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Are labor markets in the Middle East and North Africa recovering from the COVID-19 pandemic?

Abstract

The COVID-19 pandemic has not only led to a health crisis, but also to economic and labor market crises. In an effort to avert the public health threat, countries in the Middle East and North Africa (MENA) initially put in place some of the world's most stringent government responses. This paper explores how labor market outcomes for MENA workers have evolved during the COVID-19 pandemic. The paper uses the Economic Research Forum (ERF) COVID-19 MENA Monitor (CMM) phone surveys in Egypt, Jordan, Morocco, Sudan, and Tunisia, with waves spanning November 2020 to August 2021. Analyses examine outcomes of employment, unemployment, and labor force participation, along with hours of work and hourly wages. Results show differences in the evolution of pandemic-era labor markets by workers' gender, age, and education, along with their February 2020 labor market status and industry, as well as their pre-pandemic income. Employment rates have largely recovered and hours of work generally increased. Inequality in wages was initially exacerbated by the pandemic, but there has been at least some recovery on this margin as well.

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1 Introduction

The COVID-19 pandemic has taken an unprecedented toll on lives and livelihoods around the world. As countries continue to struggle with the health, economic, and labor market fallouts of the pandemic, there are concerns with unequal impact of the pandemic and differential recovery exacerbating poverty and inequality (World Bank, 2020a). These concerns are particularly acute in low- and middle-income countries (Acevedo et al., 2022), which were already facing substantial economic and labor market challenges pre-pandemic. Vulnerable groups, such as women, youth, the less educated, and those already poor pre-pandemic, may have been particularly harmed by the pandemic and its economic and labor market consequences (Bundervoet et al., 2021). Globally, initially harsh impacts of lockdowns on labor markets have modulated to varying degrees of recovery (Miguel and Mobarak, 2021).

This paper focuses on labor markets in the Middle East and North Africa (MENA) in the aftermath of the COVID-19 pandemic. The MENA region had some of the most stringent lockdown measures, substantial economic contractions, and limited government spending to cushion the health and economic shocks (Krafft et al., 2021a,b,c, 2022b,c; Assaad et al., 2022c; Marouani et al., 2022). The region already had major labor market difficulties pre-pandemic, including the world's highest rates of youth unemployment and lowest female labor force participation (Verick, 2018; Kabbani, 2019; El-Kogali and Krafft, 2020). The MENA region was the only area globally experiencing rising poverty pre-pandemic (World Bank, 2020a).

Existing research on the impact of COVID-19 on MENA labor markets has been largely descriptive and country-specific (e.g., UNDP, 2020; Central Bureau of Statistics (CBS) and World Bank, 2020; Assaad et al., 2022c; Krafft et al., 2022c; Marouani et al., 2022). Ours is one of the first papers to undertake a multivariate, multi-country, and multi-period analysis of pandemic-era labor markets in MENA. This paper takes a comparative approach to understand how the pandemic may have exacerbated inequality in labor markets and economies that already faced a number of challenges and substantial inequality and poverty pre-pandemic. The different economic and labor market structures of countries in the region, and their varying pandemic-era policy responses, provide an important opportunity to obtain comparative insights.

Our paper relies on multiple waves of data, allowing us to illustrate how labor market outcomes have evolved in the COVID-19 pandemic era. We build on and contribute to the literature using high-frequency phone surveys to assess the impact of the pandemic and the evolution of recovery in low- and middle-income countries (Bundervoet et al., 2021; Khamis et al., 2021; Miguel and Mobarak, 2021). Economic research and data from the MENA region are relatively rare (Das et al., 2013; Ekhatior-Mobayode and Hoogeveen, 2021), further impeding the ability of policy makers to respond to the pandemic.

We use all five waves of the COVID-19 MENA Monitor (CMM) data from Egypt, Jordan, Morocco, Sudan, and Tunisia, spanning November 2020 to August 2021. We examine three key outcomes: labor market status (employed, unemployed, or out of the labor force); hours of work per week; and hourly wages. These are three key margins of adjustment in response to the pandemic. We focus on how the pandemic may have exacerbated inequality, with a particular focus on the evolution of labor market outcomes by pre-pandemic labor market status and pre-pandemic income.

We demonstrate an overall recovery from the initial reductions in employment and increases in unemployment that occurred early in the pandemic. The pandemic and labor market fallout initially exacerbated inequality in hourly wages, and while this inequality has diminished, the degree of recovery varied across countries. Formal workers, as well as those with higher pre-pandemic income, fared relatively better during the pandemic, although, as the recovery evolved, the labor market outcomes of vulnerable workers, particularly their hours of work, fluctuated in response to evolving conditions.

In the next section of the paper, we provide key background for understanding MENA labor markets during COVID-19, including the global literature on the impact of COVID-19 on workers and policy responses to COVID-19 in MENA. We then discuss the details of the survey data, outcomes, and key covariates. The methods section discusses the different models we use to estimate the evolution of our outcomes during the pandemic. Our results are organized by outcome, presenting first pooled and then country-specific models. We conclude with a discussion of the implications of our results for supporting workers and addressing labor market vulnerability during the pandemic and recovery.

2 Background

2.1 Pre-existing labor market challenges

The MENA region faced a number of labor market challenges pre-pandemic that are critical to keep in mind when considering trends during the pandemic and subsequent recovery. The region, overall, has struggled with rates of female labor force participation, which are the lowest in the world, and have even stagnated and declined in the decades leading up to the pandemic (Verick, 2018; Assaad et al., 2020). Youth unemployment in the region was also the highest of any region globally pre-pandemic (Assaad, 2014; El-Kogali and Krafft, 2020). High rates of youth unemployment (32% in 2014) have been particularly challenging for Tunisia (Assaad et al., 2018a).

Employment informality has been a challenge in the region, and one that is particularly salient for employment protections and social assistance during the COVID-19 response. For instance, in Egypt formal wage employment declined from 47% of employment in 1998 to 39% in 2018 (Assaad et al., 2022a). Morocco and Sudan likewise have largely informal economies, but also a particularly large role of non-wage employment and agriculture in their economies (Ebaidalla and Nour, 2021; Krafft et al., 2022c).

Jordanians were slightly more likely to work formally over time and Jordan had a more formal labor market than other countries; 68% of Jordanians worked in the formal sector in 2016, compared to 63% in 2010, with most working in the public sector (Assaad and Salemi, 2019). Non-Jordanians, including both Syrian refugees and migrant workers, were much more likely to work informally (Assaad and Salemi, 2019; Krafft et al., 2019).

2.2 Empirical evidence on the impact of COVID-19 on workers

In this section, we review the microeconomic evidence on the impact of the crisis on workers and household incomes in developing countries. We include some developed country studies on

critical issues also relevant in developing countries, such as work from home, self-employment, or gender inequality. Estimates of the initial impact of the pandemic in the MENA region suggest that, on average, 45% of workers stopped working. Income losses and job transitions were also common (Khamis et al., 2021).

High-frequency phone surveys in 34 countries showed that there was a high correlation between country-level stringency and employment losses (Bundervoet et al., 2021). Noncompliance or non-enforcement of lockdowns may have mediated their impacts (Delaporte et al., 2021). Economic policy responses have helped support firms and employment, reducing (but not entirely preventing) labor market impacts (Webster et al., 2022).

In terms of distributional impacts, the pandemic and lockdowns have worsened poverty and inequality in Latin America and the Caribbean (Delaporte et al., 2021; Acevedo et al., 2022). Inequality increased at the country level, but rural/urban inequality decreased due to lower restrictions on agriculture. Inequality across educational levels also decreased, due to the large share of less-educated workers, mostly informal workers, who became inactive (Acevedo et al., 2022).

One factor shaping labor market resilience is the ability to continue working during closures and lockdowns. In the U.S., estimates are that one third of jobs can be done from home, jobs which pay more than ones that cannot be performed from home (Dingel and Neiman, 2020). This share is much lower in developing countries, estimated at 5%–20% (Saltiel, 2020). Those who cannot work from home are primarily the less educated, with lower income and assets (Mongey et al., 2021). The most vulnerable workers pre-pandemic in MENA were the least likely to be able to work from home (Alazzawi, 2021). In Tunisia, Marouani and Minh (2020) highlight the public versus private sector divide in work from home and essential industries. Public sector workers' incomes were protected even if they were not teleworking or working in essential industries. They find that youth, the less educated, self-employed men, and temporary contract low-wage women were the most vulnerable to the lockdown.

Vulnerable workers, including women, low-income, informal, self-employed, and casual workers, have disproportionately borne the economic costs of the pandemic globally (Aygun et al., 2021; Bundervoet et al., 2021; Cueva et al., 2021; Miguel and Mobarak, 2021). Women tend to be more vulnerable to recessions, generally, and during the COVID-19 pandemic, women in developed countries faced both reduced labor demand from the service sector, where women are concentrated, and reduced labor supply, due to disproportionate care responsibilities (Albanesi and Kim, 2021; Graeber et al., 2021).

Similar to the findings in developed countries, in Nigeria, the employment of mothers with school-age children dropped the most at the onset of the pandemic; however, it also rebounded quickly, potentially due to a smaller role for services as well as limited government support (Alon et al., 2022). However, women in Ethiopia's garment industry were negatively affected by the global pandemic and links to global value chains, highlighting the complex industrial dynamics behind the distributional effects of the pandemic (Meyer et al., 2021).

Previous reports and policy briefs from MENA highlighted a number of labor market impacts of the pandemic (Central Bureau of Statistics (CBS) and World Bank, 2020; Krafft et al., 2021a,b,c, 2022b,c; World Bank, 2021; Assaad et al., 2022c; Marouani et al., 2022). Vulnerable workers, particularly informal workers, were the most likely to report negative impacts on employment, earnings, and hours. Income reductions hit those who were poorest pre-pandemic the hardest.

For obvious social distancing reasons, most studies to date relied on high frequency phone surveys (Bundervoet et al., 2021; Khamis et al., 2021; Miguel and Mobarak, 2021). The disadvantage of these surveys is that they cover only phone owners, who are a selected group and may be relatively less vulnerable in the labor market (Assaad et al., 2022c; Krafft et al., 2022c; Marouani et al., 2022). Data quality from phone surveys may also be an issue; an experiment by Heath et al. (2021) showed that self-employed respondents give lower estimates of employment and hours worked on the phone than in-person interviews. Most of the studies focused on the earlier phases of the pandemic. More surveys will be needed in subsequent phases and also in the long run to track recovery (Miguel and Mobarak, 2021).

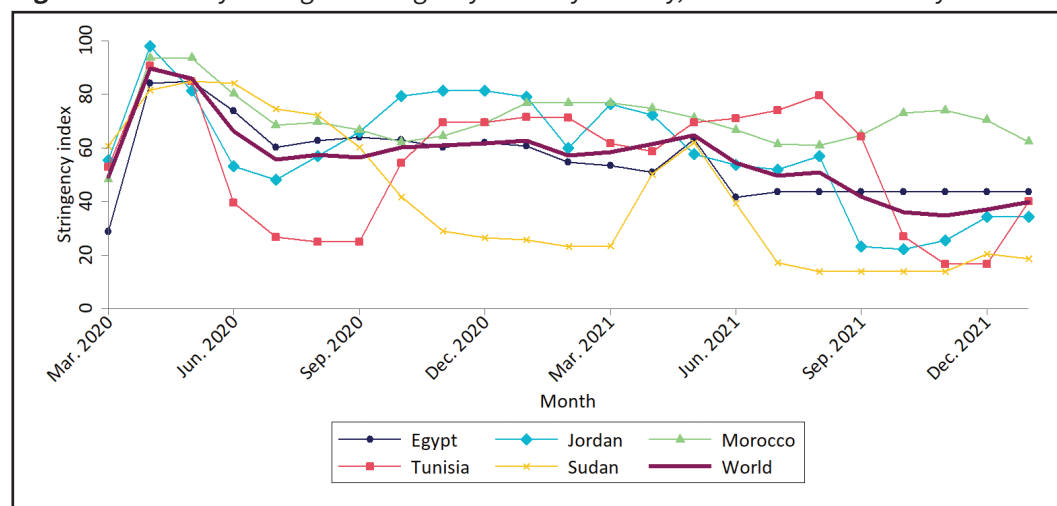
2.3 Policy responses to COVID-19 in MENA

Like their counterparts all over the world, Egypt, Jordan, Morocco, Sudan, and Tunisia adopted a number of policy responses to limit the spread of the pandemic and to mitigate its economic and social effects. In this section, we briefly review the evolution of closure measures over time, as well as the economic and social policies adopted to mitigate the impact of the pandemic on workers.

2.3.1 Closure measures

Governments around the world adopted a number of closure measures to respond to the pandemic, including school closures, workplace closures, bans on public gatherings, and travel restrictions. Systematic information about these measures is provided by the Oxford COVID-19 Government Response Tracker (OxCGRT) and is summarized in a single widely used stringency index, which is available on a daily basis (Hale et al., 2021). As shown in Figure 1, the five countries included in our analysis, Egypt, Jordan, Morocco, Sudan, and Tunisia, adopted very stringent measures that approached the world average until May 2020. The degree of stringency varied thereafter, with Jordan and Tunisia substantially loosening their very strict closure regimes by June 2020. Sudan loosened its stance substantially by September 2020 and remained on that relatively loose stance until December 2021, with the exception of a short

Figure 1 Monthly average of stringency index by country, March 2020 to January 2022.



Source: Compiled by authors based on data from Hale et al. (2021).

period from April to June 2021. Egypt and Morocco maintained stringency measures at or above the world average throughout the rest of the period.

Jordan reversed course and tightened back up in August 2020 in response to a surge in the number of cases and deaths there and remained on this relatively stringent stance until April 2021 when it started loosening its stance. By August 2021, the loosening accelerated dramatically leading to a decline in its stringency index to well below the world average. After experiencing its own surge in cases and deaths in October 2020, Tunisia followed suit and tightened its relatively loose stance considerably to again exceed the world average for most of the period from November 2020 to September 2021. In September 2021, Tunisia substantially loosened its stance and continued to do so through the end of 2021.

2.3.2 Social and economic support measures

The five countries under consideration here adopted a variety of fiscal, monetary, and business support measures as well as social protection measures in response to the COVID-19 pandemic. These measures are laid out in detail in Krafft et al. (2021a,b, 2022b) for Egypt, Jordan, Morocco, and Tunisia, and we discuss the situation below for Sudan. Overall, spending on fiscal, monetary, business support, and social protection varied across countries. Stimulus policies were equivalent to 1.8% of GDP in Egypt, 2.3% of GDP in Tunisia, 3% of GDP in Morocco, and 8% of GDP in Jordan (Krafft et al., 2021a).¹ We limit our discussion here to social support and protection measures targeted to workers and households.

Egypt began by increasing support through existing social protection systems by, for example, increasing social insurance pensions by 14% and expanding the Takaful and Karama cash transfers program for vulnerable households (IMF, 2021). The government also increased allocations in the subsidized food ration cards that reach a majority of Egyptian households (Krafft et al., 2021a, Assaad et al., 2022c). It introduced some new programs, such a temporary cash transfer program of EGP 500 (US\$ 31) per month to 1.6 million irregular workers, which was first introduced for 3 months and then renewed for another 3 months, ending in March 2021 (Krafft et al., 2022b).

Early in the pandemic, Jordan introduced measures to forbid dismissal of formally employed workers. These measures were accompanied by funding to protect nearly 180,000 jobs in the hardest-hit sectors (Krafft et al., 2022b). The Jordanian government instituted a new social protection committee to manage the response to the pandemic by building on its existing National Aid Fund (NAF) and its Zakat Fund. They used these funds to channel cash assistance of JD 50–136 (US\$ 70–192) per month for 3 months to almost one million workers, delivered through e-wallets (Krafft et al., 2021a, 2022b). Jordan also reduced social insurance contributions to encourage businesses to register their workers in the social insurance system. In addition, Jordan instituted a temporary 6-month cash transfer program for daily workers through NAF, which had expanded by December 2020 to include 100,000 new households and daily workers (IMF, 2021).

In Morocco, laid-off employees covered by social insurance were allowed to collect cash transfers of 2,000 dirhams (US\$ 227) per month starting in April 2020 through March 2021 (Krafft et al., 2021a). Informal workers benefiting from the subsidized health insurance scheme

¹ Data on Sudan not available.

(RAMED) received a monthly cash transfer of 800–1200 dirhams (US\$ 94–134) per month, depending on household composition, also starting in April 2020. Other beneficiaries of RAMED could register to receive similar support (Krafft et al., 2021a).

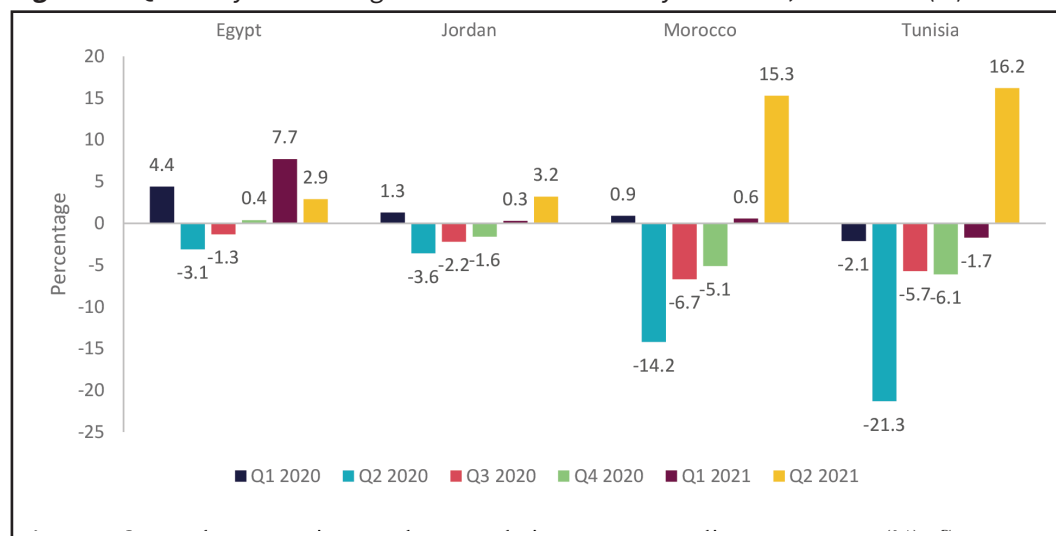
In Tunisia, limited fiscal space prevented the government from offering cash support for affected households and firms beyond the initial spring confinement period of April–May 2020 (World Bank, 2020b). Beneficiaries of the government's existing cash transfer program (PNAFN), about 8% of the population, received additional support of about US\$ 19 in April and May 2020. Households eligible for subsidized health insurance also received two payments worth about US\$ 47 each in those two months and an additional set of vulnerable households received one payment in May. There was also a one-time payment to the unemployed and some self-employed workers (Krafft et al., 2021a).

In Sudan, the government initially increased salaries of public sector employees, provided unemployment benefits to laid-off workers, and supported small firms and the banking sector (United Nations Economic Commission for Africa, 2020). Some hygiene and cash assistance was provided to families during the initial lockdown phase (UNICEF, 2020). Sudan began the expansion of its “Sudan Family Support Program” (SFSP or *Thamarat*) nationally during 2021, with the goal of reaching 80% of households with cash transfers (Sudan Family Support Program, 2021). However, a major devaluation and very high inflation, compounded by political challenges, have limited Sudan's financial and policy scope for COVID-19 response (UN-ESCWA, 2021).

2.3.3 Economic growth in pandemic times

The economic and labor market impacts of the pandemic are potentially linked. Figure 2 shows quarterly economic growth rates relative to a year earlier for the 2020–2021 period.

Figure 2 Quarterly economic growth rates relative to a year earlier, 2020–2021 (%).



Sources: Ministry of Planning and Economic Development (2021) for Egypt, Department of Statistics (Jordan) (2021) for Jordan, Haut-Commissariat au Plan (2021) for Morocco, Institut National de la Statistique (INS) (2021) for Tunisia.

Notes: Economic growth is growth of value added at constant prices in 2021 (2020) relative to the same quartile in 2020 (2019). Quarterly economic growth data are not available for Sudan.

Quarterly economic growth data are not available for Sudan. Only Egypt had a positive growth rate in 2020, 1.5% overall (Ministry of Planning and Economic Development, 2021).² Growth in Egypt was 4.4% in Q1 of 2020 (relative to the same quarter a year earlier) before a 3.1% contraction in Q2 of 2020 and then recovery by Q4 of 2020 and rebound in Q1 and Q2 of 2021. Jordan had the next highest 2020 growth, a contraction of –1.6% for the year (Department of Statistics [Jordan], 2021). Although there was some recovery in Jordan in the first half of 2021, it was anemic; for instance, only a 0.3% growth rate in Q1 of 2021.

Morocco and Tunisia had much larger contractions in 2020, –6.3% in Morocco (Haut-Commissariat au Plan, 2021) and –8.8% for Tunisia (Institut National de la Statistique (INS), 2021). Tunisia's contraction in Q2 of 2020, at –21.3%, was less than fully recovered by Q2 of 2021, when the rebound was only 16.2%. Morocco had negative growth throughout Q2–Q4 of 2020 but then weak growth in Q1 2021 (0.6%) and rebounded back from a –14.2% contraction in Q2 of 2020 to 15.4% growth in Q2 of 2021 (albeit still not a full recovery, but closer to it than Tunisia).

For the countries with detailed GDP data, we know that accommodation and food services were hit especially hard during the pandemic; transportation also contracted substantially, whereas agriculture tended to be the most resilient sector (Krafft et al., 2021c). Estimates for Sudan (not shown) are not available quarterly. However, the country was already experiencing a contraction in 2019 (–2.2%), following a contraction in 2018 as well (–2.9%) (World Bank, 2022). The contraction in 2020 (–3.6%) (World Bank, 2022) cannot be attributed necessarily or wholly to COVID-19, given the political and economic challenges Sudan was facing.

3 Data

3.1 Survey data

This study uses data from the CMM surveys, which collected data from Egypt, Jordan, Morocco, Sudan, and Tunisia. The CMM collected data through phone surveys among respondents aged 18–64 who had mobile phones. The analyses in this study rely on both retrospective data (data about labor market statuses in February 2020) and contemporaneous data (data about labor market statuses during each CMM wave). The data are publicly available at www.erfdataportal.com (OAMDI, 2021).

There were five waves of household data in the CMM surveys, the November 2020 wave (Morocco, Tunisia), the February 2021 wave (Egypt, Jordan, Morocco, Tunisia), the April 2021 wave (Morocco, Tunisia, Sudan), the June 2021 wave (Egypt, Jordan, Morocco, Tunisia), and the August 2021 wave (Jordan, Sudan). Weights account for sampling strategies, mobile phone operator market shares, and are based on nationally representative in-person surveys that identified mobile phone owners. Starting with each country's second wave, weights accounted for non-response in the panel. Refresher samples were added to maintain a sample size of approximately 2,000 individuals in each wave and country. Weights are used throughout the analyses.

² Egypt reports official statistics for a fiscal year spanning July through June; we have adjusted these statistics to present calendar years here, for comparability to other countries.

3.2 Outcomes

To understand how workers fared during the COVID-19 pandemic, our analysis focused on three outcomes: wages, hours of work, and labor market status. See Table A1 in the Appendix, for the exact original questions, responses, and recoding for outcomes and covariates, and Table A2 in the Appendix for descriptive statistics. The outcome of labor market status was defined as employed, unemployed, or out of the labor force. Respondents were employed if in the 7 days prior to the day of the survey they worked for ≥ 1 hour or were attached to a job but temporarily absent from it. They were categorized as unemployed if they did not work but were wanting, willing, and available for work (broad definition of unemployment, which does not require active search for work). Respondents were categorized as out of the labor force if they did not work and were not wanting, willing, or available to work. We present unemployment and labor force participation outcomes based on the broad definition (not requiring active search for work to be unemployed), thus including the discouraged unemployed, since COVID-19 restrictions may preclude active search.

Monthly (net) wages were collected for the month prior to the interview if the individual reported their main job or activity as a wage worker.³ Wages were winsorized at the 95th percentile to prevent outliers from driving results. We transformed these wages into hourly terms based on the hours per week reported and turned them into US dollars based on exchange rates on January 1, 2021.⁴ We focus on hourly wages and separately model hours of work in order to distinguish changes in pay rates from changes in time spent working. Our multivariate models use log hourly wages. For the hours of work per week outcome, the universe is individuals who worked ≥ 1 hour in the 7 days preceding the interview. The hours per week outcome is based on the number of hours worked in the 7 days preceding the interview.

3.3 Covariates

To understand how labor market outcomes differed across different groups of workers and individuals and how they evolved over time, we included a number of key covariates identified as important to understanding COVID-19 impacts and recovery in the literature (Miguel and Mobarak, 2021). First, we account for the time dimension by including controls for the survey wave (categorically), as the literature shows that initial sharp labor market shocks have moderated to varying degrees over time (Miguel and Mobarak, 2021). Respondents' February 2020 labor market status is a key covariate that accounts for pre-pandemic work status, including the type of work, if any, an individual was involved in. Research from 34 developing countries highlighted that formal wage workers were less likely to experience pandemic impacts than informal or self-employed workers (Bundervoet et al., 2021). Labor market status is categorized as: non-wage workers (including the self-employed, employers, and unpaid family workers), public sector wage workers, formal private sector wage workers, informal private sector wage workers in an establishment, informal private sector wage workers outside establishments, the

3 In the baseline wave for each country and for refresher respondents in subsequent waves, wage questions were asked for those who were wage workers in February 2020.

4 Given the rapid devaluation of the Sudanese currency in late 2020 and in the first half of 2021 and the high inflation that is associated with it, fixing the exchange rate to a particular date may distort the actual evolution of Sudanese wages. The exchange rates of the other four countries were fairly stable over the relevant period.

unemployed (broad definition), or those out of the labor force. Formal workers are those who report having social insurance coverage.

For those who were employed, we distinguish their industry (manufacturing and agriculture; construction; trade/retail; accommodations/food; services), given evidence that labor market impacts varied by industry (Bundervoet et al., 2021; Acevedo et al., 2022). Individuals are distinguished by sex, age groups (18–29, 30–49, or 50–64), and education level (basic or less, secondary, or higher education) given the global evidence that women, youth, and the less educated have been particularly impacted (Bundervoet et al., 2021). We also consider pre-pandemic income, in light of evidence that the pandemic has particularly hurt low-income workers and exacerbated inequality (Delaporte et al., 2021; Miguel and Mobarak, 2021; Acevedo et al., 2022). For our labor market status and hours models, we include controls for February 2020 household income quartiles. For our wage models, we include controls for February 2020 wage quartile. Using February 2020 income/wages allows us to assess the relationship between pre-pandemic status and pandemic-era outcomes, and particularly how the pandemic may have exacerbated poverty and inequality. The covariates generally help us assess who has been particularly struggling during the pandemic.

4 Methods

A key strength and contribution of our paper is the comparison of how countries' labor market recoveries from COVID-19 have evolved over time. We therefore present pooled models, with country controls interacted with wave (and no other covariates), allowing us to assess and compare how recovery has evolved across countries. We then turn to country-specific models that allow us to assess who, specifically, in each country has experienced improvements or continues to struggle. Our country-specific multivariate models are estimated first with controls (including wave) and then with interactions between all the controls and the wave, to assess the evolution of the relationship between covariates and outcomes during the pandemic. The models section of the appendix presents the exact specifications and equations for each model. We discuss the models briefly here.

For the labor market status outcome, we use a multinomial logit model and present relative risk ratios. The multinomial logit model is used when the outcome variable is categorical with more than two states and when each observation can only have one outcome, which is the case with our labor market status outcomes (employed, unemployed, and out of the labor force).⁵ For the hours of work outcome, we use a tobit model, which accommodates the possibility that the number of hours is left censored at 0. For the hourly wage outcome, we use an ordinary least squares (OLS) model on the natural log of hourly wages, where coefficients can be approximately interpreted in percentage change terms.

To summarize our models with wave interactions – which include a large number of coefficients – we present figures of predicted outcomes over time and across countries for each outcome (focusing on February 2020 labor market status and income/wage quartile; we discuss

⁵ The multinomial logit model makes the independence of irrelevant alternatives (IIA) assumption. Hausman and Small-Hsiao tests of the IIA assumption failed to reject the null that the relative risk of each pair of outcomes is independent of other alternatives in most of the 10 country-specific multinomial logit regressions we conducted. The exceptions are the Hausman test for the model without wave interactions in Jordan, and the Small-Hsiao test for the model with wave interactions for Tunisia.

other results in the text). In the country-specific models, the predicted outcomes are accounting for other characteristics (varying the covariate in question but with other characteristics as observed),⁶ and so they allow us to isolate patterns driven by the characteristic of interest from other variables in the model. For the wages outcome we also present descriptives on inequality using the 75th/25th percentile ratio.

5 Results

In this section, we organize our results by outcome, first presenting the models for labor market status, then those for hours of work, followed by those for wages. We present first the pooled models comparing across country and wave for each outcome. We then present the (lengthy) country-specific models in the appendix, and in the body we present figures for two of our key covariates in the country models: initial labor market status and household income/wage quartile in February 2020 as key foci in terms of inequality. We discuss results for other covariates, briefly, in the text as well.

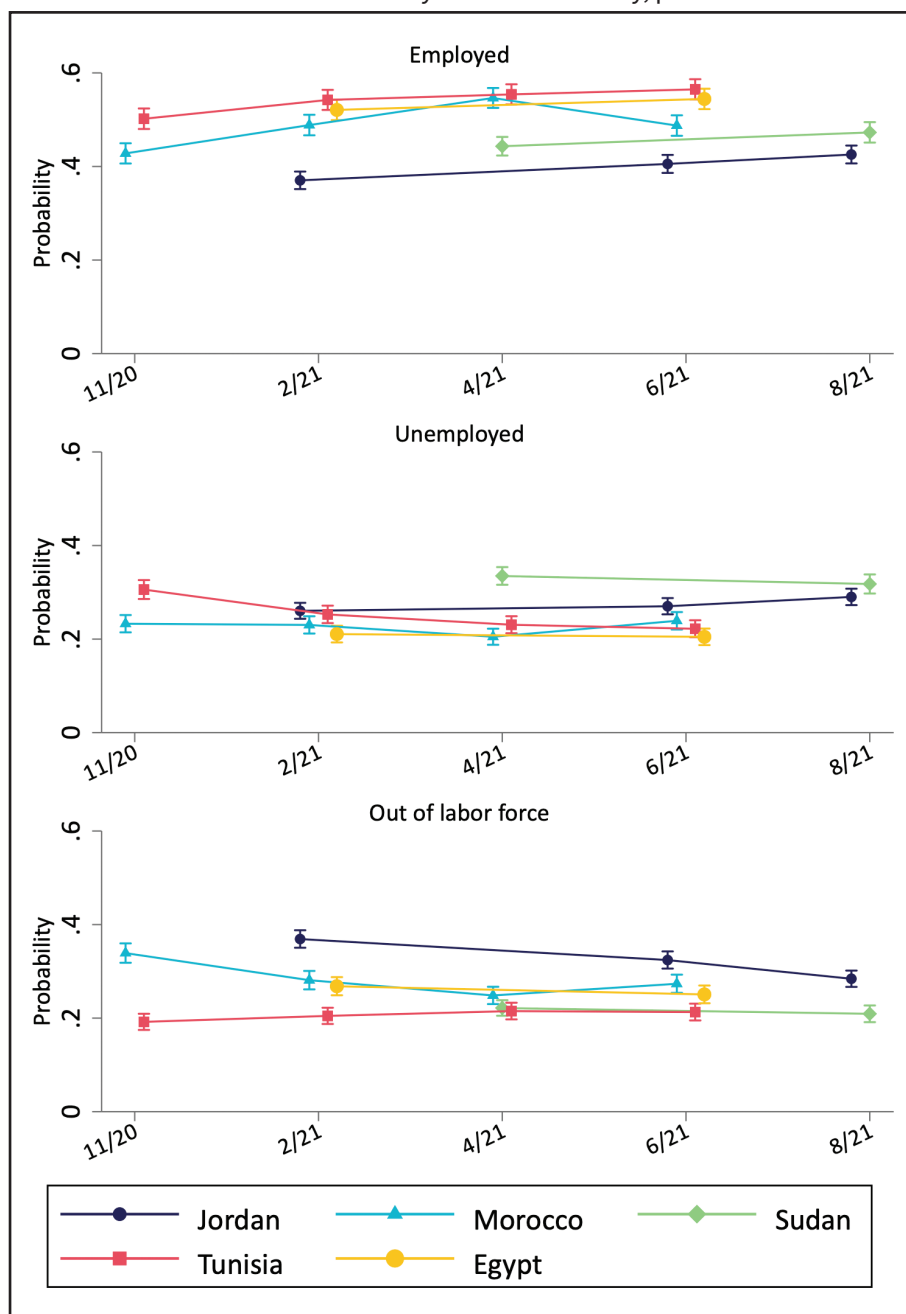
5.1 Labor market status

5.1.1 Pooled models for labor market status

Figure 3 presents predicted labor market statuses by wave and country, along with their confidence intervals. Table A3 in the Appendix shows the exact values and standard errors for these predicted outcomes. Employment recovered steadily over time in all countries, except for a slight reversal in June 2021 in Morocco (returning to 49%, the level it was at in February 2021, after rising to 55% in April 2021). Differences in employment rates across countries primarily represent pre-pandemic patterns, for instance very low employment rates in Jordan compared to countries such as Egypt and Tunisia (Assaad et al., 2018a, 2019a; Krafft et al., 2022a).

Broad unemployment (as a share of the population) increased over time in Jordan, but this is in part due to workers who were out of the labor force in earlier periods returning, as employment increased. Accordingly, the proportion out of the labor force in Jordan dropped steadily from February 2021 to August 2021. In Morocco unemployment fell from November 2020 through April 2021, but then increased again in June 2021. The proportion out of the labor force in Morocco exhibited a similar pattern. In Sudan, Tunisia, and Egypt, unemployment fell over time, albeit to varying degrees (the most in Tunisia from November 2020 to February 2021, a period not observed in the other two countries). A rather surprising result is the increase in being out of the labor force in Tunisia from November 2020 to April 2021, which suggests that some of the reduction in unemployment may be due to discouragement and exit. Overall, however, the picture that emerges is one largely of recovery in labor market status.

⁶ When we hold other characteristics as observed, these estimates use the observed values in the microdata (the full vector of characteristics for each observation) when making predictions, only changing the covariate in question. Using the observed values leads to binary variables being in their natural 0/1 state and categorical variables taking on their variety of values. Averages or means are not used. While we could theoretically undertake estimates for specific sub-groups, our finite sample size precludes further sub-groups or triple interactions.

Figure 3 Predicted labor market status by wave and country, pooled model.

Source: Authors' calculations based on CMM, all waves, and interacted models in Table A3 in the Appendix. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Notes: Bars represent 95% confidence intervals.

5.1.2 Country-specific models for labor market status

We now turn to the country-specific models for labor market status. We present these models in the Appendix. Table A4 in the Appendix shows the model with just main effects and Table A5 in the Appendix with the addition of wave interactions. The wave main effects, as expected, track those in the pooled model, while the interactions allow us to examine for whom, in particular, recovery has occurred.

Women were significantly more likely to be unemployed or out of the labor force than men, even after accounting for initial (February 2020) labor market status. This may, however,

represent the fact that women were more likely to leave the labor force even pre-pandemic (Assaad et al., 2022b). The regression model with wave interactions indicates that, except for Tunisia, there were not sex-specific patterns of recovery.

Compared to the reference group (youth aged 18–29 years), only the older age group (50–64 years) was significantly more likely to transition out of the labor force. There were heterogeneous patterns by country in unemployment and age. The model with wave interactions did not reveal any clear patterns as to how the effects of age on labor outcomes varied through the pandemic.

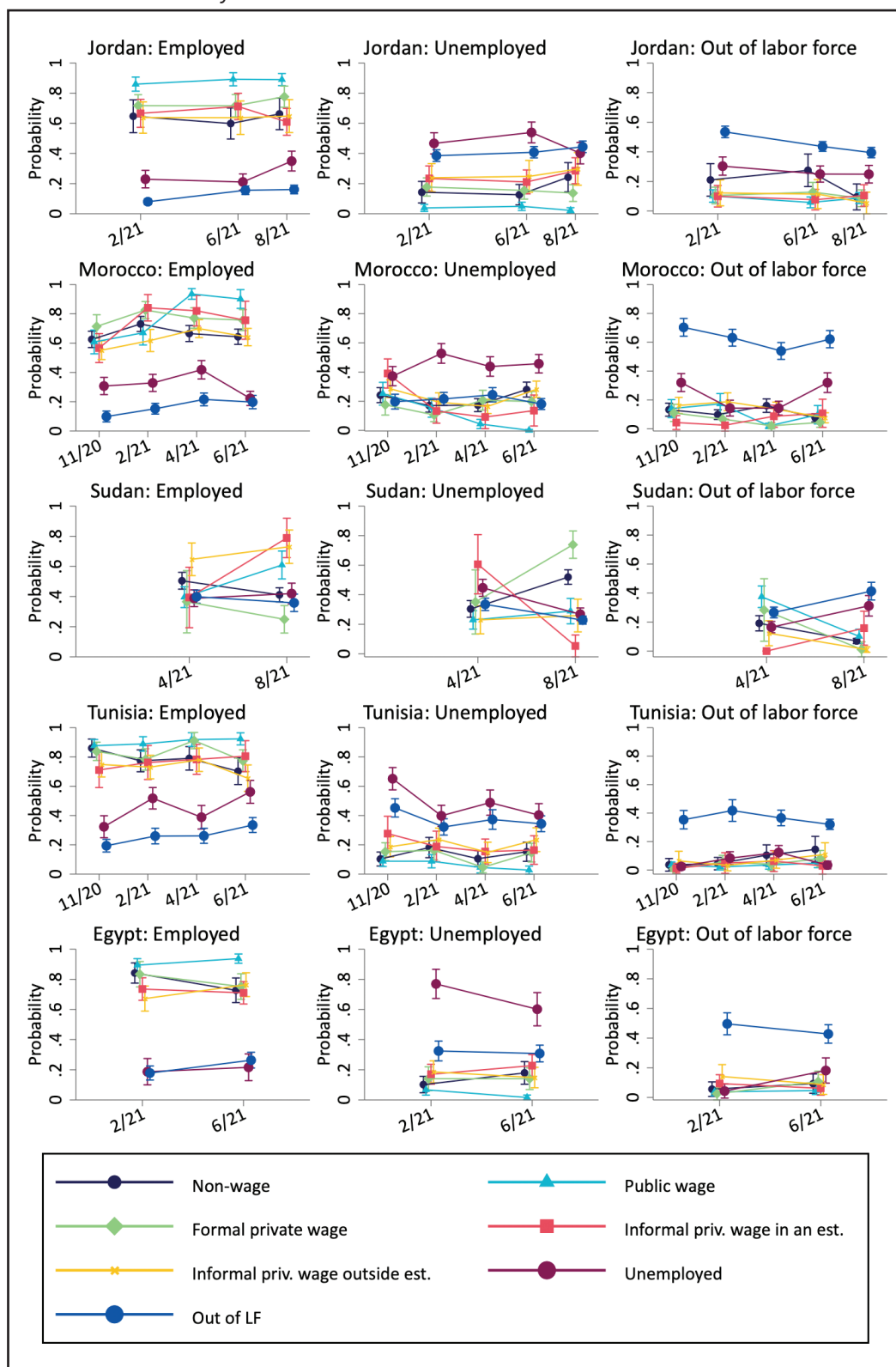
Relative to the omitted category (basic education or less), other education levels were significantly less likely to be unemployed or out of the labor force, particularly at the higher education level. The exception was Tunisia, where those with higher education were significantly more likely to be unemployed in the main effects model. The vast majority of the education and wave interactions were not statistically significant, suggesting that the education differential has been persistent across the recovery.

We now turn to initial (February 2020) labor market status. Figure 4 displays the predicted probabilities and confidence intervals from the interacted model for the evolution of recovery by initial labor market status. Labor market statuses are generally persistent, but to varying degrees by initial labor market status and country. Compared to initial public sector wage work, other statuses are generally at greater risk for transitions, particularly to unemployment. Formal private sector wage work is also relatively persistent compared to informal private sector wage work statuses and particularly working outside an establishment. Employment shows relatively more stability both overall and by initial (employment) status in Jordan (relatively few significant wave interactions and smaller magnitudes), followed by Tunisia and Egypt, where Morocco and Sudan illustrate substantially more transitions in and out of employment, consistent with their more agrarian and cyclical economies.

There are also important differences by February 2020 industry for those who were employed at the time. Compared to services, in the main effects model, the results for manufacturing and agriculture and trade/retail are mixed, while often those who were in construction and especially accommodations/food were more likely to become unemployed or out of the labor force, in many cases significantly so. These sector-specific impacts track contractions in GDP by sector (Figure 2). Looking at the wave interactions, Jordan does not have significant wave interactions with industry; nor does Egypt. There are some significant wave interactions with industry in Morocco, Tunisia, and Sudan, indicating industry-specific struggles or recovery.

A particularly important question for assessing inequality is how the labor market recovery affected different income segments of the population. Figure 5 shows predicted labor market status by February 2020 income quartile. In the main effects model, there are varying patterns across countries. In Jordan the fourth quartile is significantly less likely to be unemployed. In other countries, it is the lower income quartiles who are significantly less likely to be unemployed. This pattern is likely, at least in part, a continuation of pre-existing labor market trends. While in Jordan youth queued in unemployment regardless of education level and socio-economic status, in countries such as Egypt unemployment is primarily an indicator of familial resources to support one while searching for a higher quality job, rather than accepting a low-quality, informal job (Krafft and Assaad, 2014; Assaad et al., 2019b). Although there

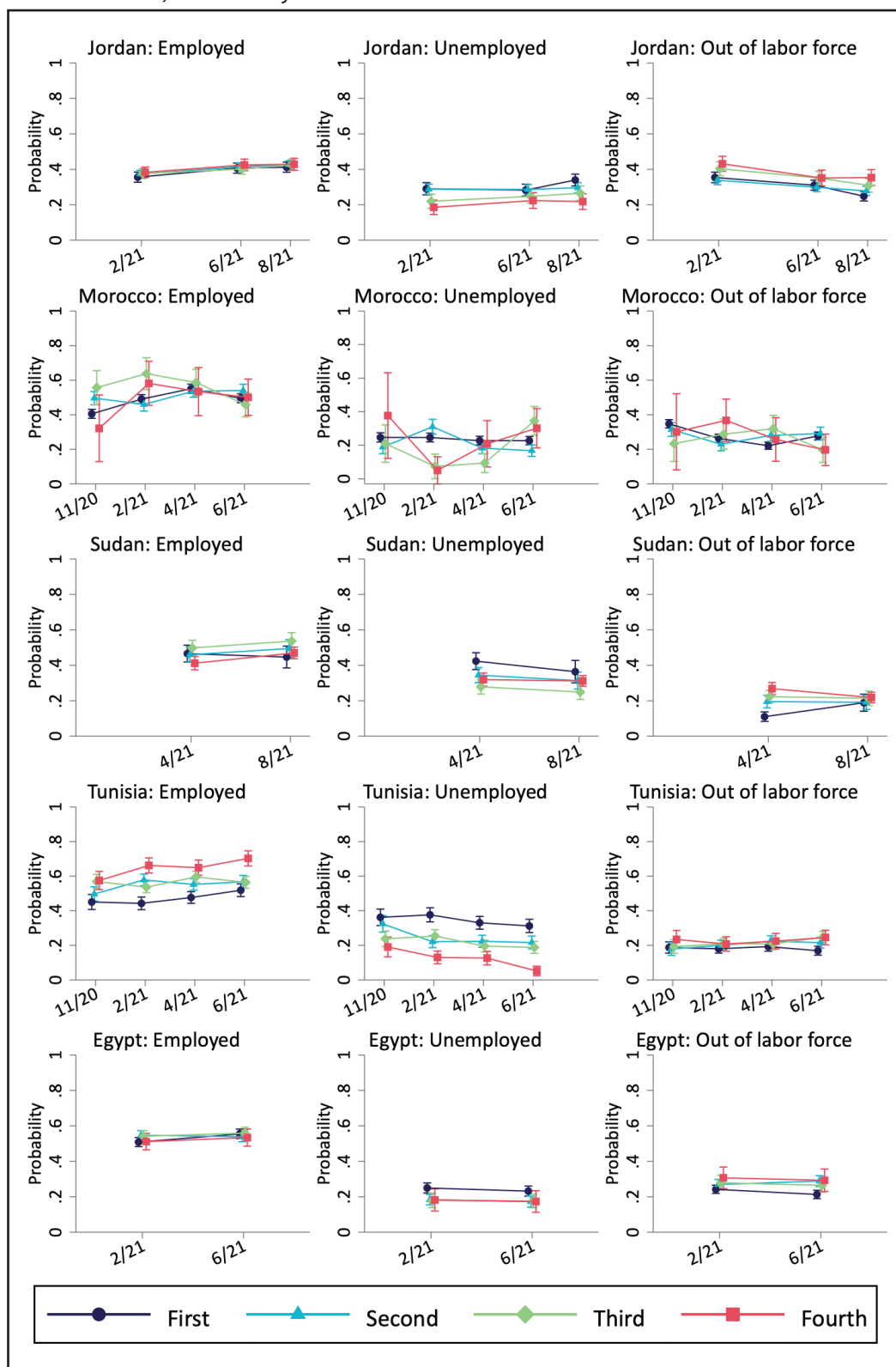
Figure 4 Predicted labor market status by initial (February 2020) labor market status, wave, and country.



Source: Authors' calculations based on CMM, all waves, and interacted models in Table A5 in the Appendix.

Notes: Bars represent 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Figure 5 Predicted labor market status by household income quartile in February 2020, wave, and country.



Source: Authors' calculations based on CMM, all waves, and interacted models in Table A5 in the Appendix.

Notes: Don't know/refused/missing not shown. Bars represent 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

are some significant wave interactions, e.g., in Morocco in February 2021 those from higher income quartiles experienced disproportionate recovery and reduced unemployment, these patterns are not persistent.

5.2 Hours of work

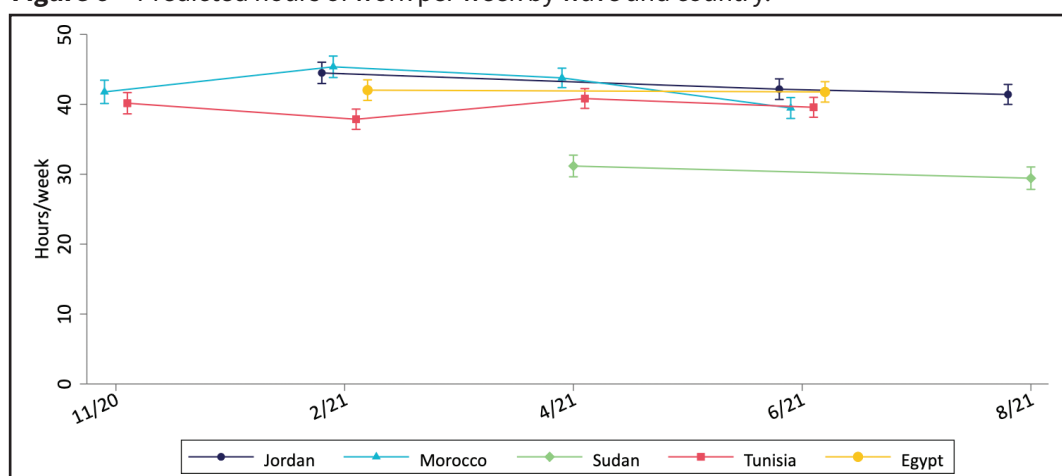
5.2.1 Pooled model for hours of work

Having examined the extensive margin of employment, we now turn to the intensive margin – hours of work. Table A3 in the Appendix presents predicted hours of work by country and wave, as does Figure 6. In most cases, hours of work per week fell over time. This may be because workers who had lost employment but later returned had worked fewer hours per week pre-pandemic. Morocco and Tunisia show slightly different and divergent patterns, with hours in Morocco rising significantly from November 2020 to February 2021 and then falling thereafter (to a particular low in June 2021, when employment also fell, but both may be related to agricultural cyclicalities). In Tunisia, hours fell from November 2020 to February 2021, then rose again in April 2021. The different and divergent patterns between hours and employment highlight the importance of different margins of adjustment (as well as composition) as the pandemic and recovery have evolved.

5.2.2 Country-specific models of hours of work

We now turn to examining for whom, exactly, hours have recovered in each country. Table A6 in the Appendix presents the main effect only models and Table A7 in the Appendix models including wave interactions. In the main effects model, women had significantly fewer hours of work than men, a pattern that predates the pandemic (Assaad and Salemi, 2019; Assaad et al., 2022a). Looking at the wave interactions, there are not significant differentials by sex over time in Jordan and Sudan. In Tunisia and Egypt, women's hours picked up over time relative to

Figure 6 Predicted hours of work per week by wave and country.



Source: Authors' calculations based on CMM, all waves, and interacted models in Table A3 in the Appendix.

Notes: Bars represent 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

men's, while in Morocco and particularly in June 2021 women's hours decreased (which may be related to agricultural cyclicalities).

Every other age group, in the main effects model, works fewer hours than ages 18–29 years, except ages 50–64 years in Sudan, with nearly all differences being statistically significant. The only significant age and wave interactions are in Tunisia, where the gap between youth and older age groups widened compared to November 2020, which may signal improved labor demand in 2021. Except in Egypt, where there were no significant differences, everywhere the more educated worked fewer hours than those with basic education and below. There were not significant interactions between education and wave in Jordan, Sudan, or Egypt and few significant interactions without a clear pattern elsewhere.

Figure 7 shows predicted hours of work per week by initial (February 2020) labor market status. In the main effects model, compared to public sector workers, formal private wage workers and informal wage workers usually worked more hours (except in Tunisia), often significantly so. Non-wage workers tended to work fewer hours in Egypt and Jordan, but more in Sudan and Morocco (which are more agrarian). These patterns are likely to represent hours of work pre-pandemic as well (Assaad and Salemi, 2019; Assaad et al., 2022a). Those who were unemployed or out of the labor force in February 2020 and became workers by the time of the surveys tended to work fewer hours, often significantly so, an indication of their lower attachment to the labor market.

Turning to the wave interactions, in Jordan, hours increased particularly for those with an initial status as non-wage and private sector wage workers. In Egypt, there were significantly lower hours of work for non-wage workers in June 2021. The decline in hours over time in Morocco particularly and significantly affected the private sector. Patterns in Tunisia and Sudan showed some scattered signs of improvements over time for private sector workers.

Among those who were working in February 2020, in terms of main effects, compared to services, construction tended to have significantly shorter hours, accommodation and food services significantly more hours, and differences for manufacturing and agriculture and trade/retail varied by country. Again, it is important to keep in mind that these hours likely varied pre-pandemic as well. Turning to the wave interactions, there was a more significant recovery in most other sectors, compared to services, in Morocco, but fewer differences in Jordan and Egypt. In Sudan, most other sectors had significantly worse trends than services.

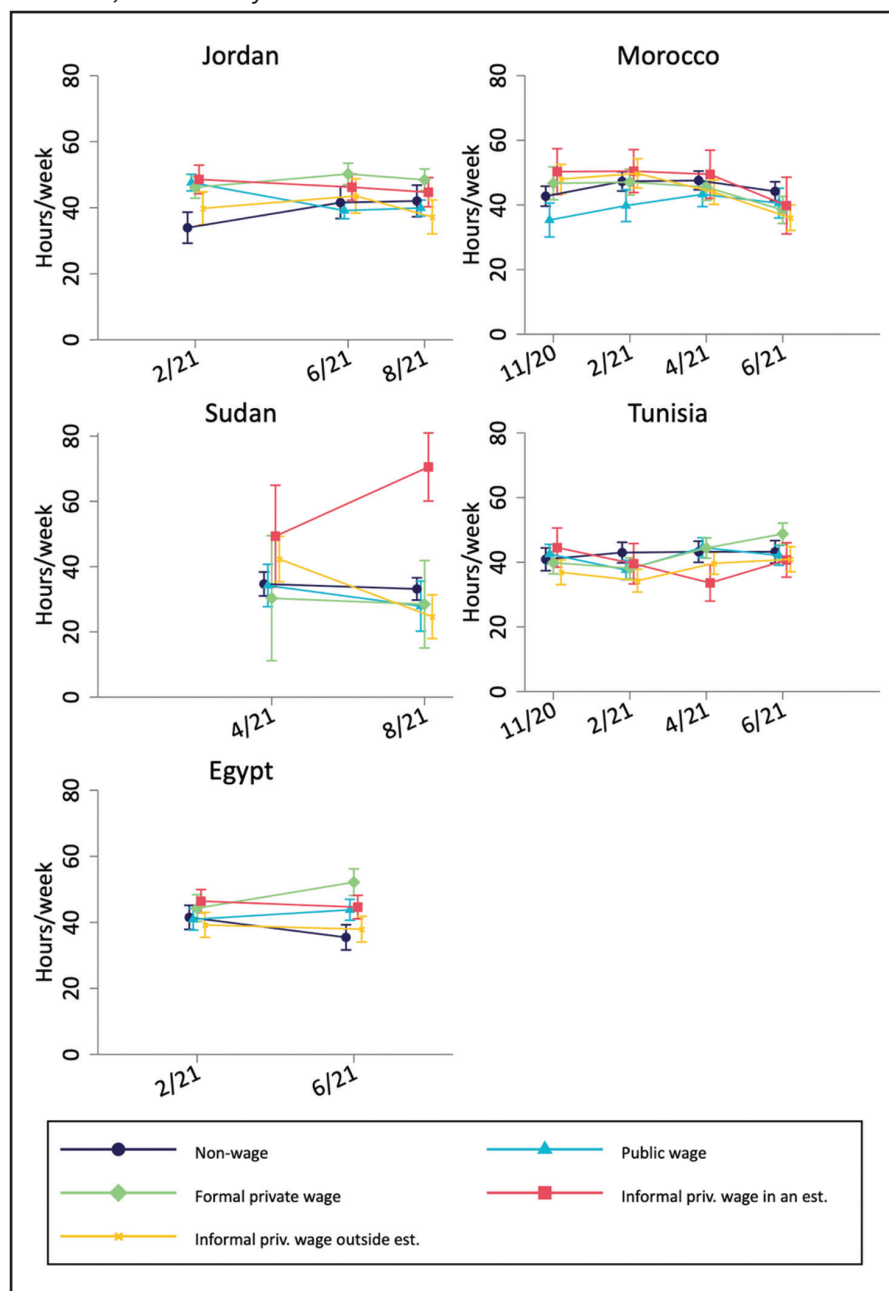
Figure 8 shows the predicted hours of work for each February 2020 income quartile. In Jordan Tunisia, and Egypt, hours of work increased significantly with income quartile in the main effects models. There was no significant relationship in Morocco, and only the fourth quartile had more hours in Sudan. Turning to the wave interactions, there are relatively few significant wave interactions without clear patterns across countries; hours trends occurred across quartiles, generally.

5.3 Hourly wages

5.3.1 Pooled models of hourly wages

Another important margin of labor market adjustment during COVID-19 times is wages. We focus on log hourly wages, to separate changes in hours from hourly wages. We use nominal

Figure 7 Predicted hours of work per week by initial (February 2020) labor market status, wave, and country.



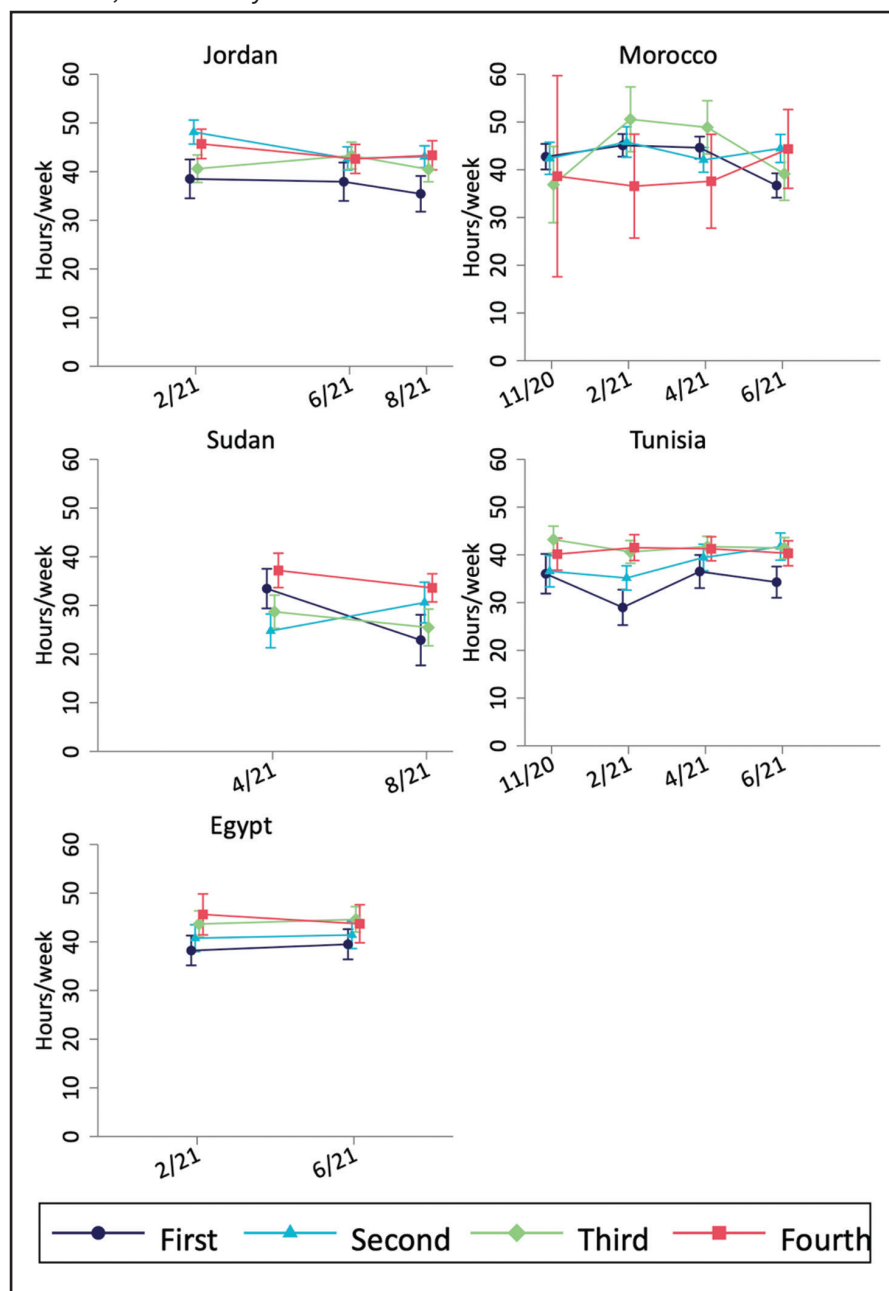
Source: Authors' calculations based on CMM, all waves, and interacted models in Table A7 in the Appendix.

Notes: February 2020 unemployed and out of labor force not shown. Bars show 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

wages transformed from local currency to US dollars, based on exchange rates on January 1, 2021, to allow for cross-country comparisons. We use a constant exchange rate to avoid exchange rate fluctuations driving patterns. However, we note that in the case of Sudan in particular there were large changes in exchange rates and inflation tied to floating the Sudanese pound in early 2021.

Figure 9 presents the results of the pooled model for log hourly wages. In Egypt and Jordan, where employment rates were relatively more stable and the overall economic contraction less

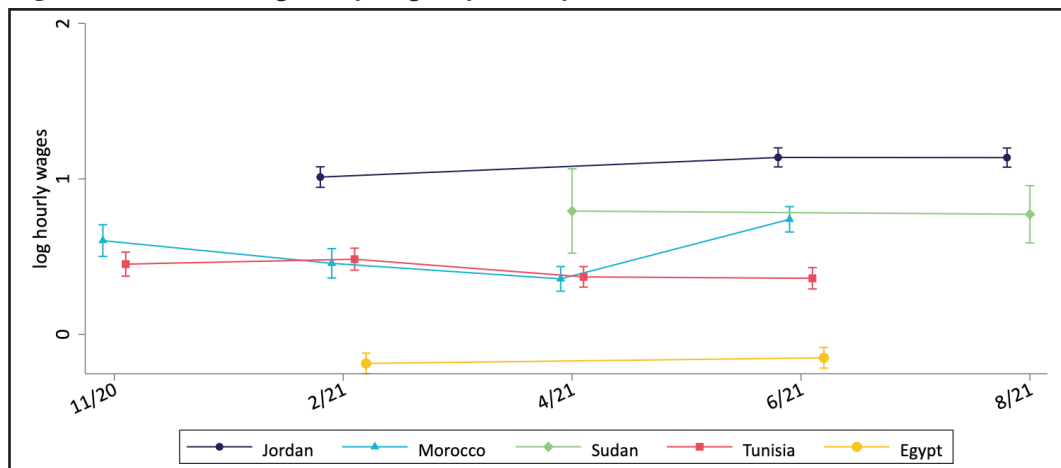
Figure 8 Predicted hours of work per week by household income quartile in February 2020, wave, and country.



Source: Authors' calculations based on CMM, all waves, and interacted models in Table A7 in the Appendix.

Note: Bars show 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

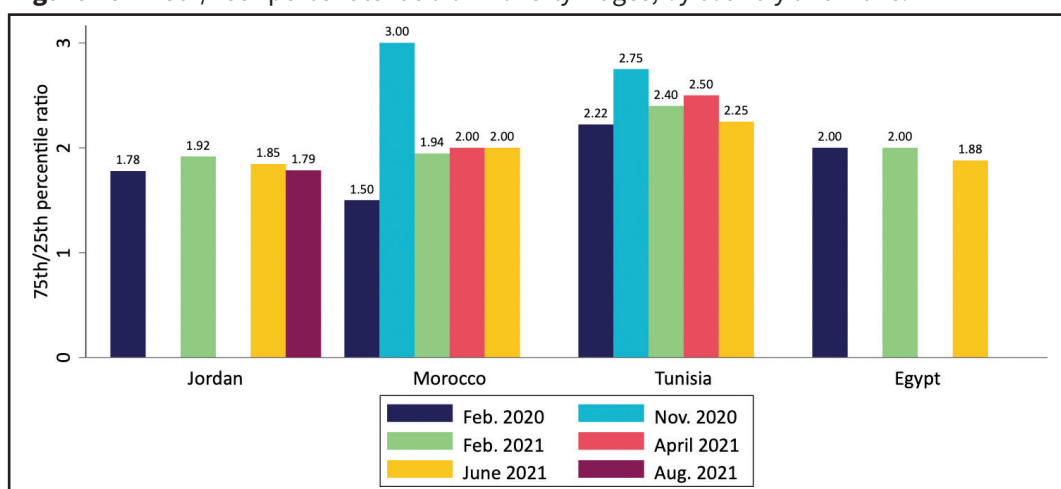
severe, wages rose somewhat over time. In Sudan, nominal wages fell slightly over time, and given inflation, real wages fell appreciably. In Tunisia, wages increased slightly (but not significantly) from November 2020 to February 2021, but then fell to lower levels in April and June 2021. This reversal is potentially caused by selectivity as employment recovers and low-earners return to the labor market, leading to a fall in the average worker's hourly wage. Morocco shows an initially similar pattern to Tunisia, with hourly wages falling and then rising in June 2021; as employment fell, it was likely low-earning (primarily agricultural) workers who left wage work.

Figure 9 Predicted log hourly wages by country and wave.

Source: Authors' calculations based on CMM, all waves, and interacted models in Table A3 in the Appendix.

Notes: Bars represent 95% confidence intervals. Log hourly wages were transformed into US\$ terms based on January 1, 2021 exchange rates. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

A particularly important dynamic created by the shifts in hours and hourly wages has been changing inequality. Figure 10 presents the 75th/25th percentile ratio (p_{75}/p_{25}) of monthly wages, by country and wave, for those who were wage workers. The figure also includes February 2020 wages. Egypt maintained similar inequality ($p_{75}/p_{25} = 2.00$) in both February 2020 and February 2021, before dropping slightly to 1.88 in June 2021. The pattern in other countries is an initial increase in inequality from February 2020, pre-pandemic, to the first wave during the pandemic, and then some reductions in inequality as recovery occurred. For example, in Jordan the p_{75}/p_{25} ratio went from 1.78 in February 2020 to 1.92 in February 2021, before falling in June 2021 to 1.85 and in August 2021 back to 1.79, very similar to pre-pandemic levels. Morocco and Tunisia followed relatively similar patterns of inequality being initially

Figure 10 75th/25th percentile ratio of monthly wages, by country and wave.

Source: Authors' calculations based on CMM.

Note: Given small sample size of wage earners in Sudan, Sudan is not shown. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

exacerbated, with some fluctuations and some (incomplete, particularly in Morocco) reduction of inequality back toward pre-pandemic levels. Given the small sample size of wage workers in Sudan (as well as complexities of inflation), results are not shown. The pandemic thus usually exacerbated inequality in wages, and only in some cases has inequality returned to pre-pandemic levels.

5.3.2 Country-specific models of hourly wages

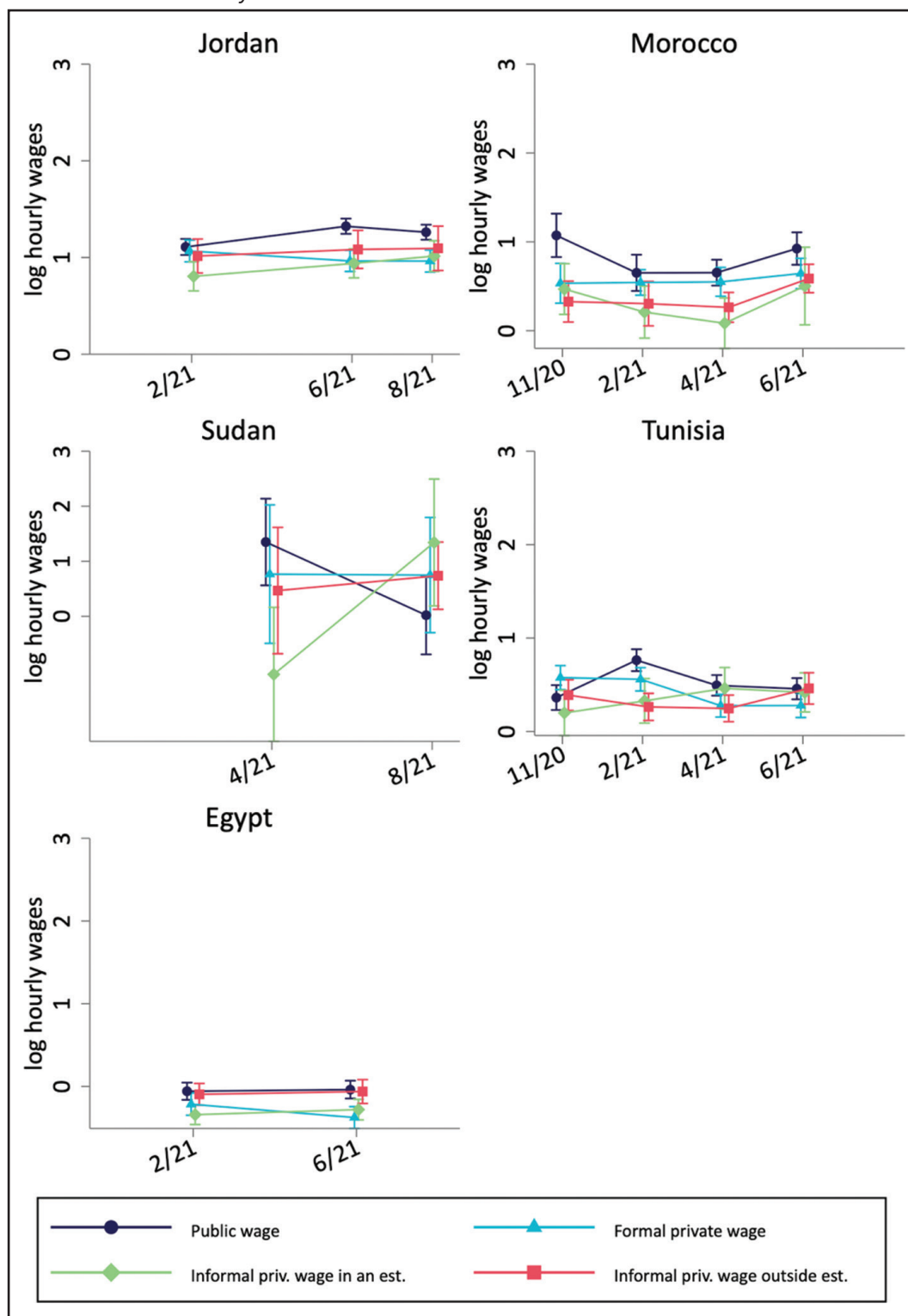
We now turn to the country-specific models of hourly wages, to further explore for whom wages have recovered. Table A8 in the Appendix shows the models with only main effects and Table A9 in the Appendix includes the wave interactions. As the dependent variable is log hourly wages, coefficients can be interpreted as (roughly) percentage changes or differences. In the main effects model, differences by sex are significant only in Jordan and Egypt, where women earn significantly higher wages. This higher wage is likely due to the selection of women into the labor market (e.g., only working in higher earning jobs) as well as selective mobile phone-ownership (Galal and Said, 2019; Assaad et al., 2022c; Said et al., 2022). There is only one significant wave interaction with gender (a temporary divergence in April 2021 in Tunisia), suggesting that, overall, the wage recovery has not had gender differentiated trends.

Older workers usually earned significantly more (main effects model), except in Morocco and Tunisia. The recoveries in Morocco, Sudan, and Tunisia appear to have particularly helped older workers. Except in Sudan, more educated workers earned significantly more (main effects). In Tunisia, the more educated particularly increased their wages after November 2020.

Figure 11 presents the evolution of wage recovery by initial labor market status. Figures are presented for initial wage statuses (but all statuses are included in the models and tables, as some individuals switched into wage work from other statuses). Unsurprisingly, private sector workers, and especially informal workers, earned less than public sector workers (main effects, usually significant). Workers outside establishments were at less of a disadvantage in hourly wages in most cases, but this may be because the main margin of adjustment for these workers was hours. The wave interactions show relatively more wage stability during recovery in Jordan and Egypt than Morocco and Tunisia; the increase in wages in June 2021 appears to be particularly among informal workers in Morocco, which may be low-earners exiting wage work or employment. There were heterogeneous patterns of main effects for industry (compared to services) across countries. In terms of recovery (based on the model with wave interactions), there were heterogeneous interactions, although food services and accommodation in Egypt and Tunisia appear to have recovered somewhat faster over time.

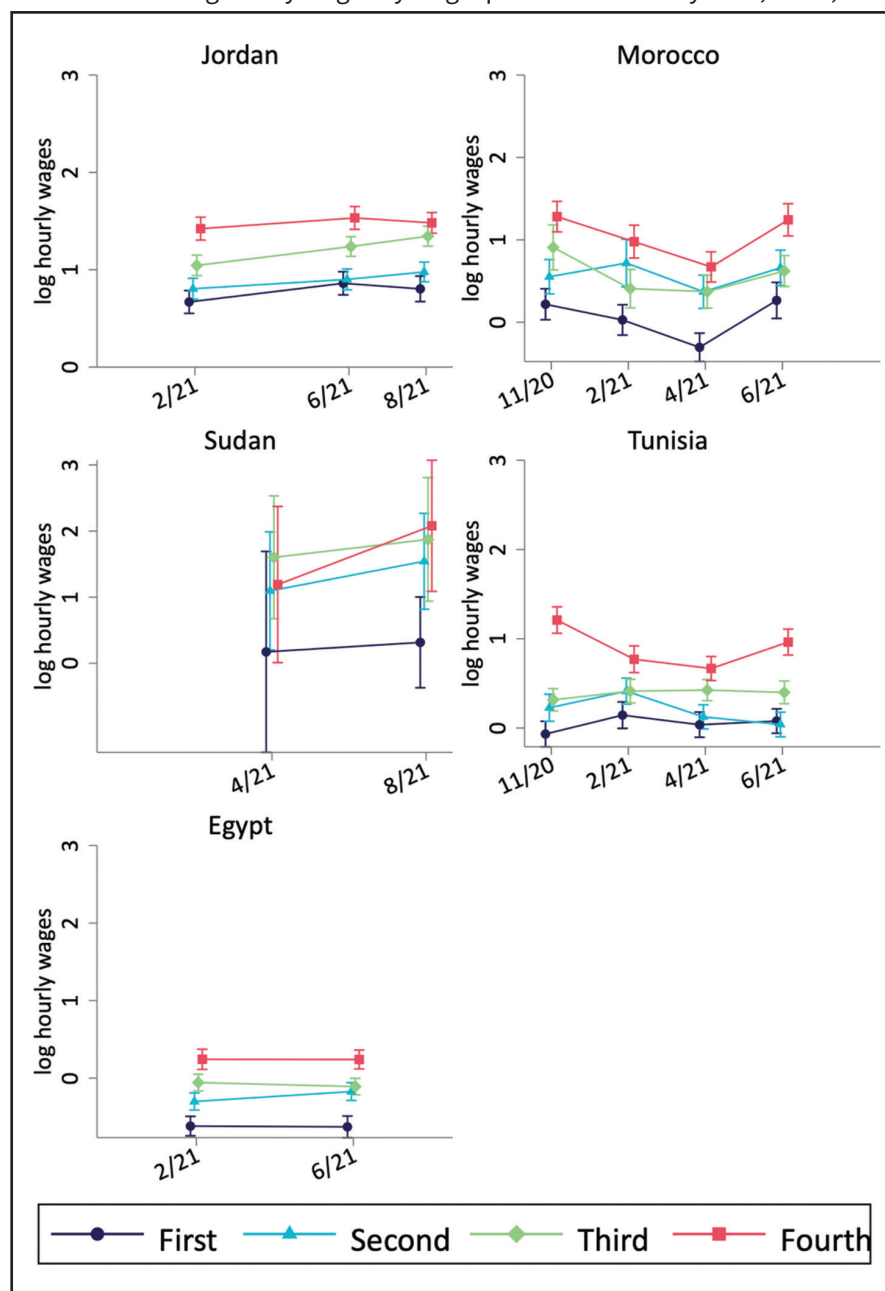
Figure 12 explores the evolution of log hourly wages by February 2020 wage quartile. Those who were not wage workers are included with don't know/refused (not shown in the figure, included in the model). Wages of course increased with quartile in the main effects model. While there were not many significant differences in the wave interactions, in the case of Tunisia, primarily, the recovery somewhat reduced inequality. This finding of limited wage recovery is consistent with research showing that household income losses have been persistent (Assaad et al., 2022c; Krafft et al., 2022c; Marouani et al., 2022).

Figure 11 Predicted log hourly wages by initial (February 2020) labor market status, wave, and country.



Source: Authors' calculations based on CMM, all waves, and interacted models in Table A9 in the Appendix.

Notes: February 2020 non-wage, unemployed, and out of labor force not shown. Bars represent 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Figure 12 Predicted log hourly wages by wage quartile in February 2020, wave, and country.

Source: Authors' calculations based on CMM, all waves, and interacted models in Table A9 in the Appendix.

Notes: Don't know/refused/missing not shown. Bars represent 95% confidence intervals. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

6 Discussion and Conclusions

6.1 Summary

The pandemic and initial lockdowns led to large, negative labor market effects globally and in low- and middle-income countries in particular (World Bank, 2020a; Bundervoet et al., 2021; Khamis et al. 2021). MENA had particularly stringent policy responses and an under-funded social assistance response (Krafft et al., 2021a,b,c, 2022, 2022b; Assaad et al., 2022c;

Marouani et al., 2022). As a result, the pandemic exacerbated poverty and inequality in a region that was already struggling with rising poverty pre-pandemic (World Bank, 2020a).

This paper demonstrates that employment, labor force participation, and unemployment in the five countries we examine here have largely recovered through mid-2021, after initial shocks. The employment recovery faltered a bit in Morocco in June 2021, most probably due to cyclicalities in its agricultural sector. While labor force participation recovered in most countries, it decreased in Tunisia as Tunisians were more likely to exit the labor force in February and April 2021, with some recovery in June 2021. Older age groups were more likely to exit the labor force during the pandemic, but this could be a continuation of pre-pandemic retirement trends.

Workers' ability to remain employed during the pandemic and their employment recovery depended strongly on their pre-pandemic employment status. Public sector workers, followed by private sector formal wage workers, saw the greatest stability in employment, and informal workers working outside fixed establishments were the most likely to transition out of employment. Jordan exhibited the greatest stability in employment over time, which could have been the result of its prohibition of layoffs during the pandemic and its relatively high share of public and formal private sector employment. The next most stable were Tunisia and Egypt, with Tunisia experiencing substantial employment recovery from November 2020 to June 2021. Sudan and Morocco, with their more agrarian economies, had the most instability. Workers in construction and accommodation and food services were also the most vulnerable to employment loss. There was more heterogeneity in employment levels and trends by initial income quartile in Morocco and Tunisia than in Egypt, Jordan, and Sudan. Employment recovered more slowly among those with lower pre-pandemic income than for those with higher incomes in these two countries.

There was also some adjustment to employment on the intensive margin, that is hours of work for those who remained employed, but with varying patterns. There were opposing patterns for Tunisia and Morocco from November 2020 to February 2021, with hours of work increasing for Morocco and decreasing for Tunisia. Subsequent to that, average hours per week tended to decline in most countries except Tunisia. These patterns could be due to the selectivity of employment loss, which may have taken out of the workforce in the early months of the pandemic individuals with weak attachment to the labor market who also have shorter work hours. As the employment levels of these individuals improved, they came back in and contributed to an apparent reduction in hours. This interpretation is supported by the fact that the hours of non-wage workers, which include many of these weakly attached workers, actually rose throughout the pandemic, except in Egypt and Sudan.

Like employment levels, hourly wage rates remained fairly stable in Egypt and Jordan. They tended to decline in Morocco during periods of employment recovery and increase in periods of employment loss, including June 2021. This pattern again appears to be the result of the selectivity of employment loss, with more weakly attached workers with presumably lower hourly wages leaving the workforce in times of low labor demand, resulting in an increase in the average hourly wage. Initial increases in wage inequality have reversed during the recovery period, albeit to varying degrees across countries.

Comparing the countries highlights some important lessons for policy response and understanding recovery. Egypt and Jordan had relatively more labor market stability than

Morocco, Sudan, or Tunisia, although for somewhat different reasons. The two countries had less severe economic contractions (Egypt more so) and Jordan had a relatively more formal and less tourism-dependent economy pre-pandemic, which, coupled with policy responses focused on preventing job loss, helped moderate labor market impacts. Morocco and Tunisia had more severe initial economic contractions and greater fluctuations during recovery. Morocco and Sudan, as largely agrarian economies, also had variable recovery tied to cyclicalities, as well as, in Sudan, other political and economic developments.

6.2 Limitations and directions for future research

Although the CMM microdata are a valuable source for understanding pandemic-era labor markets, they have a number of limitations. The surveys are focused on mobile phone owners; this is a relatively privileged segment of the labor market, and to varying degrees across countries (Assaad et al., 2022c; Krafft et al., 2022c; Marouani et al., 2022). The results may not generalize to those without mobile phones, who may be particularly disadvantaged in the pandemic recovery. Non-response to the surveys was demonstrably non-random when compared to national surveys that captured data on individual mobile phone owners. While observable non-response was incorporated into weights, unobservable non-response remains an issue, and one that may be particularly related to labor market outcomes, e.g., those initially unemployed being more likely to answer a random phone number. The frequency of the surveys is an advantage, but the finite sample size a disadvantage, particularly for some countries and outcomes (e.g., a very limited number of wage workers in Sudan).

The CMM data do include some important pre-pandemic characteristics. Recall may, however, be an issue, particularly for variable statuses, such as unemployment (Assaad et al., 2018b). There were also a number of existing disparities pre-pandemic, such as low female labor force participation, and it is difficult to disentangle pre-existing disparities from pandemic impacts and recovery. This is particularly the case for contexts with multiple ongoing challenges, for instance drought affecting Morocco and Tunisia in 2020 (Karam and Durisin, 2020), or Sudan's myriad challenges in 2021. We are unable to truly identify the causal impact of the pandemic but understanding disparities and differential recovery in the pandemic era remains critically important to designing labor market policy responses.

This research has also shown that the extensive margin of employment and participation is only temporarily affected during sharp shocks such as the ones caused by the pandemic, but that the effects may be more severe and durable at the intensive margins of hours of work and income. Examining the intensive margins of work during other health and economic shocks will be an important area for future research. In fact, it may be a minority of vulnerable workers whose labor market status is directly affected by the level of demand in the economy, but a majority whose hours and incomes are affected. Those particularly affected include self-employed workers, farmers, and casual wage workers. For them, measures such as time-related underemployment may be much more sensitive to their plight during labor market shocks than the unemployment rate (Krafft and Assaad, 2014; Assaad, 2019). Time-related underemployment measures the proportion of employed workers whose hours involuntarily fall below a certain threshold, such as 35 h/week or 40 h/week.

6.3 Policy implications

Social assistance has retreated since the start of the pandemic and during the course of the recovery (Krafft et al., 2021a,b,c, 2022b,c; Assaad et al., 2022c; Marouani et al., 2022). Such assistance remains only weakly targeted to the workers who have struggled the most (Krafft et al., 2022b). The pandemic has demonstrated clearly the consequences of the gaps in MENA countries' social safety nets. It has also demonstrated that established social safety net programs worked better to reach the most vulnerable than emergency measures devised expressly for the pandemic (Assaad et al., 2022c; Krafft et al., 2022c; Marouani et al., 2022). Designing robust social safety nets that are crisis-responsive and not based on formal employment is a critical area for future efforts in MENA.

Policies and policymakers need more robust data, particularly on hours, earnings, and poverty, both as the pandemic recovery continues to evolve and in the future. Our results underscore the importance of collecting and releasing microdata in the aftermath of the pandemic, as official statistics and reports are almost exclusively focused on headline employment, unemployment, and labor force participation rates. We demonstrated a recovery in employment rates, and one corroborated by official statistical reports (Krafft et al., 2022d; ILO and ERF, 2022), which show that the labor market suffered the most in the second quarter of 2020 (before our data begin) and gradually recovered thereafter. Yet these reports typically do not include hours and earnings data to track other aspects of recovery.

Vulnerable workers are particularly likely to have fluctuating hours and earnings but remain employed. Policies need to better support these working poor. Although cash assistance programs have expanded substantially in the region, they tend to target categories of households and individuals that are outside the labor market, e.g., female-headed households (Kawar et al., 2022; Selwaness and Ehab, 2022).

Going forward, policies need to address the potentially lasting consequences of transitory employment losses as well as persistent income challenges. Households have increasingly relied on negative coping strategies (Assaad et al., 2022c; Krafft et al., 2022c; Marouani et al., 2022), such as selling assets or reducing food intake, as the pandemic has persisted. These strategies will have lasting consequences for poverty, inequality, and human capital. It will be an ongoing challenge to try to ameliorate these negative consequences of the pandemic and economic shock on the labor market.

Declarations

Availability of data and material

The data analyzed in the current study are available from the Economic Research Forum Open Access Microdata Initiative at www.erfdataportal.com. Stata .do files to replicate analyses will be made available on the corresponding author's website.

Competing interests

The authors declare that they have no competing interests.

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Authors' contributions

CK, RA, and MA were co-principal investigators on the CMM project (creating the underlying data). CK, RA, and MA contributed equally to the overall conceptualization of the paper and its analyses. CK, RC, and AL undertook data preparation and coded the analyses. MA wrote the first draft of the literature review section. RA wrote the first draft of the policy responses section. CK wrote the first draft of the introduction, pre-existing labor market challenges, and discussion and conclusions sections. CK and AL wrote the first draft of the data and methods sections. CK and RC wrote the first draft of the results section. All authors subsequently edited the manuscript. All authors read and approved the final manuscript.

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Appendix

Models and Variables

Variables

Table A1 Variables, categories, and original questions and responses

	Categories	Full Question	Full Responses	Notes	
Outcomes					
Labor Market Status	Employed	In the past 7 days, did you spend at least 1 h working? Please consider day labor, work for wages or in-kind, and working on your own account or your own business, including an agricultural business (farm).	Yes	Employed if yes	
	Unemployed		No		
	Out of the labor force (OLF)		Were you attached to a job in the past 7 days but were temporarily absent from it?	Yes No	Employed if yes
			In the past 7 days, were you wanting, willing, and available to work?	Yes No	Only asked if not employed. Unemployed if responded yes, out of labor force if response was no.
Hours/week		In the past 7 days, how many hours did you work?			
Ln (hourly wage)		In the past month, what was your personal net monthly wage (including overtime, bonuses)?			
		Monthly wages transformed into hourly terms using hours per week reported from individuals who worked ≥1 h in the 7 days preceding the interview. Translated into US dollars based on exchange rates on January 1, 2021. Used in log form in models.			
Covariates					
Wave	“Wave 1” 11/20 “Wave 2” 2/21 “Wave 3” 4/21 “Wave 4” 6/21 “Wave 5” 8/21			Categorized into a month based on the majority of fielding for that wave.	

(Continued)

Table A1 Continued

	Categories	Full Question	Full Responses	Notes
February 2020 labor market status	Non-wage workers	What was your main job/activity as of the end of February 2020 (before the 19-COVID Pandemic)?	Wage worker for private sector/ NGO	Recoded farmer, business owner/self-employed, unpaid family worker on a farm, unpaid family worker (but not farmer) as non-wage worker. Wage worker for private sector/NGO with social insurance recoded as formal private wage
	Public sector wage workers		Wage worker for government/ public sector	Wage worker for private sector/NGO without social insurance in an establishment recoded as informal private wage in an establishment
	Formal private sector wage workers		Farmer (owns a farm/self-employed on a farm)	Wage worker for private sector/NGO without social insurance outside an establishment recoded as informal private wage outside an establishment
	Informal private sector wage workers		Business owner/self-employed (but not a farmer)	Housewife, full time student, other not employed and not looking for work, and retired recoded as out of the labor force
	Informal private sector wage workers		Unpaid family worker on a farm	
	Unemployed (broad definition)		Unpaid family worker (but not a farmer)	
	Out of the labor force (OLF)		Housewife	
			Full time student	
			Retired	
			Other, not employed, and not looking for work (e.g., taking care of family members)	
		As of end of February 2020 (before the 19-COVID pandemic), did you have social insurance?	Unemployed and looking for work	
		As of end of February 2020 (before the 19-COVID pandemic), did you work inside an establishment?	Yes No Yes No	

(Continued)

Table A1 Continued

	Categories	Full Question	Full Responses	Notes
Industry	Manufacturing and agriculture Construction Trade/retail Accommodation/food Services	Which activity best describes your main job/activity as of the end of February 2020?	Agriculture, fishing or mining Manufacturing Construction or utilities Retail or wholesale Transportation and storage Accommodation and food services Information and communication Financial activities or real estate Education Health Other services	Only asked of wage workers. Farmer, unpaid family worker on a farm, agriculture, fishing or mining, and manufacturing recoded as manufacturing and agriculture Retail or wholesale recoded as trade/retail Transportation and storage, information and communication, financial activities or real estate, education, health and other services, or unpaid family wage work (but not a farmer) recoded as services
		What was your main job/activity as of the end of February 2020 (before the COVID-19 pandemic)?	Wage worker for private sector/ NGO Wage worker for government/public sector Farmer (owns a farm/self-employed on a farm) Business owner/self-employed (but not a farmer) Unpaid family worker on a farm Unpaid family worker (but not a farmer) Housewife Full time student Retired Other, not employed, and not looking for work (e.g., taking care of family members) Unemployed and looking for work	
Education level	Basic or less Secondary Higher education	What is the highest level of education you have completed?	Less than basic Basic Secondary Higher education	Less than basic and basic recoded at basic or less

(Continued)

Table A1 Continued

	Categories	Full Question	Full Responses	Notes
Sex	Male Female			
Age group (years)	18–29 30–49 50–64	What is your age, in years?		Age integer recoded into categories
February 2020 household income quartiles	First Second Third Fourth Don't know/refused/missing	In February 2020 (before the 19-COVID pandemic), what was your household's total monthly income (from all sources and including your income)?		Categories were country-specific, roughly quartiles, given in local currency.
February 2020 wage quartile	First Second Third Fourth Don't know/refused/missing	In February 2020 (before the 19-COVID Pandemic), what was your personal net monthly wage (including overtime, bonuses)?		Continuous responses were recoded into country-specific wage quartiles.

Source: Authors' creation

Table A2 Descriptive statistics on outcomes and covariates

	Jordan	Morocco	Sudan	Tunisia	Egypt
Outcomes					
Labor market status (at wave) (percentage)					
Employed	40.1	48.8	45.7	54.1	53.3
Unemployed	27.4	22.7	32.7	25.3	20.8
Out of labor force	32.6	28.5	21.6	20.6	25.9
Total	100.0	100.0	100.0	100.0	100.0
Hours/week (mean)	42.6	42.7	30.3	39.6	41.9
Ln (hourly wage) (mean)	1.10	0.54	0.78	0.41	−0.17
Covariates (percentages)					
Wave					
Nov. 2020		24.7		24.6	
Feb. 2021	33.4	24.7		25.5	49.9
April 2021		25.9	54.5	25.3	
June 2021	32.8	24.7		24.7	50.1
Aug. 2021	33.7		45.5		
Sex					
Male	51.0	62.4	58.6	54.0	55.5
Female	49.0	37.6	41.4	46.0	44.5

(Continued)

Table A2 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Age group (years)					
18–29	34.1	31.2	48.5	27.7	33.5
30–49	47.7	47.7	40.1	49.0	49.3
50–64	18.3	21.1	11.4	23.3	17.3
Education level					
Basic or less	46.2	85.9	42.1	66.2	34.3
Secondary	21.3	8.7	33.2	16.5	41.8
Higher education	32.5	5.4	24.8	17.3	23.9
Feb. 2020 detailed labor market status					
Non-wage	5.2	24.2	34.1	11.9	10.6
Public wage	15.4	8.1	6.5	14.5	14.8
Formal private wage	9.1	8.4	1.7	9.7	7.5
Informal priv. wage in an est.	6.0	3.0	1.3	3.4	11.2
Informal priv. wage outside est.	4.2	11.5	3.7	10.6	10.1
Unemployed	8.4	14.6	15.5	9.4	4.3
Out of LF	51.8	30.2	37.2	40.6	41.4
Feb. 2020 industry (Feb. 2020 employed only)					
Manufacturing and agriculture	8.8	29.9	35.6	29.9	26.3
Construction	10.4	14.1	9.2	13.2	15.9
Trade/retail	18.0	14.1	22.8	13.2	13.9
Accommodations/food	5.7	8.0	2.0	5.3	6.5
Services	57.1	34.0	30.3	38.3	37.4
Feb. 2020 household income quartile (approximate)					
First	24.9	45.6	14.7	23.1	33.3
Second	34.1	22.9	18.2	20.4	26.1
Third	19.2	5.3	19.5	23.7	21.8
Fourth	16.4	2.0	31.9	17.3	9.9
Don't know/refused/missing	5.4	24.2	15.7	15.5	8.9
Feb. 2020 wage quartile (Feb. 2020 wage workers only)					
First	24.6	28.4	23.4	22.4	22.2
Second	23.1	16.0	23.1	19.4	22.5
Third	23.2	15.4	20.3	21.0	23.8
Fourth	23.1	18.8	19.5	20.3	19.0
Don't know/refused/missing	5.9	21.4	13.7	16.9	12.5
Total	100.0	100.0	100.0	100.0	100.0
N (Observations)	7,625	8,120	4,401	8,143	4,007

Source: Authors' calculations based on CMM, all waves.

CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Models

Y outcome variable (labor market status, hours worked per week, or log hourly wage)

L labor market status in February 2020 dummies

F industry in February 2020 dummies

S sex dummy

A age group dummies

E education level dummies

P February 2020 household income quartile dummies

R February 2020 wage income quartile dummies

W wave dummies

C country dummies

c denotes countries

i denotes an individual

j denotes labor market status category in February 2020

k denotes industry category in February 2020

l denotes sex category

m denotes age category

n denotes education category

o denotes income or wage category in February 2020

q denotes labor market status category in outcome variable ($q = 1, 2, 3$)

t denotes time (a particular wave, $t = 1, 2, 3, 4, 5$) with t_0 denoting February 2020

Pooled Models

Eq. (1): Multinomial logit model of labor market status—

$$\ln \left(\frac{\Pr(Y_{i,t}=q)}{\Pr(Y_{i,t}=1)} \right) = \alpha_q + \sum_{c,t} \beta_{c,q,t} C_{i,c} * W_{i,t} + \varepsilon_{i,q}$$

Eq. (2): Tobit model of hours worked per week—

$$Y_{i,t}^* = \alpha + \sum_{c,t} \beta_{c,t} C_{i,c} * W_{i,t} + \varepsilon_i$$

$$Y_{i,t} = Y_{i,t}^* \text{ if } Y_{i,t}^* > 0$$

$$Y_{i,t} = 0 \text{ if } Y_{i,t}^* \leq 0$$

Eq. (3): OLS model of log hourly wages—

$$Y_{i,t} = \alpha + \sum_{c,t} \beta_{c,t} C_{i,c} * W_{i,t} + \varepsilon_i$$

Country-specific Models

Eq. (4): Multinomial logit model of labor market status, main effects ($q = 1, 2, 3$)—

$$\ln \left(\frac{\Pr(Y_{i,t}=q)}{\Pr(Y_{i,t}=1)} \right) = \alpha_q + \sum_j \beta_{j,q} L_{i,j,t0} + \sum_k \beta_{k,q} F_{i,k,t0} + \beta_{l,q} S_{i,l} + \sum_m \beta_{m,q} A_{i,m} + \sum_n \beta_{n,q} E_{i,n} + \sum_o \beta_{o,q} P_{i,o,t0} + \varepsilon_{i,q}$$

Eq. (5): Multinomial logit model of labor market status, with interactions ($q = 1, 2, 3$)—

$$\ln \left(\frac{\Pr(Y_{i,t}=q)}{\Pr(Y_{i,t}=1)} \right) = \alpha_q + \sum_j \beta_{j,q} L_{i,j,t0} + \sum_k \beta_{k,q} F_{i,k,t0} + \beta_{l,q} S_{i,l} + \sum_m \beta_{m,q} A_{i,m} + \sum_n \beta_{n,q} E_{i,n} + \sum_o \beta_{o,q} P_{i,o,t0} + \sum_{j,t} \delta_{j,t,q} W_t^* L_{i,j,t0} + \sum_{k,t} \delta_{k,t,q} W_t^* F_{i,k,t0} + \sum_t \delta_{l,t,q} W_t^* S_{i,l} + \sum_{m,t} \delta_{m,t,q} W_t^* A_{i,m} + \sum_{n,t} \delta_{n,t,q} W_t^* E_{i,n} + \sum_{o,t} \delta_{o,t,q} W_t^* P_{i,o,t0} + \varepsilon_{i,q}$$

Eq. (6): Tobit model of hours worked per week, main effects—

$$Y_{i,t}^* = \alpha + \sum_j \beta_j L_{i,j,t0} + \sum_k \beta_k F_{i,k,t0} + \beta_l S_{i,l} + \sum_m \beta_m A_{i,m} + \sum_n \beta_n E_{i,n} + \sum_o \beta_o P_{i,o,t0} + \varepsilon_i$$

$$Y_{i,t} = Y_{i,t}^* \text{ if } Y_{i,t}^* > 0$$

$$Y_{i,t} = 0 \text{ if } Y_{i,t}^* \leq 0$$

Eq. (7): Tobit model of hours worked per week, with interactions—

$$Y_{i,t}^* = \alpha + \sum_j \beta_j L_{i,j,t0} + \sum_k \beta_k F_{i,k,t0} + \beta_l S_{i,l} + \sum_m \beta_m A_{i,m} + \sum_n \beta_n E_{i,n} + \sum_o \beta_o P_{i,o,t0} + \sum_{j,t} \delta_{j,t} W_t^* L_{i,j,t0} + \sum_{k,t} \delta_{k,t} W_t^* F_{i,k,t0} + \sum_t \delta_{l,t} W_t^* S_{i,l} + \sum_{m,t} \delta_{m,t} W_t^* A_{i,m} + \sum_{n,t} \delta_{n,t} W_t^* E_{i,n} + \sum_{o,t} \delta_{o,t} W_t^* P_{i,o,t0} + \varepsilon_i$$

$$Y_{i,t} = Y_{i,t}^* \text{ if } Y_{i,t}^* > 0$$

$$Y_{i,t} = 0 \text{ if } Y_{i,t}^* \leq 0$$

Eq. (8): OLS model of log hourly wages, main effects—

$$Y_{i,t} = \alpha + \sum_j \beta_j L_{i,j,t0} + \sum_k \beta_k F_{i,k,t0} + \beta_l S_{i,l} + \sum_m \beta_m A_{i,m} + \sum_n \beta_n E_{i,n} + \sum_o \beta_o R_{i,o,t0} + \varepsilon_i$$

Eq. (9): OLS model of log hourly wages, with interactions—

$$Y_{i,t} = \alpha + \sum_j \beta_j L_{i,j,t0} + \sum_k \beta_k F_{i,k,t0} + \beta_l S_{i,l} + \sum_m \beta_m A_{i,m} + \sum_n \beta_n E_{i,n} + \sum_o \beta_o R_{i,o,t0} + \sum_{j,t} \delta_{j,t} W_t^* L_{i,j,t0} + \sum_{k,t} \delta_{k,t} W_t^* F_{i,k,t0} + \sum_t \delta_{l,t} W_t^* S_{i,l} + \sum_{m,t} \delta_{m,t} W_t^* A_{i,m} + \sum_{n,t} \delta_{n,t} W_t^* E_{i,n} + \sum_{o,t} \delta_{o,t} W_t^* R_{i,o,t0} + \varepsilon_i$$

Table A3 Predicted outcomes by wave and country, pooled model

	Prob. Emp.	Prob. Unemp.	Prob. OLF	Hours/ week	Ln (hourly wage)
Jordan # Feb. 2021	0.370 (0.010)	0.260 (0.009)	0.369 (0.010)	44.497 (0.778)	1.012 (0.034)
Jordan # June 2021	0.406 (0.010)	0.270 (0.009)	0.324 (0.009)	42.167 (0.749)	1.139 (0.031)
Jordan # Aug. 2021	0.426 (0.010)	0.290 (0.009)	0.284 (0.009)	41.410 (0.727)	1.137 (0.031)
Morocco # Nov. 2020	0.428 (0.011)	0.233 (0.009)	0.339 (0.011)	41.777 (0.852)	0.603 (0.052)
Morocco # Feb. 2021	0.489 (0.011)	0.230 (0.009)	0.281 (0.010)	45.364 (0.783)	0.457 (0.048)
Morocco # April 2021	0.546 (0.011)	0.205 (0.009)	0.249 (0.009)	43.780 (0.709)	0.357 (0.040)
Morocco # June 2021	0.487 (0.011)	0.239 (0.010)	0.273 (0.010)	39.472 (0.762)	0.740 (0.042)
Sudan # April 2021	0.443 (0.010)	0.335 (0.010)	0.222 (0.008)	31.176 (0.789)	0.793 (0.138)
Sudan # Aug. 2021	0.473 (0.011)	0.318 (0.010)	0.209 (0.009)	29.430 (0.819)	0.773 (0.094)
Tunisia # Nov. 2020	0.502 (0.011)	0.306 (0.010)	0.192 (0.009)	40.156 (0.777)	0.452 (0.040)
Tunisia # Feb. 2021	0.542 (0.011)	0.253 (0.010)	0.205 (0.009)	37.861 (0.742)	0.484 (0.036)
Tunisia # April 2021	0.554 (0.011)	0.231 (0.009)	0.215 (0.009)	40.828 (0.722)	0.370 (0.034)
Tunisia # June 2021	0.565 (0.011)	0.222 (0.009)	0.213 (0.009)	39.573 (0.728)	0.361 (0.035)
Egypt # Feb. 2021	0.521 (0.011)	0.211 (0.009)	0.268 (0.010)	42.028 (0.752)	-0.187 (0.034)
Egypt # June 2021	0.544 (0.011)	0.205 (0.009)	0.251 (0.010)	41.773 (0.745)	-0.151 (0.034)
N (Obs.)	32,296	32,296	32,296	15,253	7,206

Source: Authors' calculations based on CMM, all waves.

Notes: Predicted outcomes with standard errors in parentheses.

CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Table A4 Relative risk ratios from multinomial logit models for labor market status, main effects

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Wave (first wave omitted)										
Feb. 2021			0.769** (0.068)	0.546*** (0.054)			0.773** (0.074)	1.105 (0.129)		
April 2021			0.604*** (0.054)	0.419*** (0.042)			0.667*** (0.065)	1.077 (0.125)		
June 2021	0.780** (0.073)	0.612*** (0.061)	0.807* (0.072)	0.575*** (0.057)			0.610*** (0.060)	0.979 (0.114)	0.828 (0.088)	0.767* (0.088)
Aug. 2021	0.758** (0.070)	0.463*** (0.046)			0.852* (0.064)	0.882 (0.077)				
Feb. 2020 labor market status (public wage omitted)										
Non-wage	7.103*** (1.819)	4.352*** (1.227)	2.589*** (0.431)	1.393 (0.263)	1.977*** (0.362)	0.484*** (0.101)	2.723*** (0.585)	2.799** (0.898)	4.665*** (1.533)	2.206 (0.915)
Formal private wage	5.424*** (1.243)	1.660* (0.424)	1.758** (0.328)	0.620* (0.150)	6.105*** (1.874)	0.778 (0.439)	2.351*** (0.501)	1.446 (0.485)	4.695*** (1.595)	2.189 (0.956)
Informal private wage in an establishment	9.777*** (2.299)	1.773 (0.553)	2.379*** (0.525)	0.670 (0.225)	0.731 (0.258)	0.217** (0.108)	3.839*** (0.931)	1.417 (0.686)	7.298*** (2.236)	2.737** (1.039)

(Continued)

Table A4 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Informal private wage outside an establishment	10.736*** (2.688)	1.869 (0.665)	3.026*** (0.517)	1.907*** (0.372)	0.661 (0.173)	0.147*** (0.062)	4.284*** (0.899)	2.517** (0.845)	6.473*** (2.069)	3.931*** (1.519)
Unemployed	54.708*** (12.047)	17.370*** (3.531)	12.748*** (2.137)	7.703*** (1.456)	1.680** (0.303)	0.978 (0.203)	19.826*** (3.678)	4.495*** (1.178)	125.942*** (42.860)	22.199*** (9.027)
OLF	103.298*** (21.187)	71.571*** (12.496)	11.898*** (2.025)	45.723*** (8.204)	1.433* (0.247)	1.565* (0.297)	28.960*** (5.043)	56.765*** (11.953)	54.734*** (15.277)	94.505*** (25.714)
Industry (services omitted)										
Manufacturing and agriculture	2.017*** (0.386)	0.468 (0.188)	1.239 (0.139)	1.883*** (0.284)	0.271*** (0.042)	0.869 (0.181)	1.132 (0.185)	0.428** (0.121)	1.013 (0.236)	0.721 (0.245)
Construction	1.584* (0.312)	0.527 (0.181)	1.271 (0.172)	1.547* (0.300)	0.511*** (0.103)	0.782 (0.262)	1.827** (0.342)	0.629 (0.230)	2.664*** (0.631)	1.292 (0.494)
Trade/retail	1.240 (0.206)	0.519* (0.143)	1.148 (0.156)	1.565* (0.285)	0.732* (0.112)	1.866** (0.394)	1.945*** (0.361)	0.400* (0.156)	1.016 (0.277)	1.182 (0.443)
Accommodations/food	1.906** (0.429)	0.899 (0.358)	1.571** (0.248)	2.435*** (0.471)	1.308 (0.450)	0.506 (0.419)	1.318 (0.320)	0.712 (0.328)	2.455** (0.708)	0.970 (0.505)

(Continued)

Table A4 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Sex (male omitted)										
Female	2.683*** (0.241)	4.363*** (0.415)	2.568*** (0.197)	4.125*** (0.339)	2.234*** (0.202)	3.408*** (0.359)	2.910*** (0.219)	3.775*** (0.349)	4.988*** (0.659)	6.643*** (0.926)
Age group (years, 18–29 omitted)										
30–49	1.028 (0.087)	1.129 (0.106)	0.666*** (0.048)	0.996 (0.086)	1.071 (0.088)	0.843 (0.083)	0.797** (0.064)	0.823 (0.084)	1.341* (0.166)	1.136 (0.154)
50–64	2.159*** (0.274)	5.609*** (0.725)	0.572*** (0.055)	1.766*** (0.177)	0.987 (0.134)	1.751*** (0.255)	1.063 (0.108)	2.598*** (0.297)	1.534* (0.277)	3.328*** (0.587)
Education (basic or less omitted)										
Secondary	1.022 (0.107)	0.803* (0.089)	0.836 (0.103)	1.084 (0.139)	1.161 (0.106)	0.851 (0.089)	0.997 (0.096)	0.914 (0.104)	1.106 (0.142)	0.687** (0.094)
Higher education	1.078 (0.109)	0.435*** (0.048)	0.654** (0.104)	0.650* (0.113)	0.932 (0.093)	0.468*** (0.057)	1.697*** (0.191)	1.193 (0.158)	0.824 (0.134)	0.454*** (0.078)

(Continued)

Table A4 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Feb. 2020 income (first quartile omitted)										
Second	0.873 (0.088)	0.911 (0.099)	0.844* (0.069)	0.946 (0.090)	0.807 (0.102)	1.371* (0.221)	0.505*** (0.049)	0.779* (0.090)	0.723* (0.102)	1.271 (0.191)
Third	0.785 (0.098)	1.170 (0.159)	0.658* (0.110)	0.793 (0.152)	0.592*** (0.076)	1.433* (0.225)	0.440*** (0.044)	0.783* (0.094)	0.674* (0.108)	1.145 (0.203)
Fourth	0.628*** (0.086)	1.197 (0.177)	0.990 (0.239)	0.985 (0.273)	0.857 (0.102)	1.840*** (0.275)	0.170*** (0.023)	0.533*** (0.077)	0.809 (0.176)	1.562 (0.371)
Don't know/ refused/missing	0.976 (0.181)	1.557* (0.302)	1.038 (0.084)	1.410*** (0.123)	0.920 (0.124)	2.591*** (0.413)	0.658*** (0.074)	1.251 (0.165)	1.473 (0.295)	2.426*** (0.510)
N	7,625		8,120		4,401		8,143		4,007	
Pseudo R-sq.	0.338		0.257		0.096		0.325		0.381	

Source: Authors' calculations based on CMM, all waves.

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cells display relative risk ratios relative to a base category of employed, with standard errors in parentheses. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Table A5 Relative risk ratios from multinomial logit models for labor market status, including wave interactions

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Wave (first wave omitted)										
Feb. 2021			0.396* (0.164)	0.586 (0.290)			2.060 (1.089)	0.392 (0.308)		
April 2021			0.099*** (0.050)	0.043*** (0.028)			0.277* (0.178)	0.370 (0.274)		
June 2021	0.468 (0.258)	0.253* (0.146)	0.002* (0.005)	0.254* (0.146)			0.249* (0.168)	0.894 (0.602)	0.218* (0.159)	0.649 (0.451)
Aug. 2021	0.457 (0.280)	0.474 (0.236)			0.583 (0.254)	0.108*** (0.063)				
Feb. 2020 labor market status (public wage omitted)										
Non-wage	5.270*** (2.307)	3.220** (1.459)	0.925 (0.258)	0.907 (0.334)	0.999 (0.253)	0.352*** (0.099)	1.197 (0.426)	1.083 (0.797)	1.671 (0.734)	1.642 (1.054)
Formal private wage	5.725*** (2.169)	1.319 (0.526)	0.563 (0.194)	0.627 (0.275)	1.661 (0.955)	0.789 (0.542)	1.843 (0.609)	0.260 (0.296)	2.341 (1.063)	0.738 (0.716)
Informal priv. wage in an est.	8.222*** (3.279)	1.372 (0.691)	1.693 (0.553)	0.328 (0.221)	2.582 (1.281)	0.000 (0.000)	4.097*** (1.607)	0.449 (0.677)	3.466** (1.366)	3.534* (1.951)
Informal priv. wage outside est.	8.854*** (3.695)	1.803 (0.924)	1.289 (0.367)	1.326 (0.501)	0.567 (0.196)	0.162*** (0.079)	2.583*** (0.877)	2.277 (1.550)	4.355*** (1.755)	6.300*** (3.471)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Unemployed	53.827*** (20.207)	15.770*** (5.159)	3.451*** (0.978)	5.785*** (1.981)	1.960** (0.448)	0.403*** (0.106)	24.176*** (7.215)	2.238 (1.322)	92.868*** (41.317)	9.382** (7.168)
Out of LF	133.747*** (47.061)	93.179*** (26.151)	6.694*** (2.168)	53.653*** (19.090)	1.438 (0.315)	0.667 (0.155)	28.442*** (7.789)	60.612*** (22.574)	41.318*** (14.239)	143.351*** (60.104)
Industry (services omitted)										
Manufacturing and agriculture	1.366 (0.497)	0.512 (0.321)	1.747** (0.358)	1.500 (0.421)	0.846 (0.187)	0.706 (0.198)	0.980 (0.289)	0.593 (0.383)	1.206 (0.399)	0.490 (0.262)
Construction	1.791 (0.609)	0.395 (0.251)	1.333 (0.331)	1.042 (0.382)	1.101 (0.299)	0.725 (0.302)	1.392 (0.491)	0.234 (0.268)	1.969 (0.689)	1.173 (0.628)
Trade/retail	1.359 (0.373)	0.622 (0.261)	0.520* (0.152)	0.194** (0.110)	1.248 (0.293)	1.494 (0.440)	3.042*** (0.971)	0.562 (0.503)	1.163 (0.459)	1.254 (0.680)
Accommodations/food	2.221* (0.810)	1.762 (0.902)	0.879 (0.275)	0.851 (0.351)	0.307 (0.240)	0.344 (0.298)	2.204 (0.912)	0.352 (0.591)	2.845* (1.159)	2.316 (1.378)
Sex (male omitted)										
Female	2.125*** (0.353)	3.621*** (0.616)	2.961*** (0.499)	4.492*** (0.808)	2.229*** (0.278)	4.258*** (0.632)	1.801*** (0.265)	2.337*** (0.440)	4.927*** (0.962)	6.137*** (1.278)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Age group (18–29 omitted)										
30–49	0.864 (0.131)	1.084 (0.179)	0.728* (0.103)	1.099 (0.193)	1.070 (0.118)	0.692** (0.092)	1.202 (0.194)	1.108 (0.237)	1.448* (0.266)	1.089 (0.218)
50–64	1.768* (0.416)	3.878*** (0.923)	0.534** (0.104)	1.907** (0.401)	0.889 (0.150)	0.755 (0.153)	1.515* (0.312)	2.397*** (0.595)	1.203 (0.319)	2.805*** (0.722)
Education (basic or less omitted)										
Secondary	0.884 (0.171)	0.767 (0.154)	0.577* (0.148)	0.660 (0.184)	0.785* (0.097)	0.713* (0.099)	0.941 (0.176)	0.972 (0.227)	1.459* (0.277)	0.749 (0.153)
Higher education	1.053 (0.198)	0.434*** (0.086)	0.651 (0.226)	0.572 (0.218)	0.894 (0.118)	0.323*** (0.054)	1.566* (0.326)	1.744* (0.457)	0.705 (0.170)	0.405*** (0.103)
Feb. 2020 income (first quartile omitted)										
Second	0.856 (0.160)	0.803 (0.158)	0.549*** (0.095)	0.556** (0.118)	0.834 (0.131)	1.906** (0.410)	0.714 (0.158)	0.727 (0.204)	0.572** (0.117)	0.878 (0.193)
Third	0.678 (0.158)	1.045 (0.257)	0.459* (0.176)	0.242** (0.130)	0.614** (0.100)	2.007*** (0.420)	0.383*** (0.089)	0.551* (0.158)	0.588* (0.139)	0.976 (0.259)
Fourth	0.561* (0.142)	1.112 (0.292)	2.040 (1.351)	1.114 (1.050)	0.884 (0.138)	3.134*** (0.637)	0.309*** (0.090)	0.704 (0.236)	0.756 (0.244)	1.467 (0.518)
Don't know/ refused/missing	0.623 (0.201)	0.945 (0.314)	0.978 (0.150)	1.100 (0.189)	0.922 (0.155)	3.879*** (0.826)	0.728 (0.142)	0.782 (0.185)	1.496 (0.456)	3.007*** (0.964)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Wave and Feb. 2020 labor market status int.										
Feb. 2021 # Non-wage			1.071 (0.442)	0.556 (0.271)			2.211 (1.222)	2.273 (2.454)		
Feb. 2021 # Formal private wage			0.942 (0.471)	0.473 (0.285)			1.256 (0.665)	11.406 (15.546)		
Feb. 2021 # Informal priv. wage in an est.			0.384 (0.218)	0.331 (0.368)			0.689 (0.441)	6.153 (11.197)		
Feb. 2021 # Informal priv. wage outside est.			1.067 (0.472)	0.900 (0.455)			1.480 (0.792)	0.851 (0.934)		
Feb. 2021 # Unemployed			2.315* (0.977)	0.318* (0.163)			0.454 (0.211)	3.755 (3.216)		
Feb. 2021 # Out of LF			1.066 (0.489)	0.387 (0.191)			0.730 (0.316)	2.021 (1.339)		
April 2021 # Non-wage			6.568*** (3.360)	14.799*** (9.519)			2.487 (1.706)	3.744 (3.695)		
April 2021 # Formal private wage			10.724*** (6.037)	2.187 (1.828)			0.552 (0.403)	4.700 (6.420)		

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
April 2021 # Informal priv. wage in an est.			1.465 (1.046)	16.359** (16.014)			1.099 (0.794)	5.270 (9.118)		
April 2021 # Informal priv. wage outside est.			4.216** (2.198)	7.946** (5.232)			1.683 (1.130)	1.190 (1.154)		
April 2021 # Unemployed			7.593*** (3.871)	3.504 (2.260)			1.804 (1.053)	6.021* (4.813)		
April 2021 # Out of LF			4.439** (2.354)	3.586* (2.236)			1.866 (1.025)	1.270 (0.768)		
June 2021 # Non-wage	0.866 (0.535)	3.641 (2.518)	648.087* (2,127.191)	1.342 (0.795)			6.913** (4.870)	4.463 (4.183)	9.826** (7.193)	1.970 (1.666)
June 2021 # Formal private wage	0.754 (0.399)	2.666 (1.733)	592.198 (1,949.768)	0.890 (0.645)			3.755 (2.574)	8.428 (10.717)	5.237* (3.927)	4.831 (5.328)
June 2021 # Informal priv. wage in an est.			131.888 (437.864)	4.302 (4.157)			1.786 (1.381)	1.653 (3.122)	6.206** (4.276)	0.613 (0.478)
June 2021 # Informal priv. wage outside est.			471.054 (1,546.759)	0.923 (0.568)			5.469* (3.759)	1.728 (1.578)	2.889 (2.066)	0.440 (0.351)
June 2021 # Unemployed	1.239 (0.642)	2.389 (1.314)	1,041.680* (3,418.862)	3.398* (1.906)			1.260 (0.798)	0.653 (0.538)	2.959 (2.227)	3.713 (3.437)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
June 2021 # Out of LF	0.537 (0.256)	1.171 (0.568)	222.157 (729.929)	0.903 (0.504)			1.774 (1.076)	0.542 (0.293)	2.734 (1.750)	0.513 (0.286)
Aug. 2021 # Non-wage	2.986 (1.985)	0.527 (0.408)			3.506** (1.359)	2.726* (1.254)				
Aug. 2021 # Formal private wage	1.273 (0.776)	0.918 (0.568)			7.479** (5.406)	0.299 (0.746)				
Aug. 2021 # Informal priv. wage in an est.	2.498 (1.547)	1.539 (1.101)			0.045** (0.043)	4004994.921 (2.502e+09)				
Aug. 2021 # Informal priv. wage outside est.	2.219 (1.443)	0.536 (0.512)			1.278 (0.703)	0.422 (0.487)				
Aug. 2021 # Unemployed	1.046 (0.614)	0.703 (0.328)			0.694 (0.266)	14.448*** (7.531)				
Aug. 2021 # Out of LF	1.093 (0.608)	0.489 (0.194)			0.932 (0.339)	14.694*** (7.186)				
Wave and Feb. 2020 industry int.										
Feb. 2021 # Manufacturing and agriculture			0.873 (0.274)	2.049 (0.845)	0.803 (0.351)	1.615 (1.434)				

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Feb. 2021 # Construction			1.169 (0.455)	3.947** (2.002)			1.023 (0.517)	1.381 (2.350)		
Feb. 2021 # Trade/retail			2.202 (0.939)	18.794*** (12.425)			0.484 (0.235)	2.368 (2.747)		
Feb. 2021 # Accommodations/food			0.399 (0.242)	1.675 (1.011)			0.528 (0.329)	2.397 (4.921)		
April 2021 # Manufacturing and agriculture			0.518* (0.171)	1.052 (0.436)			2.354 (1.235)	0.580 (0.524)		
April 2021 # Construction			1.277 (0.490)	0.831 (0.478)			3.559* (2.131)	8.320 (10.714)		
April 2021 # Trade/retail			3.273** (1.299)	3.384 (2.392)			1.220 (0.700)	0.991 (1.144)		
April 2021 # Accommodations/food			3.907** (1.715)	5.653** (3.043)			0.468 (0.380)	6.838 (12.348)		
June 2021 # Manufacturing and agriculture	2.381 (1.177)	1.078 (0.985)	0.501* (0.163)	1.329 (0.618)			1.074 (0.471)	0.362 (0.296)	0.737 (0.348)	1.996 (1.379)
June 2021 # Construction	1.258 (0.607)	2.157 (1.754)	0.930 (0.351)	0.886 (0.602)			1.330 (0.676)	1.391 (1.857)	1.853 (0.894)	1.080 (0.840)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
June 2021 # Trade/retail	0.953 (0.400)	0.626 (0.413)	3.448** (1.358)	23.490*** (15.868)			0.340* (0.176)	0.084 (0.127)	0.848 (0.467)	0.927 (0.699)
June 2021 # Accommodations/food	0.660 (0.393)	0.086 (0.141)	3.504** (1.553)	4.628* (2.799)			0.508 (0.333)	0.076 (0.240)	0.712 (0.418)	0.050 (0.086)
Aug. 2021 # Manufacturing and agriculture	1.321 (0.636)	0.686 (0.733)			0.078*** (0.027)	2.274 (1.133)				
Aug. 2021 # Construction	0.585 (0.285)	0.683 (0.750)			0.237** (0.105)	1.278 (1.015)				
Aug. 2021 # Trade/retail	0.819 (0.324)	1.088 (0.745)			0.397** (0.129)	3.617** (1.789)				
Aug. 2021 # Accommodations/food	0.905 (0.473)	0.389 (0.382)			12.453** (11.645)	1.361 (4.889)				
Wave and sex int.										
Feb. 2021 # Female			0.911 (0.212)	1.015 (0.251)			1.786** (0.377)	1.845* (0.496)		
April 2021 # Female			0.688 (0.156)	0.977 (0.242)			3.133*** (0.698)	2.357** (0.631)		
June 2021 # Female	1.744* (0.400)	1.494 (0.360)	1.327 (0.311)	1.159 (0.289)			1.435 (0.309)	1.932* (0.512)	1.089 (0.292)	1.326 (0.379)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Aug. 2021 # Female	1.153 (0.256)	1.205 (0.282)			1.220 (0.232)	0.676 (0.147)				
Wave and age int.										
Feb. 2021 # 30–49			1.359 (0.286)	1.205 (0.296)			0.324*** (0.074)	0.607 (0.182)		
Feb. 2021 # 50–64			1.477 (0.397)	0.576 (0.166)			0.374*** (0.109)	1.069 (0.366)		
April 2021 # 30–49			0.744 (0.154)	0.704 (0.176)			0.666 (0.158)	0.959 (0.286)		
April 2021 # 50–64			1.252 (0.344)	1.097 (0.324)			0.683 (0.208)	1.762 (0.599)		
June 2021 # 30–49	1.587* (0.339)	1.012 (0.238)	0.656* (0.137)	0.785 (0.201)			0.900 (0.208)	0.526* (0.154)	0.853 (0.214)	1.092 (0.300)
June 2021 # 50–64	1.353 (0.442)	1.893 (0.623)	0.526* (0.154)	1.060 (0.322)			0.940 (0.272)	0.880 (0.290)	1.570 (0.576)	1.445 (0.518)
Aug. 2021 # 30–49	1.051 (0.218)	1.115 (0.258)			1.132 (0.197)	1.761** (0.362)				
Aug. 2021 # 50–64	1.271 (0.396)	1.573 (0.504)			1.560 (0.489)	8.042*** (2.524)				

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Wave and educ. int.										
Feb. 2021 # Secondary			1.669 (0.600)	1.729 (0.650)			1.089 (0.294)	1.243 (0.407)		
Feb. 2021 # Higher education			1.491 (0.733)	2.102 (1.076)			1.081 (0.332)	0.658 (0.251)		
April 2021 # Secondary			1.918 (0.695)	2.250* (0.882)			1.313 (0.369)	0.908 (0.302)		
April 2021 # Higher education			1.613 (0.769)	1.704 (0.896)			1.619 (0.534)	0.805 (0.310)		
June 2021 # Secondary	1.553 (0.417)	1.288 (0.361)	1.253 (0.451)	1.548 (0.585)			1.031 (0.282)	0.789 (0.257)	0.580* (0.151)	0.860 (0.240)
June 2021 # Higher education	1.031 (0.269)	0.818 (0.230)	0.794 (0.374)	0.560 (0.302)			0.977 (0.313)	0.490 (0.181)	1.316 (0.435)	1.250 (0.438)
Aug. 2021 # Secondary	1.005 (0.260)	0.881 (0.240)			2.916*** (0.565)	1.692* (0.373)				
Aug. 2021 # Higher education	1.060 (0.265)	1.180 (0.319)			1.086 (0.232)	2.039** (0.512)				

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Wave and Feb. 2020 income int.										
Feb. 2021 # Second			2.548*** (0.606)	1.667 (0.477)			0.444** (0.129)	0.767 (0.277)		
Feb. 2021 # Third			0.393 (0.281)	2.785 (1.849)			1.157 (0.350)	1.343 (0.500)		
Feb. 2021 # Fourth			0.072* (0.083)	1.096 (1.165)			0.424* (0.167)	0.557 (0.246)		
Feb. 2021 # Don't know/refused/missing			0.666 (0.153)	1.121 (0.273)			0.457* (0.164)	2.692* (1.063)		
April 2021 # Second			1.574 (0.374)	2.785*** (0.787)			0.623 (0.186)	1.070 (0.384)		
April 2021 # Third			0.843 (0.455)	6.786** (4.380)			0.802 (0.254)	0.992 (0.370)		
April 2021 # Fourth			0.482 (0.403)	1.212 (1.347)			0.489 (0.200)	0.645 (0.286)		
April 2021 # Don't know/refused/missing			1.306 (0.298)	1.889* (0.475)			0.721 (0.247)	1.929 (0.732)		
June 2021 # Second	1.109 (0.287)	1.099 (0.302)	1.126 (0.283)	1.629 (0.473)			0.835 (0.239)	1.552 (0.550)	1.516 (0.434)	1.983* (0.603)

(Continued)

Table A5 Continued

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
June 2021 # Third	1.381 (0.445)	1.213 (0.417)	3.781** (1.772)	2.809 (1.835)			1.404 (0.426)	2.569** (0.939)	1.313 (0.426)	1.360 (0.488)
June 2021 # Fourth	1.282 (0.448)	0.950 (0.354)	0.626 (0.481)	0.512 (0.543)			0.298** (0.133)	1.105 (0.477)	1.188 (0.524)	1.253 (0.607)
June 2021 # Don't know/re-fused/missing	2.773* (1.337)	2.920* (1.455)	1.600* (0.375)	1.196 (0.311)			1.763 (0.563)	2.537* (0.970)	0.995 (0.403)	0.708 (0.303)
Aug. 2021 # Second	0.955 (0.238)	1.325 (0.357)			0.881 (0.246)	0.462* (0.155)				
Aug. 2021 # Third	1.104 (0.342)	1.184 (0.396)			0.829 (0.235)	0.446* (0.147)				
Aug. 2021 # Fourth	1.113 (0.377)	1.329 (0.481)			0.886 (0.232)	0.350*** (0.110)				
Aug. 2021 # Don't know/refused/missing	1.520 (0.670)	1.705 (0.787)			1.154 (0.348)	0.483* (0.164)				
N (Obs.)	7,625	7,625	8,120	8,120	4,401	4,401	8,143	8,143	4,007	4,007
Pseudo R²	0.344	0.344	0.288	0.288	0.130	0.130	0.343	0.343	0.391	0.391

Source: Authors' calculations based on CMM, all waves.

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cells display relative risk ratios relative to a base category of employed, with standard errors in parentheses. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Table A6 Tobit model of hours of work per week, main effects

	Jordan	Morocco	Sudan	Tunisia	Egypt
Wave (first wave omitted)					
Feb. 2021		4.250*** (1.206)		-2.017* (0.959)	
April 2021		3.332** (1.167)		0.697 (0.953)	
June 2021	-2.021* (0.977)	-0.911 (1.205)		0.279 (0.959)	-0.091 (1.030)
Aug. 2021	-2.600** (0.965)		-4.060** (1.284)		
Feb. 2020 labor market status (public wage omitted)					
Non-wage	-3.347* (1.694)	5.293*** (1.467)	5.912* (2.825)	0.956 (1.276)	-3.872* (1.928)
Formal private wage	6.076*** (1.248)	4.332** (1.584)	2.971 (6.269)	0.947 (1.184)	5.785** (1.868)
Informal private wage in an establishment	4.299** (1.531)	7.912*** (2.218)	37.905*** (5.046)	-3.118 (1.744)	3.138 (1.845)
Informal private wage outside an establishment	-2.280 (1.751)	4.119* (1.615)	4.766 (3.457)	-4.140** (1.339)	-3.829* (1.936)
Unemployed	2.342 (1.863)	-1.426 (1.801)	-4.107 (3.222)	-8.497*** (1.475)	-10.381* (4.347)
OLF	-6.410*** (1.484)	-11.331*** (1.949)	-8.406** (3.072)	-8.542*** (1.192)	-5.756** (2.225)
Industry (services omitted)					
Manufacturing and agriculture	-1.019 (1.763)	-9.069*** (1.220)	-7.248** (2.312)	2.811* (1.098)	-1.380 (1.548)
Construction	-10.276*** (1.655)	-8.007*** (1.473)	2.507 (3.178)	-3.870** (1.387)	-5.229** (1.783)
Trade/retail	2.898* (1.410)	-4.117** (1.523)	-5.388* (2.607)	-0.831 (1.378)	6.465*** (1.873)
Accommodations/food	5.383* (2.094)	-0.952 (1.839)	-4.896 (6.003)	0.042 (1.814)	6.745** (2.535)
Sex (male omitted)					
Female	-12.386*** (1.066)	-6.673*** (1.155)	-8.841*** (1.687)	-4.997*** (0.806)	-10.617*** (1.510)
Age group (years, 18–29 omitted)					
30–49	-4.140*** (0.899)	-2.230* (0.997)	-3.187* (1.396)	-1.968* (0.826)	-4.490*** (1.293)
50–64	-4.019* (1.627)	-1.028 (1.228)	6.485** (2.178)	-6.767*** (1.048)	-10.287*** (1.763)

(Continued)

Table A6 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Education (basic or less omitted)					
Secondary	3.627** (1.141)	-1.288 (1.608)	-5.577*** (1.568)	-1.810* (0.909)	1.344 (1.305)
Higher education	-5.181*** (1.071)	-4.395* (1.970)	-5.425** (1.736)	-5.469*** (1.028)	-1.389 (1.564)
Feb. 2020 income (first quartile omitted)					
Second	7.048*** (1.288)	1.421 (1.005)	-3.225 (2.161)	4.259*** (1.134)	2.082 (1.500)
Third	4.100** (1.455)	2.154 (1.781)	-2.150 (2.078)	7.603*** (1.113)	4.800** (1.530)
Fourth	6.279*** (1.537)	-2.452 (2.783)	5.969** (2.042)	6.966*** (1.234)	5.395** (1.936)
Don't know/refused/missing	11.446*** (2.498)	-0.063 (1.186)	4.318 (2.497)	6.793*** (1.325)	-1.132 (2.394)
N	3,182	3,849	1,484	4,590	2,148
Pseudo R²	.0164	.00503	.0168	.0088	.0118

Source: Authors' calculations based on CMM, all waves.

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cells display tobit coefficients, with standard errors in parentheses.

CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Table A7 Tobit model of hours of work per week, model including wave interactions

	Jordan	Morocco	Sudan	Tunisia	Egypt
Wave (first wave omitted)					
Feb. 2021		-5.312 (4.954)		-3.148 (4.522)	
April 2021		2.702 (4.550)		7.710 (4.362)	
June 2021	-5.621 (4.017)	-2.676 (4.961)		5.693 (4.386)	3.315 (4.710)
Aug. 2021	-6.129 (3.939)		-7.752 (6.989)		
Feb. 2020 labor market status (public wage omitted)					
Non-wage	-13.658*** (2.897)	7.368* (3.284)	0.474 (3.925)	-1.615 (2.510)	0.578 (2.716)
Formal private wage	-1.439 (2.148)	11.340** (3.642)	-3.890 (10.232)	-2.662 (2.367)	3.378 (2.657)
Informal priv. wage in an est.	0.974 (2.683)	14.963*** (4.542)	15.121 (8.579)	2.007 (3.518)	5.499* (2.581)
Informal priv. wage outside est.	-7.792** (2.975)	12.665*** (3.662)	8.123 (4.831)	-5.634* (2.703)	-1.715 (2.712)

(Continued)

Table A7 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Unemployed	-1.211 (3.315)	-9.418* (4.180)	-5.335 (4.151)	-12.795*** (3.117)	-0.379 (6.424)
Out of LF	-9.857*** (2.924)	6.924 (5.313)	-8.501* (3.903)	-2.573 (2.514)	-3.644 (3.319)
Industry (services omitted)					
Manufacturing and agriculture	0.378 (3.135)	-16.213*** (2.605)	1.645 (3.281)	4.052 (2.151)	-2.892 (2.219)
Construction	-11.212*** (2.919)	-13.619*** (3.038)	10.244* (4.213)	-2.588 (2.799)	-6.269* (2.432)
Trade/retail	3.346 (2.394)	-19.427*** (3.025)	9.241* (3.732)	-2.044 (2.753)	7.843** (2.593)
Accommodations/food	10.612** (3.675)	-7.936* (3.833)	-6.163 (7.360)	6.075 (3.887)	13.325*** (3.449)
Sex (male omitted)					
Female	-13.902*** (1.909)	0.903 (2.708)	-10.250*** (2.306)	-9.457*** (1.742)	-15.752*** (2.205)
Age group (18–29 omitted)					
30–49	-2.772 (1.593)	-3.019 (2.095)	-2.064 (1.947)	2.767 (1.740)	-3.355 (1.815)
50–64	-4.884 (2.912)	-3.491 (2.579)	3.766 (2.842)	3.789 (2.200)	-10.736*** (2.441)
Education (basic or less omitted)					
Secondary	3.338 (2.050)	1.378 (3.395)	-5.671** (2.129)	3.192 (1.884)	0.570 (1.820)
Higher education	-4.322* (1.969)	-14.167** (4.865)	-7.686*** (2.329)	-3.062 (2.063)	-1.594 (2.193)
Feb. 2020 income (first quartile omitted)					
Second	9.618*** (2.321)	-0.343 (2.229)	-8.688** (2.799)	0.527 (2.649)	2.538 (2.084)
Third	2.089 (2.600)	-5.847 (4.364)	-4.758 (2.686)	7.159** (2.544)	5.446* (2.155)
Fourth	7.184** (2.708)	-4.084 (10.879)	3.733 (2.771)	4.111 (2.832)	7.417** (2.800)
Don't know/refused/missing	10.895** (4.090)	-2.507 (2.407)	5.575 (3.230)	4.447 (2.417)	5.217 (3.386)
Wave and Feb. 2020 labor market status int.					
Feb. 2021 # Non-wage		0.124 (4.498)		7.006* (3.495)	
Feb. 2021 # Formal private wage		-4.069 (4.863)		3.185 (3.316)	

(Continued)

Table A7 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Feb. 2021 # Informal priv. wage in an est.		-4.293 (6.201)		-0.058 (5.062)	
Feb. 2021 # Informal priv. wage outside est.		-2.705 (5.028)		2.332 (3.738)	
Feb. 2021 # Unemployed		15.112** (5.633)		13.039** (4.231)	
Feb. 2021 # Out of LF		-19.231** (6.762)		-0.940 (3.533)	
April 2021 # Non-wage		-3.083 (4.201)		0.337 (3.576)	
April 2021 # Formal private wage		-9.110* (4.625)		2.524 (3.298)	
April 2021 # Informal priv. wage in an est.		-8.787 (6.210)		-12.922** (4.908)	
April 2021 # Informal priv. wage outside est.		-12.005** (4.592)		0.774 (3.737)	
April 2021 # Unemployed		5.352 (5.104)		2.544 (4.336)	
April 2021 # Out of LF		-20.483*** (6.166)		-8.729* (3.432)	
June 2021 # Non-wage	16.084*** (4.134)	-3.703 (4.375)		2.706 (3.648)	-8.927* (3.827)
June 2021 # Formal private wage	12.522*** (3.028)	-13.440** (4.807)		9.314** (3.381)	4.968 (3.703)
June 2021 # Informal priv. wage in an est.	6.095 (3.675)	-15.718* (6.719)		-3.453 (4.807)	-4.688 (3.661)
June 2021 # Informal priv. wage outside est.	12.222** (4.285)	-17.199*** (4.842)		4.410 (3.871)	-4.166 (3.844)
June 2021 # Unemployed	5.422 (4.801)	11.992* (5.607)		0.844 (4.176)	-18.222* (8.642)
June 2021 # Out of LF	5.248 (3.816)	-21.912*** (6.461)		-10.797** (3.349)	-3.918 (4.442)
Aug. 2021 # Non-wage	15.800*** (4.103)		4.803 (5.720)		
Aug. 2021 # Formal private wage	9.979** (3.050)		4.468 (12.979)		
Aug. 2021 # Informal priv. wage in an est.	3.803 (3.830)		27.511* (10.826)		
Aug. 2021 # Informal priv. wage outside est.	5.089 (4.211)		-11.352 (6.992)		

(Continued)

Table A7 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Aug. 2021 # Unemployed	4.122 (4.427)		1.278 (6.456)		
Aug. 2021 # Out of LF	4.807 (3.786)		1.104 (6.204)		
Wave and Feb. 2020 industry int.					
Feb. 2021 # Manufacturing and agriculture		9.584** (3.535)		1.196 (3.034)	
Feb. 2021 # Construction		5.527 (4.216)		-3.857 (3.910)	
Feb. 2021 # Trade/retail		24.395*** (4.266)		2.695 (3.827)	
Feb. 2021 # Accommodations/food		5.391 (5.329)		-6.222 (5.264)	
April 2021 # Manufacturing and agriculture		7.577* (3.437)		0.258 (3.035)	
April 2021 # Construction		5.718 (4.266)		3.453 (3.836)	
April 2021 # Trade/retail		14.316*** (4.151)		0.691 (3.832)	
April 2021 # Accommodations/food		2.373 (5.304)		-8.583 (5.145)	
June 2021 # Manufacturing and agriculture	0.416 (4.401)	8.347* (3.584)		-8.119** (3.127)	2.987 (3.066)
June 2021 # Construction	1.518 (4.091)	10.684** (4.139)		-5.881 (3.973)	2.398 (3.539)
June 2021 # Trade/retail	0.690 (3.398)	23.278*** (4.372)		2.010 (3.954)	-3.366 (3.712)
June 2021 # Accommodations/food	-7.011 (5.091)	15.423** (5.302)		-7.730 (5.314)	-14.113** (5.032)
Aug. 2021 # Manufacturing and agriculture	-4.617 (4.289)		-13.328** (4.575)		
Aug. 2021 # Construction	-0.615 (4.010)		-15.114* (6.524)		
Aug. 2021 # Trade/retail	-2.137 (3.442)		-26.947*** (5.249)		
Aug. 2021 # Accommodations/food	-8.352 (5.139)		10.352 (12.382)		
Wave and sex int.					
Feb. 2021 # Female		-2.650 (3.650)		5.040* (2.364)	

(Continued)

Table A7 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
April 2021 # Female		-6.637* (3.353)		6.104** (2.351)	
June 2021 # Female	0.856 (2.653)	-14.262*** (3.519)		4.731* (2.307)	9.804** (3.001)
Aug. 2021 # Female	3.503 (2.602)		1.183 (3.363)		
Wave and age int.					
Feb. 2021 # 30–49		2.371 (2.890)		-5.523* (2.403)	
Feb. 2021 # 50–64		5.888 (3.485)		-15.580*** (3.056)	
April 2021 # 30–49		2.451 (2.770)		-7.057** (2.338)	
April 2021 # 50–64		1.303 (3.477)		-13.699*** (2.970)	
June 2021 # 30–49	-2.371 (2.211)	-2.776 (2.954)		-4.945* (2.383)	-2.242 (2.565)
June 2021 # 50–64	-4.651 (4.057)	0.154 (3.644)		-10.993*** (2.989)	0.579 (3.513)
Aug. 2021 # 30–49	-1.989 (2.203)		0.471 (2.817)		
Aug. 2021 # 50–64	5.306 (3.951)		5.472 (4.447)		
Wave and educ. int.					
Feb. 2021 # Secondary		-1.512 (4.682)		-6.012* (2.632)	
Feb. 2021 # Higher education		10.570 (6.453)		-3.504 (2.939)	
April 2021 # Secondary		-3.702 (4.478)		-5.065* (2.553)	
April 2021 # Higher education		3.854 (6.078)		-1.307 (2.870)	
June 2021 # Secondary	4.189 (2.866)	-7.445 (4.729)		-7.566** (2.576)	1.422 (2.588)
June 2021 # Higher education	-1.352 (2.720)	14.366* (6.003)		-4.069 (2.866)	-0.205 (3.105)
Aug. 2021 # Secondary	-2.726 (2.763)		0.982 (3.136)		
Aug. 2021 # Higher education	-0.959 (2.613)		4.246 (3.479)		

(Continued)

Table A7 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Wave and Feb. 2020 income int.					
Feb. 2021 # Second		1.038 (3.025)		5.640 (3.442)	
Feb. 2021 # Third		11.301* (5.759)		4.480 (3.413)	
Feb. 2021 # Fourth		-4.460 (12.299)		8.419* (3.767)	
Feb. 2021 # Don't know/refused/ missing		0.139 (3.326)		4.183 (3.804)	
April 2021 # Second		-2.214 (2.852)		2.415 (3.437)	
April 2021 # Third		10.096 (5.436)		-1.928 (3.299)	
April 2021 # Fourth		-2.945 (12.066)		0.653 (3.665)	
April 2021 # Don't know/refused/ missing		3.324 (3.332)		2.967 (3.931)	
June 2021 # Second	-4.829 (3.228)	8.106** (3.029)		6.920* (3.377)	-0.615 (2.975)
June 2021 # Third	3.286 (3.669)	8.283 (5.412)		-0.018 (3.258)	-0.324 (3.040)
June 2021 # Fourth	-2.492 (3.821)	11.746 (11.771)		1.933 (3.625)	-3.205 (3.850)
June 2021 # Don't know/refused/ missing	-1.512 (6.362)	6.634 (3.486)		4.312 (3.885)	-11.614* (4.745)
Aug. 2021 # Second	-1.989 (3.147)		16.392*** (4.389)		
Aug. 2021 # Third	2.937 (3.513)		7.342 (4.214)		
Aug. 2021 # Fourth	0.746 (3.731)		6.988 (4.156)		
Aug. 2021 # Don't know/refused/ missing	4.859 (5.849)		-4.091 (5.073)		
Constant	47.683*** (2.890)	47.582*** (3.688)	39.858*** (4.390)	38.147*** (3.266)	43.726*** (3.348)
N (Obs.)	3,182	3,849	1,484	4,590	2,148
Pseudo R-sq.	0.019	0.010	0.023	0.012	0.014

Source: Authors' calculations based on CMM, all waves.

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cells display tobit coefficients, with standard errors in parentheses.

CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa.

Table A8 OLS models of log hourly wages, main effects

	Jordan	Morocco	Sudan	Tunisia	Egypt
Wave (first wave omitted)					
Feb. 2021		−0.145*		0.057	
		(0.065)		(0.044)	
April 2021		−0.274***		−0.085*	
		(0.061)		(0.042)	
June 2021	0.151***	0.069		−0.052	0.003
	(0.036)	(0.062)		(0.043)	(0.040)
Aug. 2021	0.131***		0.172		
	(0.037)		(0.271)		
Feb. 2020 labor market status (public wage omitted)					
Non-wage	−0.284	−0.375***	2.985*	−0.241*	−0.084
	(0.172)	(0.111)	(1.163)	(0.104)	(0.259)
Formal private wage	−0.241***	−0.247***	0.195	−0.088	−0.235***
	(0.042)	(0.059)	(0.424)	(0.046)	(0.062)
Informal priv. wage in an est.	−0.299***	−0.451***	−0.652	−0.150*	−0.255***
	(0.053)	(0.086)	(0.456)	(0.069)	(0.063)
Informal priv. wage outside est.	−0.159*	−0.401***	−0.084	−0.169**	−0.021
	(0.065)	(0.064)	(0.382)	(0.055)	(0.067)
Unemployed	−0.379**	−0.647***	1.117	−0.374***	1.340*
	(0.140)	(0.122)	(1.129)	(0.105)	(0.577)
Out of LF	−0.499***	−0.274	1.662	−0.665***	−0.248
	(0.121)	(0.164)	(1.862)	(0.085)	(0.209)
Industry (services omitted)					
Manufacturing and agriculture	0.107	0.176**	−0.323	−0.134**	0.073
	(0.065)	(0.060)	(0.356)	(0.045)	(0.057)
Construction	−0.029	0.158*	0.510	−0.170**	0.078
	(0.063)	(0.069)	(0.519)	(0.060)	(0.066)
Trade/retail	−0.082	0.464***	0.939*	−0.237***	−0.037
	(0.053)	(0.092)	(0.430)	(0.066)	(0.071)
Accommodations/food	−0.156*	0.099	0.881	−0.214**	−0.037
	(0.073)	(0.080)	(0.583)	(0.076)	(0.087)
Sex (male omitted)					
Female	0.198***	−0.016	−0.102	−0.043	0.254***
	(0.040)	(0.054)	(0.343)	(0.037)	(0.061)
Age group (years, 18–29 omitted)					
30–49	0.127***	0.029	0.548	−0.086*	0.171***
	(0.034)	(0.049)	(0.301)	(0.039)	(0.052)
50–64	0.206**	−0.018	1.247*	−0.019	0.379***
	(0.067)	(0.064)	(0.495)	(0.051)	(0.069)

(Continued)

Table A8 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Education (basic or less omitted)					
Secondary	0.024 (0.042)	0.216** (0.070)	-0.905 (0.473)	0.225*** (0.042)	0.094 (0.052)
Higher education	0.434*** (0.039)	0.494*** (0.080)	-0.021 (0.507)	0.502*** (0.046)	0.176** (0.060)
Feb. 2020 wage quartile (first quartile omitted)					
Second	0.132** (0.046)	0.479*** (0.070)	0.484 (0.439)	0.130** (0.048)	0.388*** (0.061)
Third	0.446*** (0.047)	0.529*** (0.070)	0.884 (0.484)	0.317*** (0.049)	0.551*** (0.062)
Fourth	0.710*** (0.051)	0.946*** (0.066)	1.453** (0.474)	0.837*** (0.056)	0.874*** (0.068)
Don't know/refused/missing	0.319** (0.104)	0.468*** (0.086)	-0.975 (1.051)	0.439*** (0.060)	0.462*** (0.099)
N	2,052	1,415	148	2,353	1,238
Pseudo R²	0.368	0.326	0.295	0.369	0.256

Source: Authors' calculations based on CMM, all waves.

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cells display OLS coefficients, with standard errors in parentheses. CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa; OLS, ordinary least squares.

Table A9 OLS models of log hourly wages, models with wave interactions

	Jordan	Morocco	Sudan	Tunisia	Egypt
Wave (first wave omitted)					
Feb. 2021		−0.486*		0.099	
		(0.230)		(0.184)	
April 2021		−0.544**		−0.158	
		(0.198)		(0.170)	
June 2021	0.306*	−0.110		−0.436*	0.125
	(0.122)	(0.221)		(0.171)	(0.181)
Aug. 2021	0.405**		1.528		
	(0.124)		(1.336)		
Feb. 2020 labor market status (public wage omitted)					
Non-wage	−0.227	−0.071	4.598***	−0.368	−0.004
	(0.252)	(0.201)	(1.319)	(0.195)	(0.274)
Formal private wage	−0.042	−0.539***	−0.583	0.214*	−0.157
	(0.071)	(0.129)	(0.624)	(0.089)	(0.088)
Informal priv. wage in an est.	−0.304***	−0.604***	−2.403***	−0.164	−0.283**
	(0.090)	(0.161)	(0.661)	(0.140)	(0.087)
Informal priv. wage outside est.	−0.093	−0.745***	−0.882	0.027	−0.037
	(0.101)	(0.139)	(0.658)	(0.112)	(0.092)
Unemployed	0.074	−0.600**	2.140	0.143	1.455*
	(0.209)	(0.219)	(1.241)	(0.181)	(0.585)
Out of LF	−0.392*	−0.078	2.958	−0.386*	−0.143
	(0.184)	(0.281)	(1.797)	(0.152)	(0.228)
Industry (services omitted)					
Manufacturing and agriculture	0.088	0.566***	1.246	−0.300***	0.058
	(0.125)	(0.142)	(0.631)	(0.084)	(0.081)
Construction	0.193	0.217	−0.319	−0.639***	0.072
	(0.102)	(0.139)	(2.319)	(0.128)	(0.087)
Trade/retail	−0.064	0.653***	1.161*	−0.247	−0.094
	(0.088)	(0.186)	(0.571)	(0.144)	(0.101)
Accommodations/food	−0.350**	−0.063	0.567	−0.596***	−0.218
	(0.136)	(0.181)	(0.903)	(0.165)	(0.121)
Sex (male omitted)					
Female	0.133	−0.152	0.717	0.062	0.335***
	(0.072)	(0.133)	(0.569)	(0.088)	(0.095)
Age group (years, 18–29 omitted)					
30–49	0.234***	−0.040	−0.600	−0.215*	0.211**
	(0.060)	(0.111)	(0.643)	(0.089)	(0.072)
50–64	0.179	−0.230	0.129	−0.353**	0.453***
	(0.125)	(0.136)	(0.801)	(0.112)	(0.092)

(Continued)

Table A9 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Education (basic or less omitted)					
Secondary	0.109 (0.076)	0.020 (0.149)	0.980 (0.906)	-0.064 (0.093)	0.166* (0.073)
Higher education	0.428*** (0.073)	0.722*** (0.213)	2.252* (0.909)	0.143 (0.109)	0.187* (0.085)
Feb. 2020 wage quartile (first quartile omitted)					
Second	0.136 (0.077)	0.334* (0.133)	0.922 (0.900)	0.294** (0.097)	0.317*** (0.085)
Third	0.375*** (0.080)	0.690*** (0.171)	1.430 (0.852)	0.383*** (0.095)	0.561*** (0.086)
Fourth	0.753*** (0.087)	1.063*** (0.133)	1.018 (0.846)	1.277*** (0.114)	0.861*** (0.097)
Don't know/refused/missing	0.720*** (0.196)	0.188 (0.356)	3.022 (1.998)	0.158 (0.186)	0.557*** (0.146)
Wave and Feb. 2020 labor market status int.					
Feb. 2021 # Non-wage		-0.012 (0.294)		-0.151 (0.265)	
Feb. 2021 # Formal private wage		0.431* (0.183)		-0.418** (0.130)	
Feb. 2021 # Informal priv. wage in an est.		0.162 (0.245)		-0.271 (0.201)	
Feb. 2021 # Informal priv. wage outside est.		0.398 (0.210)		-0.527*** (0.155)	
Feb. 2021 # Unemployed		0.312 (0.325)		-1.140*** (0.272)	
Feb. 2021 # Out of LF		-0.817 (0.660)		-0.586** (0.216)	
April 2021 # Non-wage		-0.818** (0.282)		0.336 (0.267)	
April 2021 # Formal private wage		0.435* (0.170)		-0.431*** (0.127)	
April 2021 # Informal priv. wage in an est.		0.035 (0.227)		0.132 (0.194)	
April 2021 # Informal priv. wage outside est.		0.354* (0.180)		-0.273 (0.154)	
April 2021 # Unemployed		-0.577 (0.306)		-0.410 (0.252)	

(Continued)

Table A9 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
April 2021 # Out of LF		−0.590 (0.369)		−0.206 (0.210)	
June 2021 # Non-wage	0.225 (0.363)				
June 2021 # Formal private wage	−0.317** (0.100)	0.259 (0.184)		−0.394** (0.131)	−0.181 (0.124)
June 2021 # Informal priv. wage in an est.	−0.080 (0.127)	0.182 (0.291)		0.125 (0.191)	0.041 (0.126)
June 2021 # Informal priv. wage outside est.	−0.146 (0.151)	0.409* (0.194)		−0.023 (0.159)	0.014 (0.136)
June 2021 # Unemployed	−0.680* (0.300)				
June 2021 # Out of LF	0.000 (0.266)				
Aug. 2021 # Formal private wage	−0.257* (0.102)		1.311 (0.903)		
Aug. 2021 # Informal priv. wage in an est.	0.056 (0.132)		3.723*** (0.935)		
Aug. 2021 # Informal priv. wage outside est.	−0.073 (0.161)		1.598 (0.833)		
Wave and Feb. 2020 industry int.					
Feb. 2021 # Manufacturing and agriculture		−0.428* (0.184)		0.050 (0.122)	
Feb. 2021 # Construction		−0.200 (0.217)		0.620*** (0.173)	
Feb. 2021 # Trade/retail		−0.422 (0.262)		0.001 (0.188)	
Feb. 2021 # Accommodations/food		0.549* (0.249)		0.411 (0.219)	
April 2021 # Manufacturing and agriculture		−0.715*** (0.180)		0.274* (0.122)	
April 2021 # Construction		−0.195 (0.200)		0.502** (0.171)	
April 2021 # Trade/retail		−0.225 (0.259)		0.092 (0.191)	
April 2021 # Accommodations/food		0.141 (0.239)		0.669** (0.217)	
June 2021 # Manufacturing and agriculture	−0.008 (0.168)	−0.206 (0.189)		0.419*** (0.124)	0.036 (0.113)
June 2021 # Construction	−0.402** (0.152)	0.008 (0.191)		0.702*** (0.175)	0.015 (0.134)

(Continued)

Table A9 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
June 2021 # Trade/retail	0.009 (0.126)	−0.186 (0.260)		0.077 (0.199)	0.121 (0.143)
June 2021 # Accommodations/food	0.267 (0.181)	0.096 (0.250)		0.498* (0.228)	0.383* (0.175)
Aug. 2021 # Manufacturing and agriculture	0.043 (0.162)		−2.494** (0.818)		
Aug. 2021 # Construction	−0.295* (0.150)		0.950 (2.401)		
Aug. 2021 # Trade/retail	−0.098 (0.131)		−0.371 (0.845)		
Aug. 2021 # Accommodations/food	0.309 (0.182)		−1.245 (1.331)		
Wave and sex int.					
Feb. 2021 # Female		0.344 (0.189)		−0.081 (0.116)	
April 2021 # Female		0.143 (0.160)		−0.241* (0.111)	
June 2021 # Female	0.147 (0.098)	−0.059 (0.177)		0.013 (0.112)	−0.166 (0.125)
Aug. 2021 # Female	0.049 (0.099)		−0.392 (0.718)		
Wave and age int.					
Feb. 2021 # 30–49		0.166 (0.152)		0.147 (0.119)	
Feb. 2021 # 50–64		0.063 (0.201)		0.390* (0.155)	
April 2021 # 30–49		0.063 (0.148)		0.135 (0.114)	
April 2021 # 50–64		0.167 (0.185)		0.419** (0.144)	
June 2021 # 30–49	−0.053 (0.083)	−0.027 (0.146)		0.303* (0.119)	−0.089 (0.104)
June 2021 # 50–64	0.291 (0.172)	0.447* (0.184)		0.504*** (0.152)	−0.158 (0.139)
Aug. 2021 # 30–49	−0.269** (0.084)		2.261** (0.747)		
Aug. 2021 # 50–64	−0.135 (0.163)		2.494* (1.032)		
Wave and educ. int.					
Feb. 2021 # Secondary		0.377 (0.199)		0.300* (0.127)	

(Continued)

Table A9 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Feb. 2021 # Higher education		−0.300 (0.278)		0.450** (0.145)	
April 2021 # Secondary		0.157 (0.198)		0.277* (0.120)	
April 2021 # Higher education		−0.112 (0.261)		0.445** (0.138)	
June 2021 # Secondary	−0.245* (0.106)	0.117 (0.223)		0.462*** (0.124)	−0.146 (0.105)
June 2021 # Higher education	0.084 (0.098)	−0.378 (0.257)		0.442** (0.138)	−0.003 (0.120)
Aug. 2021 # Secondary	−0.013 (0.103)		−3.257** (1.050)		
Aug. 2021 # Higher education	−0.073 (0.097)		−4.093*** (1.091)		
Wave and Feb. 2020 wage int.					
Feb. 2021 # Second		0.357 (0.217)		−0.026 (0.140)	
Feb. 2021 # Third		−0.311 (0.225)		−0.115 (0.141)	
Feb. 2021 # Fourth		−0.113 (0.192)		−0.651*** (0.161)	
Feb. 2021 # Don't know/refused/missing		0.052 (0.396)		0.365 (0.216)	
April 2021 # Second		0.341 (0.186)		−0.207 (0.135)	
April 2021 # Third		−0.013 (0.215)		0.004 (0.133)	
April 2021 # Fourth		−0.087 (0.186)		−0.647*** (0.155)	
April 2021 # Don't know/refused/missing		0.778* (0.388)		0.240 (0.215)	
June 2021 # Second	−0.096 (0.110)	0.062 (0.205)		−0.333* (0.134)	0.137 (0.123)
June 2021 # Third	0.002 (0.113)	−0.333 (0.224)		−0.062 (0.134)	−0.042 (0.124)
June 2021 # Fourth	−0.082 (0.125)	−0.085 (0.196)		−0.392* (0.158)	0.007 (0.138)
June 2021 # Don't know/refused/missing	−0.456 (0.264)	0.201 (0.394)		0.111 (0.221)	−0.210 (0.200)
Aug. 2021 # Second	0.038 (0.112)		0.305 (1.030)		

(Continued)

Table A9 Continued

	Jordan	Morocco	Sudan	Tunisia	Egypt
Aug. 2021 # Third	0.166 (0.116)		0.128 (1.061)		
Aug. 2021 # Fourth	-0.075 (0.124)		0.746 (1.053)		
Aug. 2021 # Don't know/refused/missing	-0.749** (0.257)		-4.700* (2.302)		
Constant	0.359*** (0.089)	0.448** (0.151)	-1.435 (1.163)	0.258* (0.122)	-0.900*** (0.125)
N (Obs.)	2,052	1,415	148	2,353	1,238
R²	0.400	0.382	0.520	0.413	0.269

Source: Authors' calculations based on CMM, all waves.

Notes: * $p < 0.05$; ** $p < 0.01$; *** $p < 0.001$. Cells display OLS coefficients, with standard errors in parentheses.

CMM, COVID-19 MENA Monitor; MENA, Middle East and North Africa; OLS, ordinary least squares.