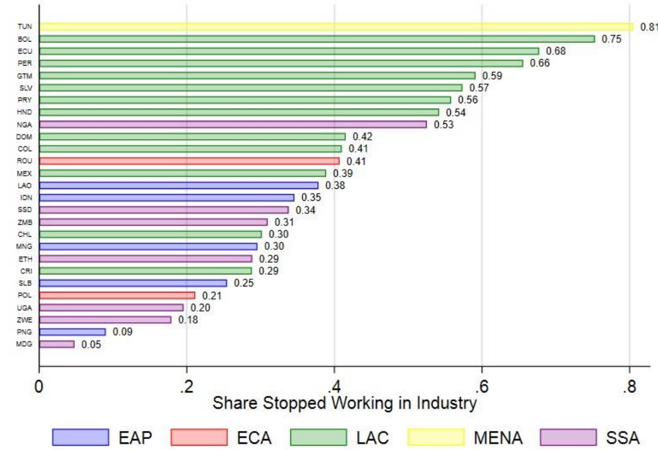
Notes: Figure shows the share of respondents who changed their job during the pandemic, in the high-frequency phone survey in each country, grouping countries by region. These data are available in some countries in three regions: East Asia & Pacific (in blue), Latin America & the Caribbean (in green), and Sub-Saharan Africa (in purple).

Figure 4: Share Stopped Working By Country and Sector

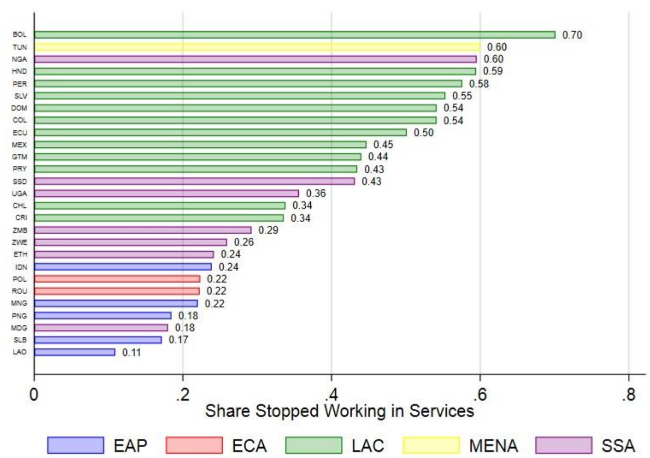
(a) Agriculture



(b) Industry



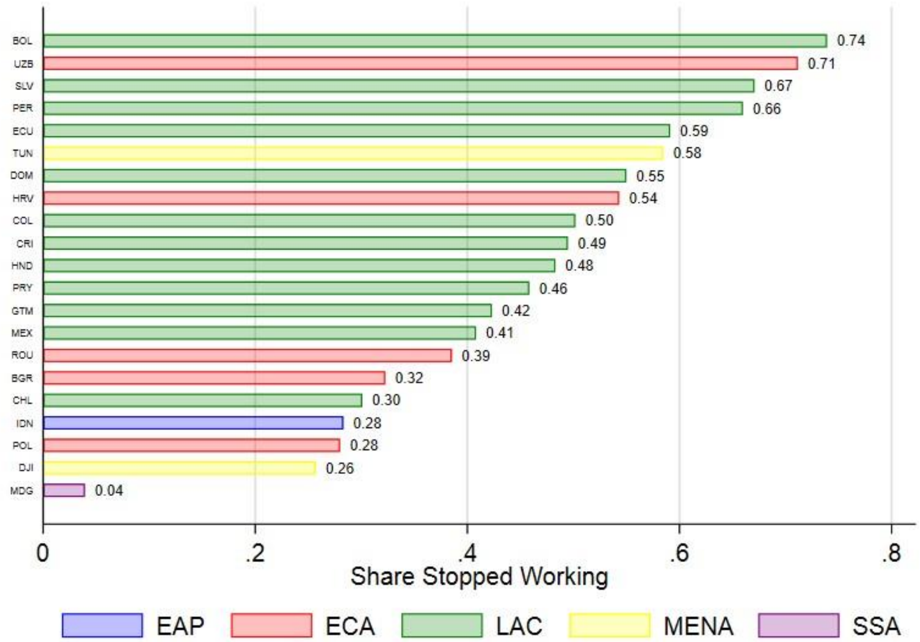
(c) Services



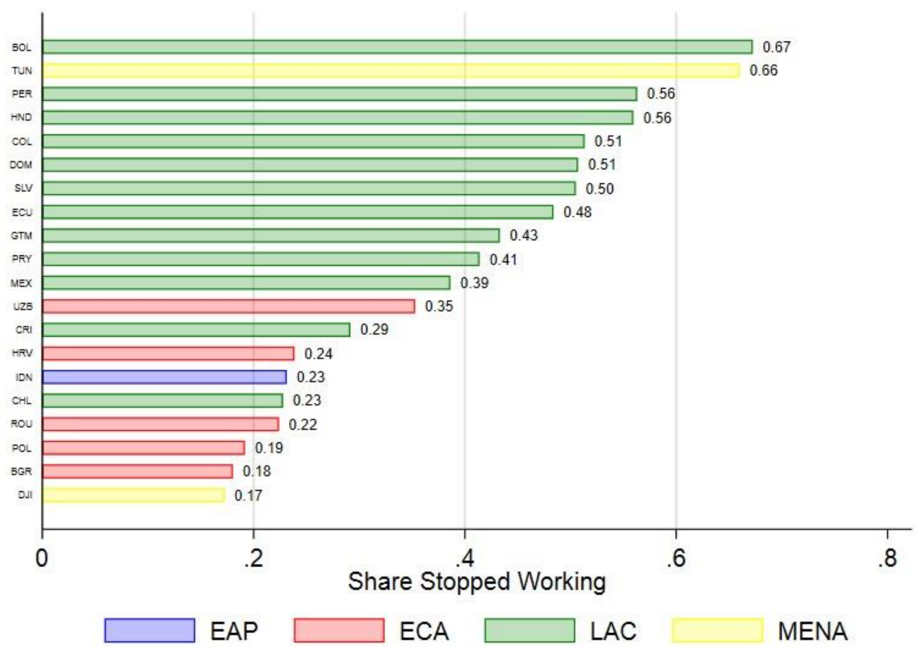
Notes: Figure shows the share of respondents who report stopping work in the high-frequency phone survey in each country by sector, grouping countries by region. In each panel, East Asia & Pacific (EAP) is in blue, Europe & Central Asia (ECA) is in red, Latin America and Caribbean (LAC) is in green, and Sub-Saharan Africa (SSA) is in purple. Agriculture includes the "Agriculture, Hunting, Fishing, etc." sector, Industry includes the "Mining", "Manufacturing", and "Construction" sectors, and Services includes the "Public Utility Services", "Commerce", "Transport and Communication", "Financial and Business Services", "Public Services", and "Other Services, Unspecified" sectors.

Figure 5: Share Stopped Working by Country and Employment Type

(a) Self-Employed



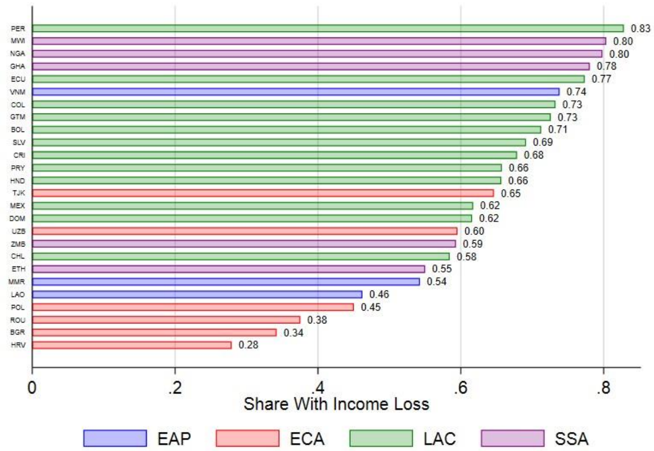
(b) Employee



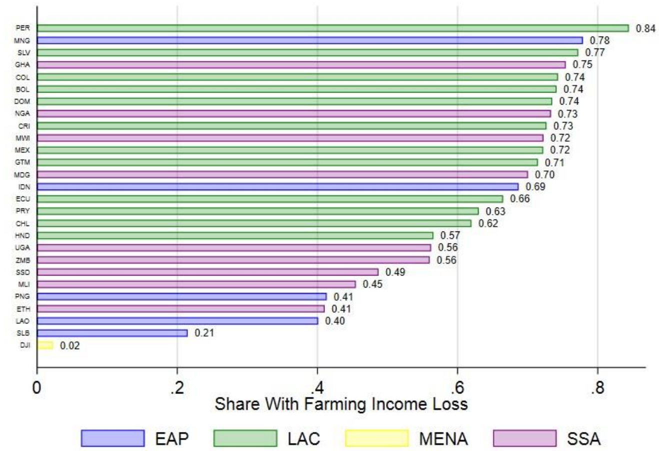
Notes: Figure shows the share of respondents who report stopping work in the high-frequency phone survey in each country by employment type, grouping countries by region. In each panel, East Asia & Pacific (EAP) is in blue, Europe & Central Asia (ECA) is in red, Latin America and Caribbean (LAC) is in green, and Sub-Saharan Africa (SSA) is in purple.

Figure 6: Income Loss

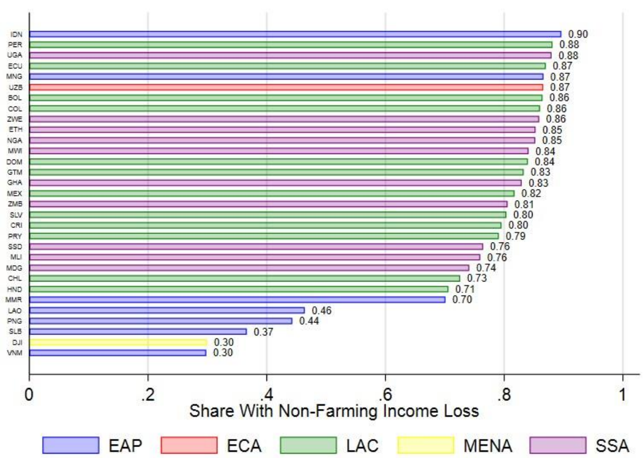
(a) Total Income



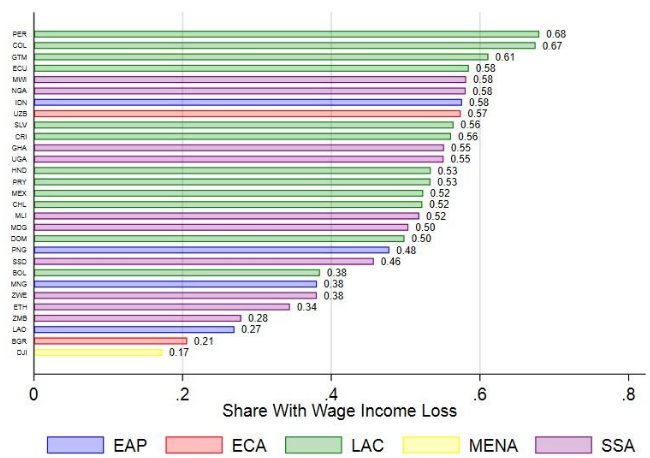
(b) Farming Income



(c) Non-Farming Income



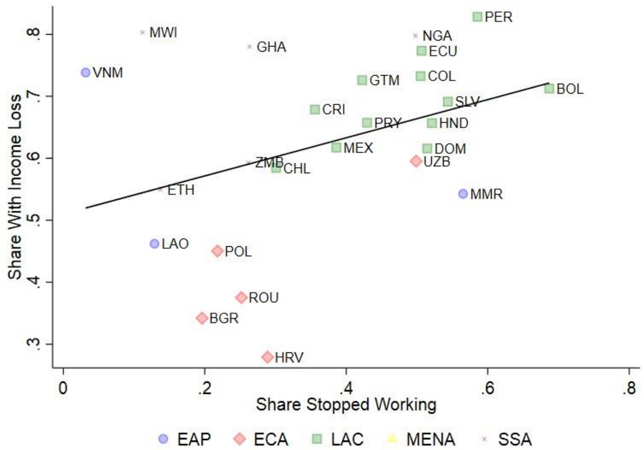
(d) Wage Income



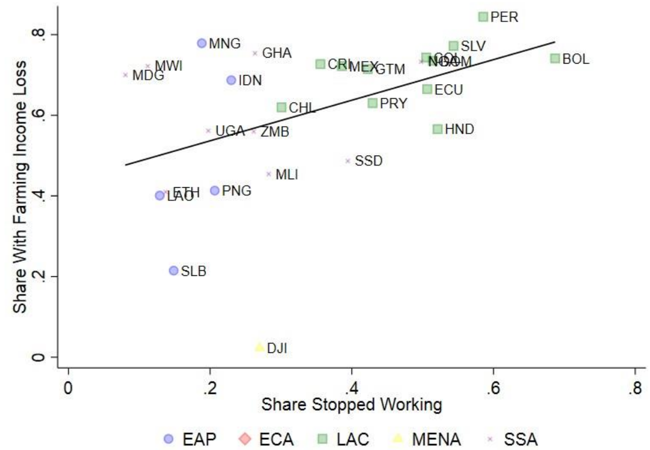
Notes: Figure shows the share of respondents who experienced income loss in the highfrequency phone survey in each country in four income categories, conditional on income in that category, grouping countries by region. In each panel, East Asia & Pacific (EAP) is in blue, Europe & Central Asia (ECA) is in red, Latin America and Caribbean (LAC) is in green, Middle East & North Africa (MENA) is in yellow, and Sub-Saharan Africa (SSA) is in purple.

Figure 7: Income Loss vs Stopped Working

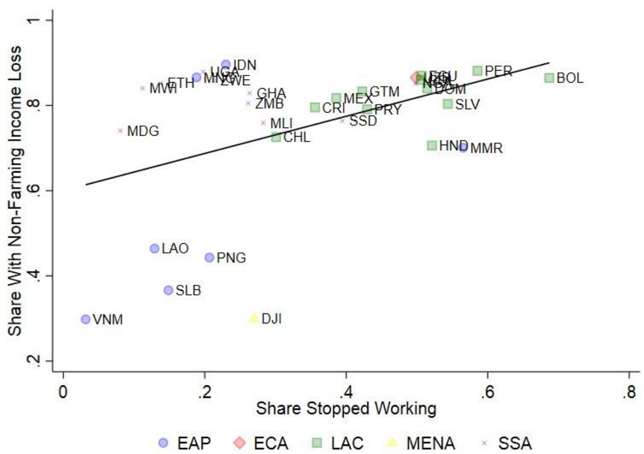
(a) Total Income



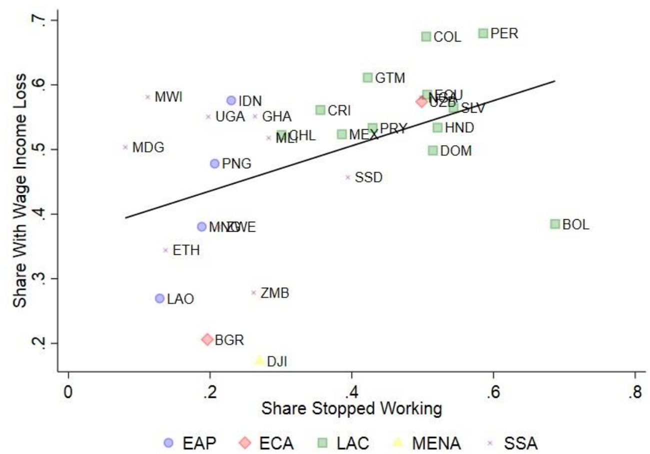
(b) Farming Income



(c) Non-Farming Income



(d) Wage Income

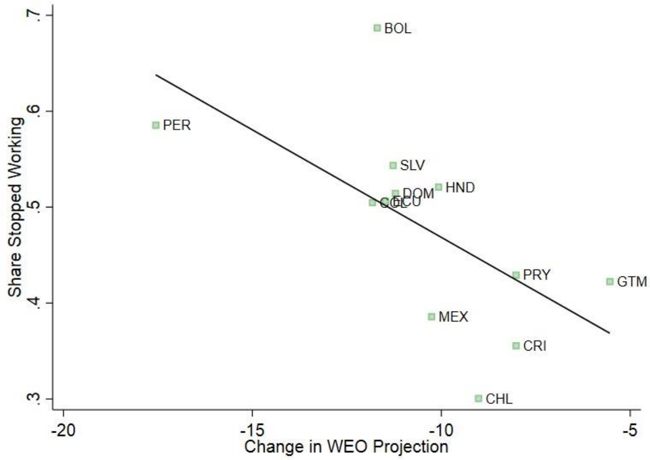


Notes: Figure shows the relationship between income loss (total, farming, non-farming, and wage income) and stopping work. In each panel, East Asia & Pacific (EAP) is in blue, Europe & Central Asia (ECA) is in red, Latin America and Caribbean (LAC) is in green, Middle East & North Africa (MENA) is in yellow, and Sub-Saharan Africa (SSA) is in purple.

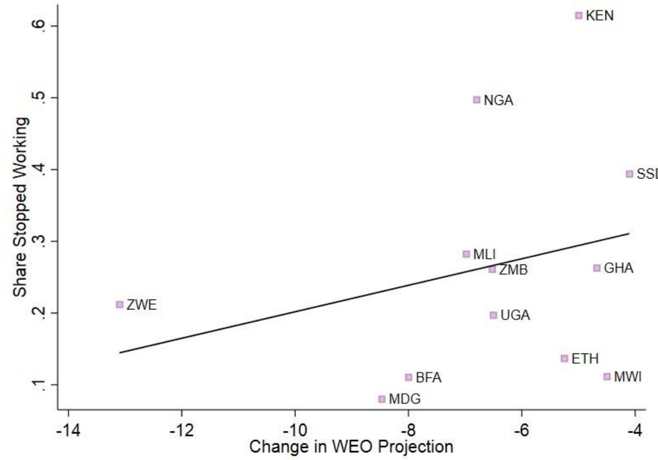
Figure 8: HFPS Measures vs WEO Change

Stopped Working

(a) Latin America & the Caribbean

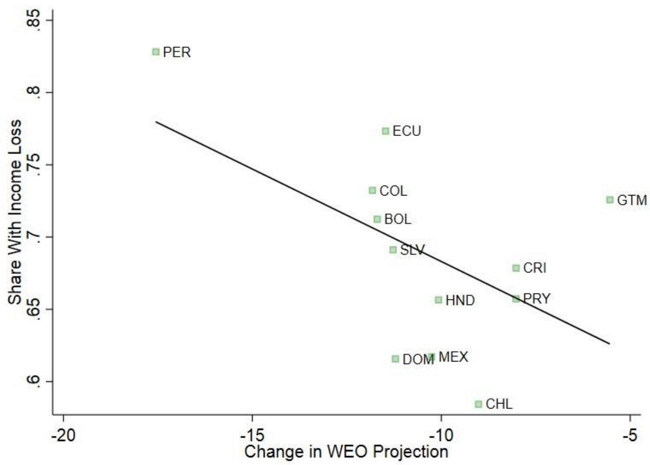


(b) Sub-Saharan Africa

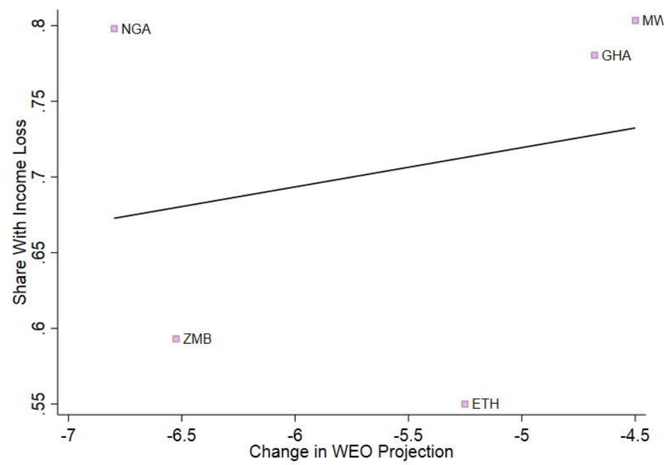


Total Income

(c) Latin America & the Caribbean

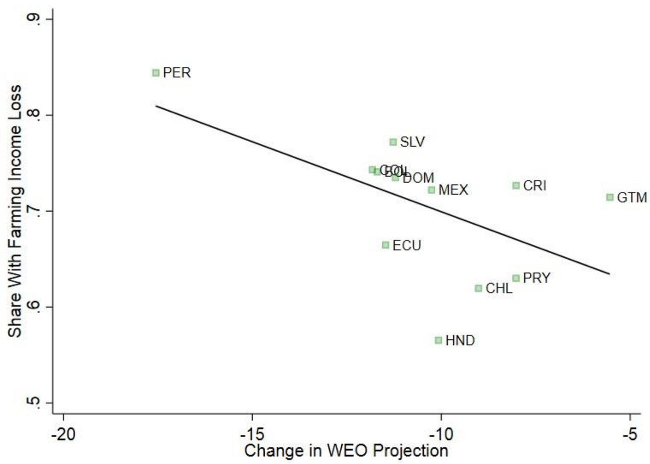


(d) Sub-Saharan Africa

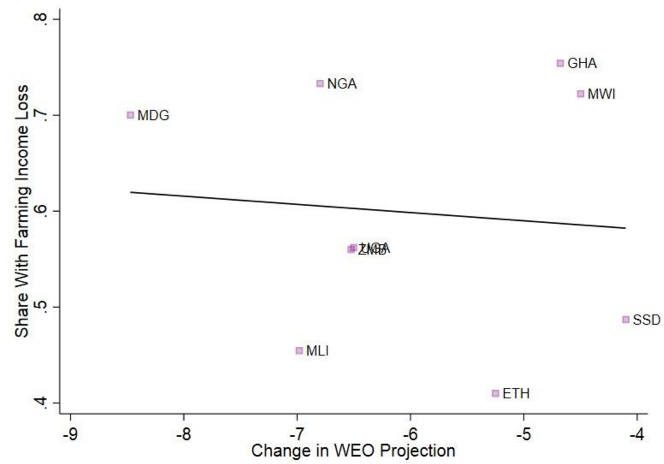


Farming Income

(e) Latin America & the Caribbean

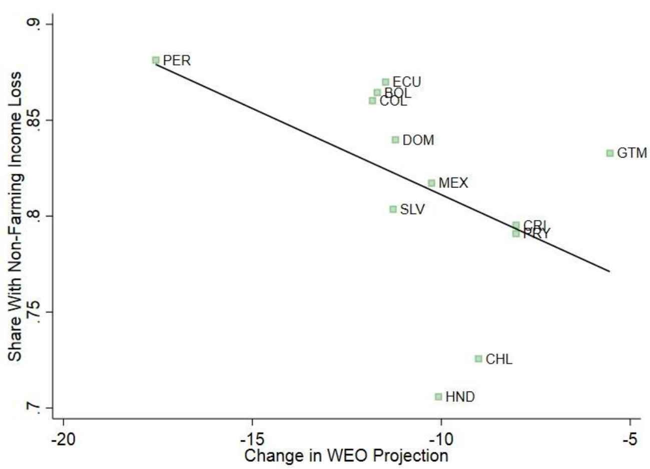


(f) Sub-Saharan Africa

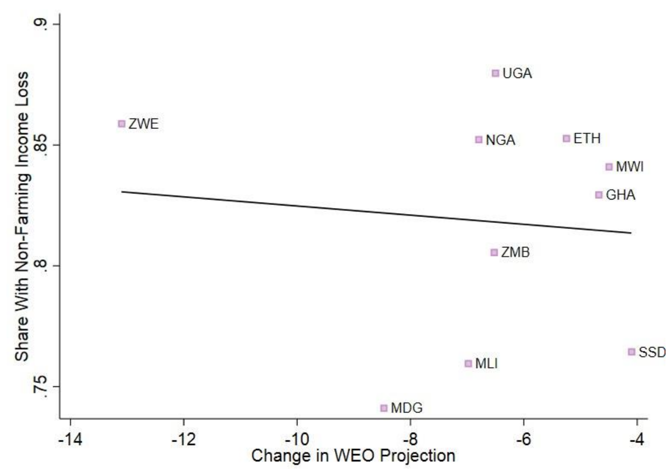


Non-Farming Income

(g) Latin America & the Caribbean

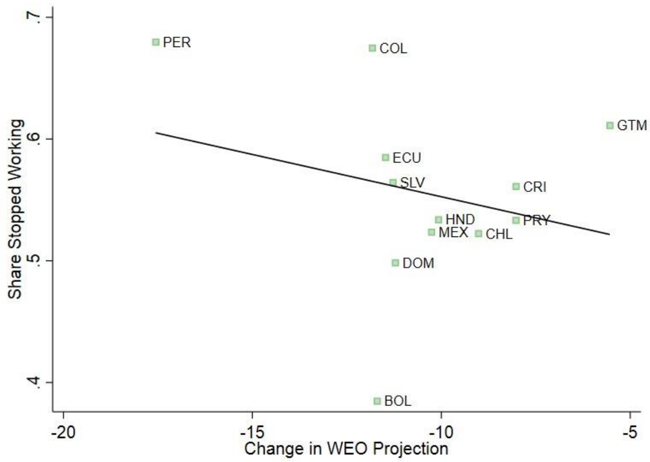


(h) Sub-Saharan Africa

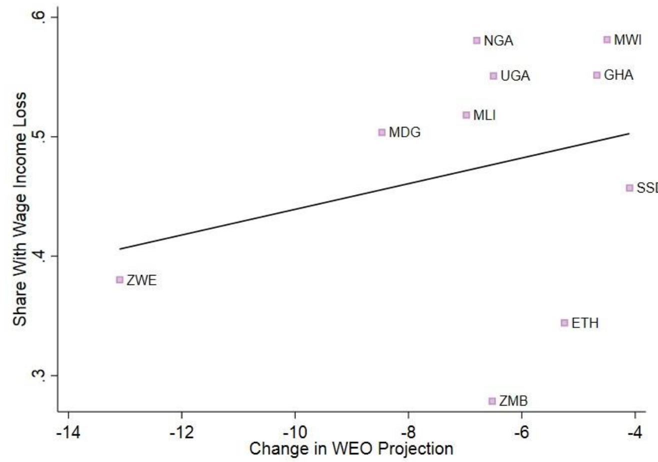


Wage Income

(i) Latin America & the Caribbean



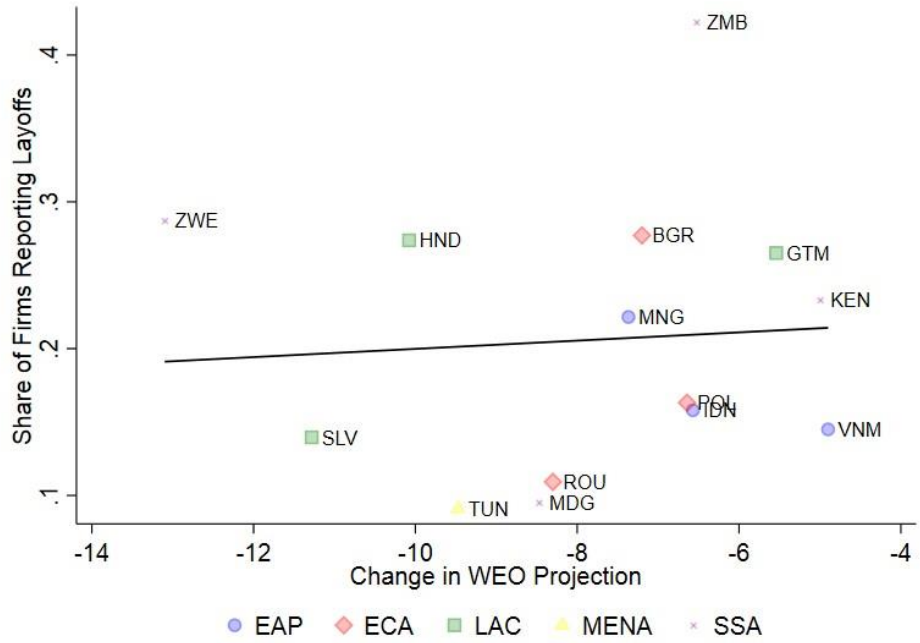
(j) Sub-Saharan Africa



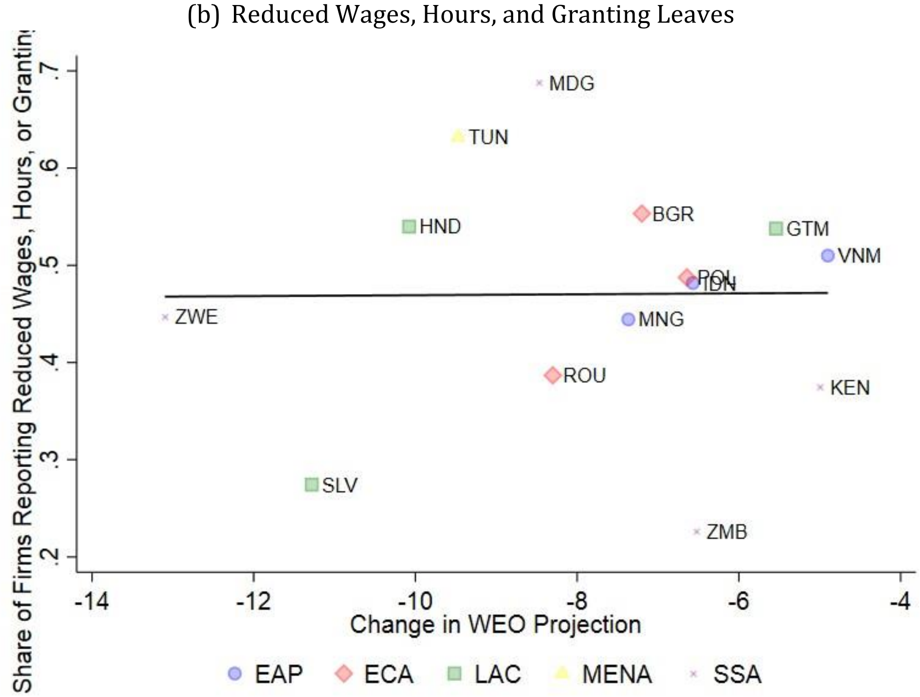
Note: Figure shows the relationship between the change in the International Monetary Fund's (IMF) World Economic Outlook (WEO) projection and four HFPS measures (stopped working, farming income loss, non-farming income loss, wage income loss). The change in the WEO projection is the difference between the October 2019 projection of 2020 GDP change and the October 2020 projection of 2020 GDP change.

Figure 9: Firm Survey Measures of Labor Demand vs WEO Change

(a) Layoffs



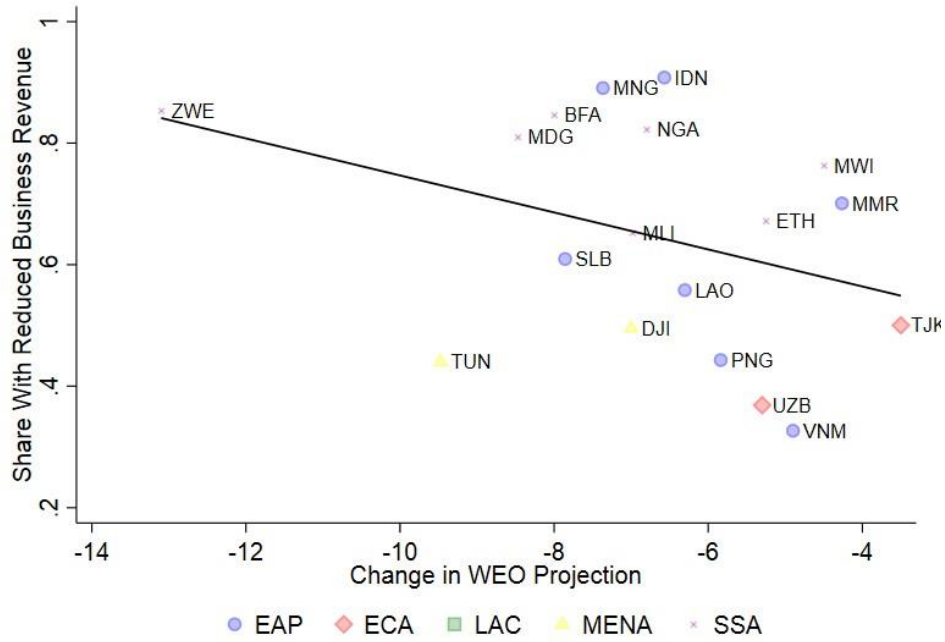
(b) Reduced Wages, Hours, and Granting Leaves



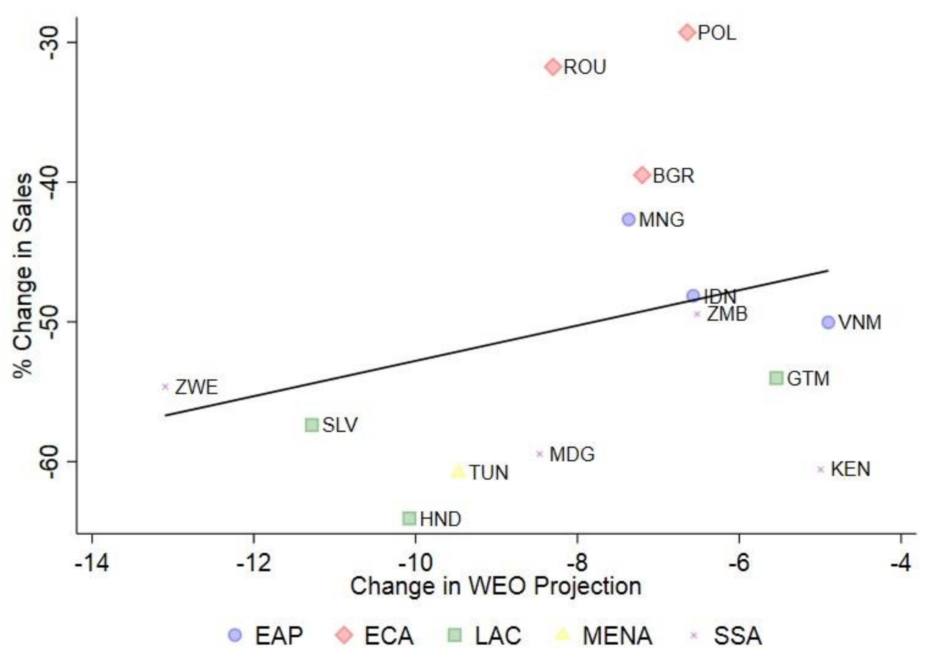
Notes: Figure shows the relationship between WEO projections and the share of firms laying off workers (Panel (a)) and reducing wages, hours, or granting leaves (Panel (b)) in firm survey data. Where available, the regions are indicated as East Asia & Pacific (in blue), Europe & Central Asia (in red), Latin America & the Caribbean (in green), and Sub-Saharan Africa (in purple).

Figure 10: Business Revenues vs WEO Change

(a) Share With Reduced Business Revenue (High-Frequency Phone Surveys)

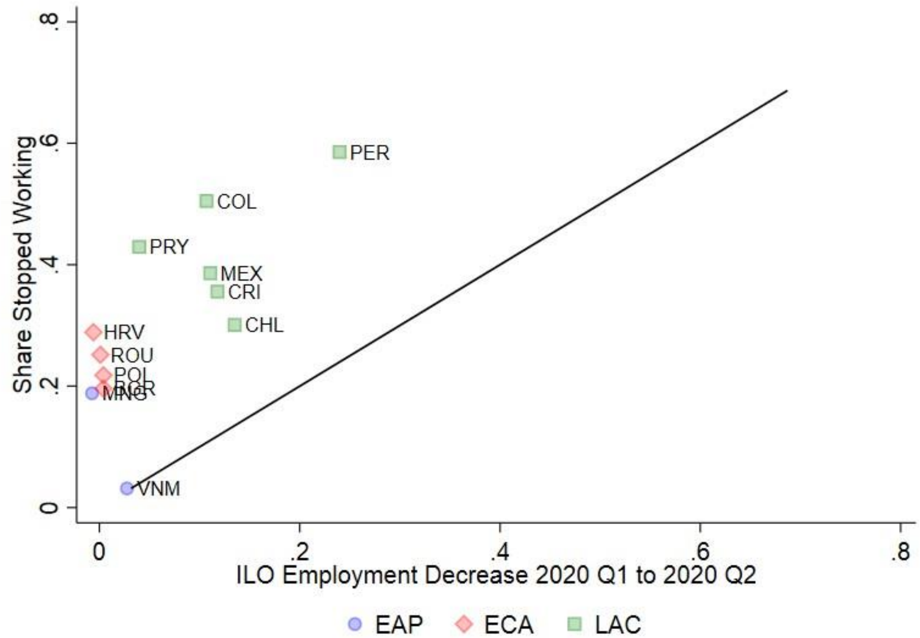


(b) Change in Sales (Firm Survey)



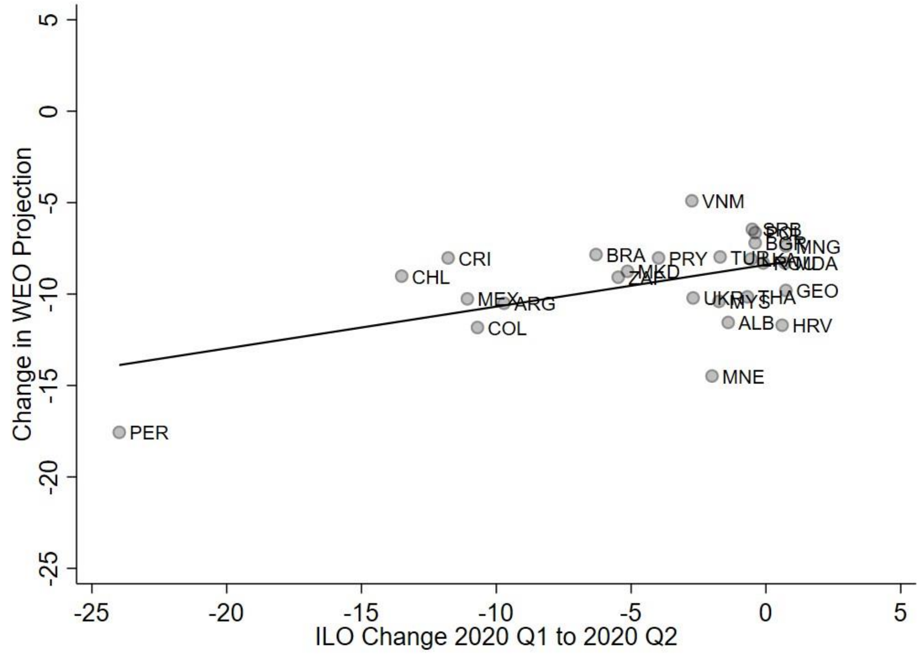
Notes: Figure shows the relationship between WEO projections and the share of respondents reporting reduced business revenues (Panel (a)) in high-frequency phone survey data and reports of change in sales (Panel (b)) in firm survey data. Where available, the regions are indicated as East Asia & Pacific (in blue), Europe & Central Asia (in red), Latin America & the Caribbean (in green), and Sub-Saharan Africa (in purple).[45]

Figure 11: Share Stopped Working vs ILO Employment Change



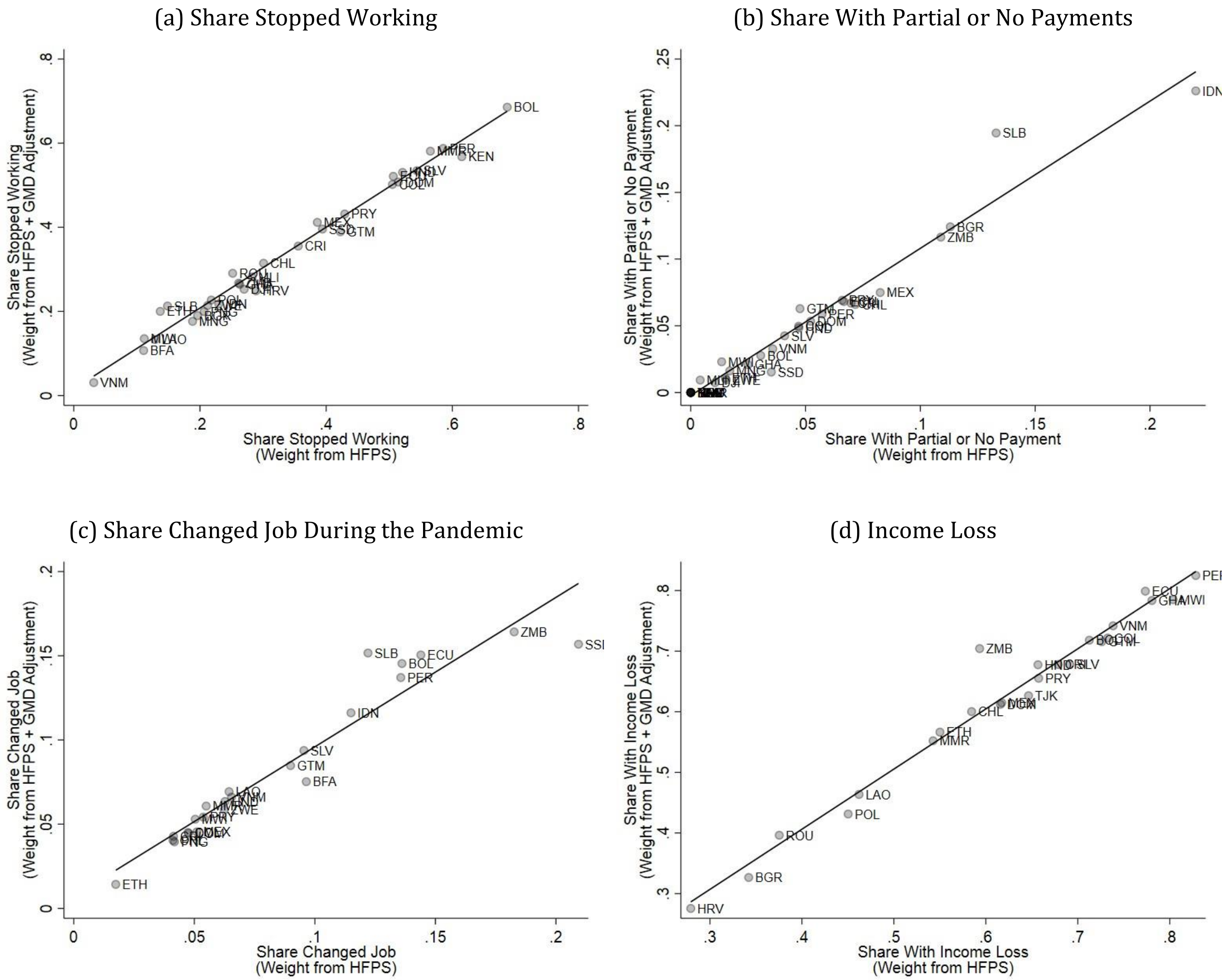
Notes: Figure shows the relationship between the change ILO employment change (quarterly) and the share who report stopping work in our high-frequency phone survey data. The ILO employment change calculated as the difference between Quarter 1 and Quarter 2 of 2020 total employment-to-population ratio for 15 years of age and over.

Figure 12: WEO Change vs ILO Employment Change



Notes: Figure shows the relationship between the change in the International Monetary Fund's (IMF) World Economic Outlook (WEO) projection and the ILO employment change (quarterly). The change in the WEO projection is the difference between the October 2019 projection of 2020 GDP change and the October 2020 projection of 2020 GDP change. The ILO employment change calculated as the difference between Quarter 1 and Quarter 2 of 2020 total employment-to-population ratio for 15 years of age and over.

Figure 13: Comparison of Weighting Methods



Notes: Figure shows how our main outcomes compare when calculated using the HFPS household weights and when further adjusting for individual weights using the GMD.

Table 1: Pandemic Severity and Macroeconomic Projections

Region	Code	Name	Income group	Total cases	Total cases per million	Total deaths	Total deaths per million	October 2019 WEO projection for 2020	October 2020 WEO projection for 2020	Change in WEO projec - tion	2020 Q1 ILO employment	2020 Q2 ILO employment	Change in ILO employment
EAP	IDN	Indonesia	UM	25,773	94	1,573	5.8	5.1	-1.5	-6.6			
EAP	LAO	Lao PDR	LM	19	3	0	0	6.5	0.2	-6.3			
EAP	MMR	Myanmar	LM	224	4	6	0.1	6.3	2	-4.3			
EAP	MNG	Mongolia	LM	179	55	0	0	5.4	-2	-7.4	55.1	55.8	0.7
EAP	PNG	Papua New Guinea	LM	8	1	0	0	2.6	-3.3	-5.8			
EAP	SLB	Solomon Islands	LM					2.9	-5.0	-7.9			
EAP	VNM	Vietnam	LM	327	3	0	0	6.5	1.6	-4.9	67.6	64.9	-2.7
ECA	BGR	Bulgaria	LM	2,513	362	140	20.1	3.2	-4	-7.2	52.4	52	-0.4
ECA	HRV	Croatia	H	2,246	547	103	25.1	2.7	-9	-11.7	46.9	47.5	0.6
ECA	POL	Poland	H	2,3571	623	1,061	28	3.1	-3.6	-6.6	54.2	53.8	-0.4
ECA	ROU	Romania	H	19,133	995	1,253	65.1	3.5	-4.8	-8.3	52.2	52.1	-0.1
ECA	TJK	Tajikistan	L	3,807	399	47	5	4.5	1.0	-3.5			
ECA	UZB	Uzbekistan	LM	3,554	106	14	0.4	6.0	0.7	-5.3			
LAC	BOL	Bolivia	LM	9,592	822	310	26.6	3.8	-7.9	-11.7			
LAC	CHL	Chile	H	94,858	4,962	997	52.2	3	-6	-9	57.3	43.8	-13.5
LAC	COL	Colombia	UM	28,236	555	890	17.5	3.6	-8.2	-11.8	57.6	46.9	-10.7
LAC	CRI	Costa Rica	UM	1,047	206	10	2	2.5	-5.5	-8	55.5	43.7	-11.8
LAC	DOM	Dominican Republic	UM	16,908	1,559	498	45.9	5.2	-6	-11.2			
LAC	ECU	Ecuador	UM	38,571	2,186	3,334	189	0.5	-11	-11.5			
LAC	GTM	Guatemala	UM	4,739	265	102	5.7	3.5	-2	-5.5			
LAC	HND	Honduras	LM	5,094	514	201	20.3	3.5	-6.6	-10.1			
LAC	MEX	Mexico	UM	87,512	679	9,779	76	1.3	-9.0	-10.3	57.8	46.7	-11.1
LAC	PER	Peru	UM	155,671	4,721	4,371	132.6	3.6	-13.9	-17.6	68.4	44.4	-24
LAC	PRY	Paraguay	UM	964	135	11	1.5	4	-4	-8	65.6	61.6	-4

LAC	SLV	El Salvador	LM	2,517	388	46	7.1	2.3	-9	-11.3
MENA	DJI	Djibouti	LM	3,194	3,233	22	22.3	6	-1	-7
MENA	TUN	Tunisia	LM	1,076	91	48	4	2.4	-7.0	-9.5
SSA	BFA	Burkina Faso	L	853	41	53	2.5	6	-2	-8
SSA	ETH	Ethiopia	L	1,063	9	8	0.1	7.2	1.9	-5.3
SSA	GHA	Ghana	LM	7,768	250	35	1.1	5.6	0.9	-4.7
SSA	KEN	Kenya	LM	1,888	35	63	1.2	6	1	-5
SSA	MDG	Madagascar	L	758	27	6	0.2	5.3	-3.2	-8.5
SSA	MLI	Mali	L	1,250	62	76	3.8	5	-2	-7
SSA	MWI	Malawi	L	279	15	4	0.2	5.1	0.6	-4.5
SSA	NGA	Nigeria	LM	9,855	48	273	1.3	2.5	-4.3	-6.8
SSA	SSD	South Sudan	L	994	89	10	0.9	8.2	4.1	-4.1
SSA	UGA	Uganda	L	413	9	0	0	6.2	-0.3	-6.5
SSA	ZMB	Zambia	L,M	1,057	57	7	0.4	1.7	-4.8	-6.5
SSA	ZWE	Zimbabwe	LM	174	12	4	0.3	2.7	-10.4	-13.1

Note: Table shows summary measures of pandemic severity (total cases, total cases per million, total deaths, and total deaths per million) on May 31, as well as macroeconomic projections (the IMF World Economic Outlook's October 2019 and October 2020 GDP change projections for 2020) and ILO employment change calculated as the difference between Quarter 1 and Quarter 2 of 2020 total employment-to-population ratio for 15 years of age and over by country. In the region column, ECA=Europe & Central Asia, EAP=East Asia & Pacific, LAC=Latin America & the Caribbean, MENA=Middle East & North Africa, and SSA=Sub-Saharan Africa. In the income group column, L=low income, LM=lower middle income, UM=upper middle income, and H=high income.

Table 2: Summary of Government Responses

Region	Code	Name	Economic Support Index	Stringency Index	Workplace Closing Index
EAP	IDN	Indonesia	10.03	43.60	1.20
EAP	LAO	Lao PDR	22.29	37.48	1.18
EAP	MMR	Myanmar	1.48	39.49	1.11
EAP	MNG	Mongolia	16.12	53.75	1.68
EAP	PNG	Papua New Guinea	19.90	36.22	0.91
EAP	SLB	Solomon Islands	21.71	23.37	0.87
EAP	VNM	Vietnam	8.72	50.20	1.07
ECA	BGR	Bulgaria	32.65	38.12	0.53
ECA	HRV	Croatia	41.28	46.81	1.15
ECA	POL	Poland	17.35	42.93	1.04
ECA	ROU	Romania	38.65	45.71	1.07
ECA	TJK	Tajikistan	4.44	21.75	0.49
ECA	UZB	Uzbekistan	22.70	48.67	1.33
LAC	BOL	Bolivia	20.39	48.69	1.43
LAC	CHL	Chile	16.12	36.72	1.16
LAC	COL	Colombia	34.05	46.28	1.28
LAC	CRI	Costa Rica	20.72	40.94	1.21
LAC	DOM	Dominican Republic	10.86	45.73	1.38
LAC	ECU	Ecuador	35.69	48.52	1.50
LAC	GTM	Guatemala	20.23	52.46	1.50
LAC	HND	Honduras	33.96	51.93	1.49
LAC	MEX	Mexico	0.00	37.17	1.32
LAC	PER	Peru	37.34	49.57	1.32
LAC	PRY	Paraguay	30.26	49.82	1.53
LAC	SLV	El Salvador	26.64	53.64	1.49
MENA	DJI	Djibouti	4.52	42.85	1.30
MENA	TUN	Tunisia	35.53	45.11	1.24
SSA	BFA	Burkina Faso	0.00	37.35	0.71
SSA	ETH	Ethiopia	8.88	37.64	0.89
SSA	GHA	Ghana	18.09	34.59	0.69
SSA	KEN	Kenya	23.52	46.06	0.97
SSA	MDG	Madagascar	5.59	38.10	0.90
SSA	MLI	Mali	20.07	30.82	0.75
SSA	MWI	Malawi	28.54	29.48	0.38
SSA	NGA	Nigeria	0.00	41.45	1.15
SSA	SSD	South Sudan	5.59	38.47	1.14
SSA	UGA	Uganda	23.36	47.20	1.17
SSA	ZMB	Zambia	10.69	27.37	0.43
SSA	ZWE	Zimbabwe	8.88	42.91	1.24

Note: Table shows summary measures of government responses to the pandemic (economic support index, stringency index, and workplace closing index) published by the Oxford COVID-19 Government Response Tracker (OxCGRT). The economic support index records measures of income support and debt relief (0-100). The stringency index records the strictness of 'lockdown style' policies that primarily restrict people's behavior (0-100). The workplace closing index records closing of work places (0-3) (averaged over the period 1 January to 31 May 2020).

Table 3: Data Availability By Country

Region	Code	Month	Sampling frame	N	Outcome variables			Weighting variables			
					Stop work	Partial or no payment	Job change	Age	Gender	Urban	Education
EAP	IDN	5	Survey	4,125	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EAP	LAO	7	RDD	2,427	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EAP	MMR	5	Non-survey list	1,445	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EAP	MNG	5	Survey	1,178	Yes	Yes	No	Yes	Yes	Yes	Yes
EAP	PNG	6	Non-survey list	3,048	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EAP	SLB	6	Non-survey list	2,600	Yes	Yes	Yes	Yes	Yes	Yes	Yes
EAP	VNM	6	Survey	5,346	Yes	Yes	Yes	Yes	Yes	Yes	No
ECA	BGR	7	RDD	1,212	Yes	Yes	No	Yes	Yes	Yes	Yes
ECA	HRV	6	Non-survey list	896	Yes	Yes	No	Yes	Yes	Yes	Yes
ECA	POL	M	RDD	1,288	Yes	Yes	No	Yes	Yes	Yes	Yes
ECA	ROU	5	Non-survey list	1,259	Yes	Yes	No	Yes	Yes	Yes	Yes
ECA	TJK	4	Survey	746	No	Yes	No	Yes	Yes	Yes	Yes
ECA	UZB	4	Survey	1,387	Yes	Yes	No	Yes	Yes	Yes	No
LAC	BOL	5	RDD	1,043	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	CHL	5	RDD	914	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	COL	6	RDD	928	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	CRI	5	RDD	743	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	DOM	5	RDD	749	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	ECU	5	RDD	1,130	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	GTM	5	RDD	778	Yes	Yes	Yes	Yes	Yes	No	Yes
LAC	HND	6	RDD	784	Yes	Yes	Yes	Yes	Yes	No	Yes
LAC	MEX	6	RDD	1,808	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	PER	5	RDD	951	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	PRY	6	RDD	692	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LAC	SLV	6	RDD	772	Yes	Yes	Yes	Yes	Yes	No	Yes
MENA	DJI	M	Survey	1,346	Yes	Yes	No	Yes	Yes	No	No
MENA	TUN	5	Surveu	850	Yes	Yes	No	Yes	No	Yes	Yes
SSA	BFA	6	Survey	1,750	Yes	Yes	Yes	Yes	Yes	Yes	No
SSA	ETH	4	Survey	3,055	Yes	Yes	Yes	Yes	Yes	Yes	No
SSA	GHA	6	Survey	2,833	Yes	Yes	No	Yes	Yes	Yes	Yes
SSA	KEN	6	Survey	5,101	Yes	Yes	No	Yes	Yes	Yes	Yes
SSA	MLI	6	Survey	1,496	Yes	Yes	No	Yes	Yes	Yes	No
SSA	MWI	6	Survey	1,613	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSA	NGA	4	Survey	1,699	Yes	Yes	No	Yes	Yes	Yes	No
SSA	SSD	5	RDD	1,197	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSA	UGA	6	Survey	1,859	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSA	ZMB	M	Non-survey list	1,556	Yes	Yes	Yes	Yes	Yes	Yes	Yes
SSA	ZWE	6	Survey	1,457	Yes	Yes	Yes	Yes	Yes	Yes	No

Note: Table list the countries that appear in the high-frequency survey data. For each country, the table shows the month, the sampling frame, the number of respondents, as well as the availability of four variables that we attempt to use for weighting (age, gender, urban, and education level) and the availability of key outcome variables. Sampling frames can be Random Digit Dialing (RDD), an existing survey, or a non-survey list of phone numbers.

Table 4. Variable Definitions

Outcome	**Survey variables**	**Survey questions**	**Definition**
Stopped working	*stop_working* based on *prepan_work* and *current work*	Was the respondent working before the pandemic? (Yes/No) Was the respondent working at the time the survey was conducted? (Yes/No)	Respondent was working before the pandemic but is not currently working
Plans to return to work	*plan_retwork*	Are you planning to return to work?	
Partial or no payments	*work_werepaid*	For the work that you did in the last week, will you be paid/were you paid? (Full normal/Partial/No payment)	Respondent reports partial payment or no payment
Changed job	*change_jobs*	Has the respondent changed jobs since the beginning of the pandemic? (Yes/No)	Respondent reports that she changed jobs
Total income loss	*totalinc_change*	Has your Total Household Income changed since the pandemic started?" Includes ALL Income sources such as money received for formal or informal work, public aid programs, remittances, pensions, donations, etc (Increased/Stayed the same/Decreaded/Not received/Do not know)	Respondent reports income decreased
Farm income loss	*farminc_change*	Has this source of household income changed since the pandemic started?" : Family farming, livestock or fishing (Increased/Stayed the same/Decreaded/Not received/Do not know)	Respondent reports income decreased
Non-farm income loss	*nonfarminc_change*	Has this source of household income changed since the pandemic started?" : Non-farm family business	Respondent reports income decreased
Wage income loss	*wageinc_change*	Has this source of household income changed since the pandemic started?" : Wage employment of household members	Respondent reports income decreased
Sector	*prepan_lsector, current_lsector*	What is the main activity of the business or organization in which you were working in your current main job? What is the main activity of the business or organization in which you were working in your main job before the pandemic?	Use *prepan_lsector* if available. If not available, use *current_lsector* if available.

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