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

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Abstract

The COVID-19 pandemic has not only led to a health crisis, but also to economic and labour 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 labour market outcomes for MENA workers have evolved during the COVID-19 pandemic. The paper uses the International Labour Organization (ILO) and the Economic Research Forum (ERF) COVID-19 MENA Monitor phone surveys in Egypt, Jordan[6], Morocco, Sudan and Tunisia, with waves spanning November 2020 to August 2021. Analyses examine outcomes of employment, unemployment, and labour force participation, along with hours of work and hourly wages. Results show differences in the evolution of pandemic-era labour markets by workers' gender, age, and education, along with their February 2020 labour 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.

Keywords: Labour market; wages; hours; employment; unemployment; labour force; COVID-19; Middle East and North Africa

JEL codes: J21, J31, J22, I18

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[6] Jordan survey is funded by the Foreign, Commonwealth, and Development Office (FCDO).

Key Messages

- Although employment rates dropped during the initial lockdown phase of the COVID-19 pandemic in the second quarter of 2020, they had generally recovered by mid-2021 in Egypt, Jordan, Morocco, Sudan, and Tunisia.

- Wage inequality initially rose during the pandemic, but shifted back towards pre-pandemic levels, to varying degrees, by mid-2021.

- Hours of work tended to decline over the course of the pandemic, but this is likely due to informal and self-employed workers who had lost employment initially returning to work.

- Employment during the pandemic recovery depended on labour market status and sector pre-pandemic; public sector, followed by private formal sector workers were the most likely to stay employed, while non-wage and informal private sector wage workers were more likely to exit employment.

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 labour 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, Castellani, Cota, Lotti, & Székely, 2022), which were already facing substantial economic and labour 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 labour market consequences (Bundervoet, Dávalos, & Garcia, 2021). Globally, initially harsh impacts of lockdowns on labour markets have modulated to varying degrees of recovery (Miguel & Mobarak, 2021).

This paper focuses on labour 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 (Assaad et al., 2022; Krafft et al., 2022; Krafft, Assaad, & Marouani, 2021a, 2021b, 2021c, 2022; Marouani et al., 2022). The region already had major labour market difficulties pre-pandemic, including the world's highest rates of youth unemployment and lowest female labour force participation (El-Kogali & Krafft, 2020; Kabbani, 2019; Verick, 2018). The MENA region was the only area globally experiencing rising poverty pre-pandemic (World Bank, 2020a).

Our paper relies on multiple waves of data, allowing us to illustrate how labour 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, Dávalos, & Garcia, 2021; Khamis et al., 2021; Miguel & Mobarak, 2021). Economic research and data from the MENA region are relatively rare (Das, Do, Shaines, & Srikant, 2013; Ekhator-Mobayode & 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 data from Egypt, Jordan, Morocco, Sudan, and Tunisia, spanning November 2020 to August 2021. We focus on three key outcomes: labour market status (employed, unemployed, or out of the labour force); hours of work per week; and hourly wages. These are three key margins of adjustment in response to the pandemic. We also examine how outcomes have evolved by key demographics: sex, age group, and education. Analyses highlight how the pandemic has exacerbated inequality, with a particular focus on the evolution of labour market outcomes by pre-pandemic labour 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. Differences in economic and labour market recovery across countries may be due in part on how stringent policy responses were, specific labour market policies, such as those around layoffs, as well as pre-pandemic labour market structures, such as the degree of employment informality and role of different industriesin the economy. Egypt and Jordan, which had (in Egypt) relatively less stringent policies and (in Jordan) more formal employment and employment protection, experienced relatively more labour market stability than Tunisia, which had a severe economic contraction, or Morocco and Sudan, where agricultural and economic cyclicality also contributed to volatility. The pandemic and labour market fallout initially exacerbated inequality in hourly wages, and while this inequality has diminished, the degree of recovery varied across countries. Unsurprisingly, formal workers and more

educated workers, as well as those with higher pre-pandemic income, fared relatively better during the pandemic, although, as the recovery evolved, the labour 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 labour 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 labour market vulnerability during the pandemic and recovery.

2. Background

2.1 Pre-existing labour market challenges

The MENA region and particularly the countries we study faced a number of labour 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 labour force participation, which are the lowest in the world, and have even stagnated and declined in the decades leading up to the pandemic (Assaad, Hendy, Lassassi, & Yassin, 2020; Verick, 2018). Youth unemployment in the region was also the highest of any region globally pre-pandemic (Assaad, 2014; El-Kogali & Krafft, 2020).

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 per cent in 1998 to 39 per cent in 2018 (Assaad, AlSharawy, & Salemi, 2022). Morocco and Sudan also have largely informal economies, but a particularly large role of non-wage employment and agriculture in their economies (Ebaidalla & Nour, 2021; Krafft et al., 2022).

Jordanians were slightly more likely to work formally over time and Jordan had a more formal labour market than other countries; 68 per cent of Jordanians worked in the formal sector in 2018, compared to 63 per cent in 2010, with most working in the public sector (Assaad & Salemi, 2019). Non-Jordanians, including both Syrian refugees and migrant workers, were much more likely to work informally (Assaad & Salemi, 2019; Krafft, Sieverding, Salemi, & Keo, 2019). High rates of youth unemployment (32 per cent in 2014) have been particularly challenging for Tunisia (Assaad, Ghazouani, & Krafft, 2018).

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

The COVID-19 crisis and its health and labour market impacts have received extensive attention from scholars. In this section, we review the microeconomic evidence on the impact of the crisis on workers and household incomes. We focus on impacts in developing countries but also 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 from 39 countries suggest that, on average, 34 per cent of workers stopped working (Khamis et al., 2021). The share was particularly high, 45 per cent, in the MENA region. As well as work stoppage, income losses and job transitions were common (Khamis et al., 2021). For instance, in a study of 16 low- and middle-income countries, the share of households experiencing income losses ranged from 8 per cent to 87 per cent, with a median of 68 per cent (Egger et al., 2021).

Gross domestic product (GDP) growth projections do not necessarily reflect actual labour and income outcomes for households. Indeed, while in Latin America and the Caribbean job losses have the expected negative correlation with pandemic-era GDP growth, the opposite result pertains in Sub-Saharan Africa, which may be due to the size of the informal and agricultural sectors (Khamis et al., 2021), underscoring the importance of microdata on labour markets, not just macro data on growth.

Based on high-frequency phone surveys in 34 countries, there was a high correlation between country-level stringency and employment losses (Bundervoet, Dávalos, & Garcia, 2021). Noncompliance or nonenforcement of lockdowns may mediate their impacts (Delaporte, Escobar, & Peña, 2021). Economic policy responses may have helped support firms and employment, reducing (but not entirely preventing) labour market impacts (Webster, Khorana, & Pastore, 2022).

In terms of distributional impacts, the pandemic and lockdowns have worsened poverty and inequality in Latin America and the Caribbean (Acevedo, Castellani, Cota, Lotti, & Székely, 2022; Delaporte, Escobar, & Peña, 2021). Inequality has shifted in complex ways; in Latin America and the Caribbean, inequality increased at the country level but rural/urban inequality decreased due to lower restrictions on agriculture (Acevedo, Castellani, Cota, Lotti, & Székely, 2022). Moreover, the multiple dimensions of labour market dynamics must be kept in mind; while income inequality across education levels decreased, this was because less educated low earners became inactive (and thus did not have income) (Acevedo, Castellani, Cota, Lotti, & Székely, 2022).

One factor shaping labour 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 occupations that cannot be performed from home (Dingel & Neiman, 2020). This share is much lower in developing countries, estimated at 5 to 20 per cent (Saltiel, 2020).

Those who cannot work from home and who have jobs with high physical proximity are primarily the less educated, with lower income and assets (Mongey, Pilossoph, & Weinberg, 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 & Minh (2020) highlight the dimension of public versus private sector in work from home and essential industries. Indeed, public sector workers' incomes were protected even if they were not teleworking or working in essential industries. They find that youth, the low 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, Koksal, & Uysa, 2021; Bundervoet, Dávalos, & Garcia, 2021; Cueva, Del Carpio, & Winkler, 2021; Miguel & Mobarak, 2021). Women tend to be more vulnerable to recessions, generally, and during the COVID-19 pandemic both reduced labour demand from the service sector, where women are concentrated, and reduced labour supply, due to disproportionate care responsibilities have been issues in developed countries (Albanesi & Kim, 2021; Graeber, Kritikos, & Seebauer, 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, Doepke, & Manysheva, 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 distributional effects of the pandemic (Meyer, Hardy, Witte, Kagy, & Demeke, 2021).

Previous reports and policy briefs from MENA highlighted a number of labour market impacts of the pandemic (Assaad et al., 2022; Central Bureau of Statistics (CBS) & World Bank, 2020; Krafft et al., 2022; Krafft, Assaad, & Marouani, 2021c, 2021a, 2021b, 2022; Marouani et al., 2022; World Bank, 2021).

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, Dávalos, & Garcia, 2021; Khamis et al., 2021; Miguel & 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 labour market (Assaad et al., 2022; Krafft et al., 2022; 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 & 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 in their territories and to mitigate its economic and social effects. In this section, we briefly review the main closure measures that these countries undertook and the evolution of these 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 spread of the virus, including school closures, workplace closures, bans on public gatherings, and travel restrictions. Systematic and timely information about these measures is provided by the Oxford COVID-19 Government Response Tracker (OxCGRT) and is summarized in a single widely used index called the stringency index available on a daily basis from the OxCGRT website (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 early in the pandemic 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, but Egypt, Morocco and Sudan maintaining stringency measures above the world average, but on a slightly declining trend through August 2020.

Jordan reversed course and tightened back up in August 2020 in response to a surge in the number of cases and deaths there[7]. Jordan continued to tighten its stance until its stringency index exceeded that of all the other countries we study by October 2020 and remained at a level well above the world average through April 2021, with the exception of a small dip in February. After a decline in its death rates in May 2021, Jordan began a gradual loosening that lasted through August 2021, at which point the loosening accelerated dramatically leading to a decline in its stringency index to well below the world average through November 2021.

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 from November 2020 to February 2021.

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[7] See Krafft, Assaad, & Marouani (2022) for information on the rate of new cases and deaths in Egypt, Jordan, Morocco, and Tunisia since March 2020. Krafft, Assaad, & Marouani (2021a, 2022) present the detailed closure policies that these countries adopted and how they changed over time.

It moderated its stance slightly through April 2021 but tightened again through August 2021 in response to a dramatic increase in the death rate. With the decline in the death rate in September 2021, Tunisia substantially loosened its stance in October and continued to do so through the end of 2021.

Throughout the July 2020 to February 2021 period, Egypt experienced a reportedly moderate caseload and maintained a fairly stable stringency stance at about the world average. It then started a period of relative loosening that lasted through June 2021, again with the exception of a short-lived spike in May 2021. It thereafter maintained a stable stance roughly around the world average through the rest of 2021.

Morocco had a similar stance to Egypt's from July to November 2020 but began to tighten in response to a Fall 2020 increase in cases and deaths, leading to a fairly stringent stance through April 2021. After that, Morocco began a gradual loosening that lasted through August 2021, but throughout this period its stringency index remained above the world average. In response to a moderate increase in cases in August 2021, Morocco tightened its stance again in the latter part of the year at a time when the world average stringency index was declining, making it the country with the strictest policy regime in the region in the last quarter of 2021.

After maintaining a fairly strict closure regime through August 2020, Sudan began to loosen fairly rapidly from September to November 2020, reaching very low levels of stringency, which it continued to gradually loosen through March 2021. That loosening was temporarily interrupted by a two-months tightening spell, but returned to a very loose regime by July 2021, which was maintained through the end of the year.

Figure 1. Monthly average of stringency index by country, March 2020 to January 2022
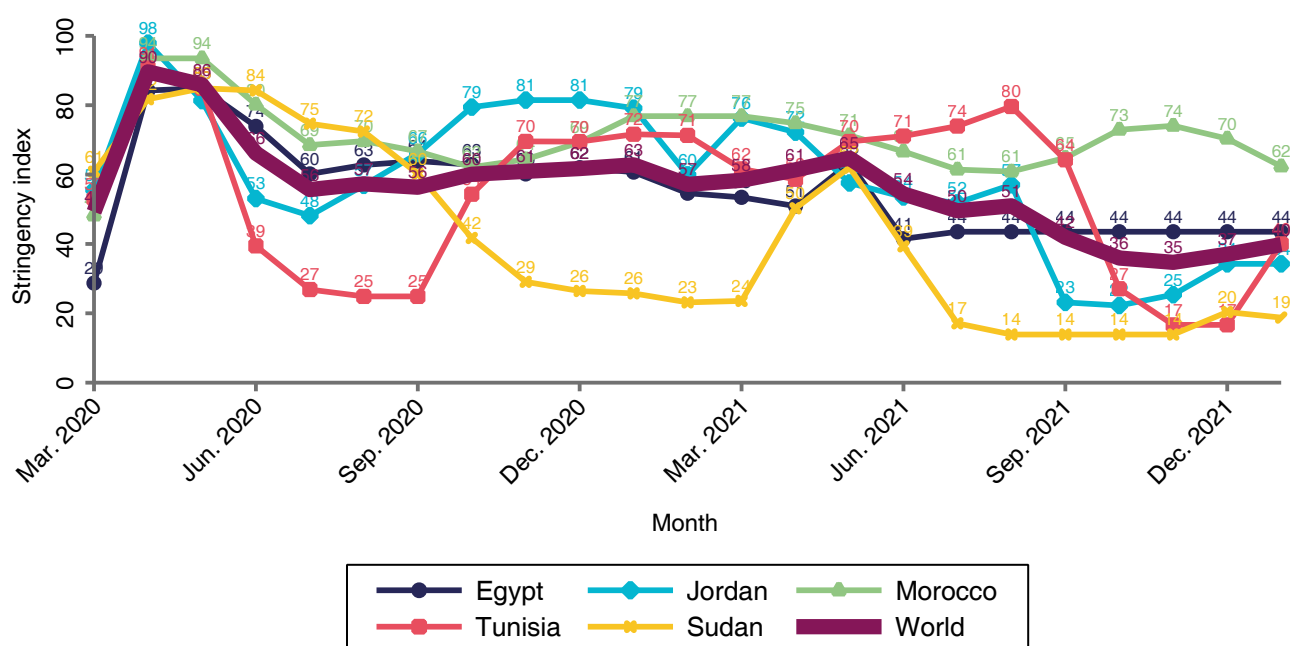
Source: Compiled by authors based on data from Hale et al. (2021)

2.3.2 Social and economic support measures

around the world, 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, Assaad, & Marouani (2021a, 2021b, 2022) 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 per cent of GDP in Egypt, 2.3 per cent of GDP in Tunisia, 3 per cent of GDP in Morocco, and 8 per cent of GDP in Jordan (Krafft, Assaad, & Marouani, 2021a)[8]. 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 percent and expanding the Takaful and Karama cash transfers program for vulnerable households (IMF, 2021). By June 2021, 411 thousand households were added to the program rolls, raising the total number of supported households to 3.4 million (Krafft, Assaad, & Marouani, 2021a, 2022). The government also increased allocations in the subsidized food ration cards that reach a majority of Egyptian households (Krafft, Assaad, & Marouani, 2021a, 2022). It also introduced some new programs, such a temporary cash transfer program of EGP 500 (USD 31) per month to 1.6 million irregular workers, which was first introduced for 3 months and then renewed for another three, ending in March 2021 (Krafft, Assaad, & Marouani, 2022). Finally a consumer spending initiative, including subsidized consumer loans, was introduced to complement the ration card measures in support of consumers (IMF, 2021).

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, Assaad, & Marouani, 2022). 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-JD 136 (USD 70-192) per month for three months to almost one million workers delivered through e-wallets (Krafft, Assaad, & Marouani, 2021a, 2022). Jordan also reallocated social insurance funds dedicated to maternity leaves to the assistance of the sick and elderly (Krafft, Assaad, & Marouani, 2021a). It reduced the social insurance contribution so as to encourage businesses to register their workers in the contributory social insurance system. In addition, Jordan instituted a temporary six-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 (USD 227) per month starting in April 2020 through March 2021 (Krafft, Assaad, & Marouani, 2021a). Informal workers benefitting from the subsidized health insurance scheme (RAMED) received a monthly cash transfer of 800-1200 dirhams (USD 94-134) per month, depending on household composition, again starting in April 2020. Other beneficiaries of RAMED could register to receive similar support (Krafft, Assaad, & Marouani, 2021a).

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[8] Data on Sudan not available.

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 percent of the population, received additional support of about USD 19 in April and May 2020. Households eligible for subsidized health insurance also received two payments worth about USD 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, Assaad, & Marouani, 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 per cent 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).

2.2.3 Economic growth in pandemic times

The economic and labour 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. Quarterly economic growth data are not available for Sudan. Only Egypt had a positive growth rate in 2020, 1.5 per cent overall (Ministry of Planning and Economic Development, n.d.)[9]. Growth was 4.4 per cent in Q1 of 2020 before a 3.1 per cent 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 per cent (Department of Statistics (Jordan), 2021). Although there was some recovery in the first half of 2021, it was anaemic; for instance, only a 0.3 per cent growth rate in Q1 of 2021.

Morocco and Tunisia had much larger contractions in 2020, -6.3 per cent in Morocco (Haut-Commissariat au Plan, 2021) and -8.8 per cent for Tunisia (Institut National de la Statistique (INS), 2021). Tunisia's contraction in Q2 of 2020, at -21.3 per cent, was less than fully recovered by Q2 of 2021, when the rebound was only 16.2 per cent. Morocco had negative growth throughout Q2-Q4 of 2020 but then weak growth in Q1 2021 (0.6 per cent) and rebounded back from a -14.2 per cent contraction in Q2 of 2020 to 15.4 per cent growth in Q2 of 2021 (albeit still not a full recovery, but closer 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, Assaad, & Marouani, 2021c). Estimates for Sudan (not shown) are not available quarterly. However, the country was already experiencing a contraction in 2019 (-2.2 per cent growth), following a contraction in 2018 as well (-2.9 per cent). The contraction in 2020 (-3.6 per cent) (World Bank, 2012) cannot be attributed necessarily or wholly to COVID-19, given the political and economic challenges Sudan was experiencing.

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

Figure 2. Employment rates (percentage), by country, sex, and quarter, 2019-2021
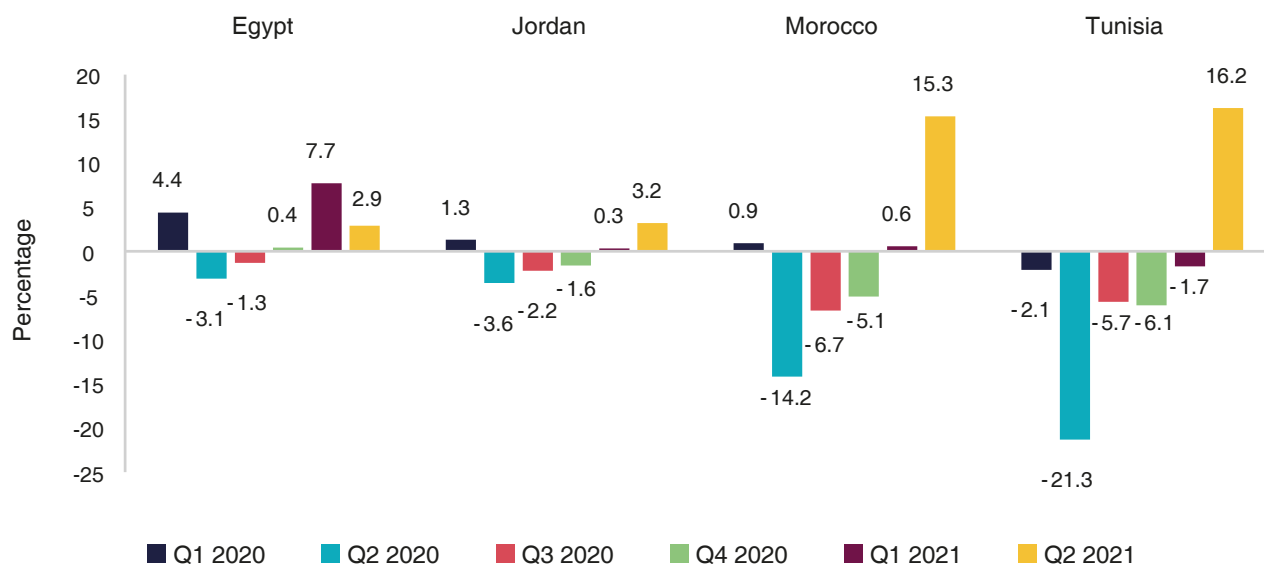
Sources: Ministry of Planning and Economic Development (2021) for Egypt, Department of Statistics (Jordan) (2021) for Jordan, Haut Commissariat au Plan (Haut-Commissariat au Plan, 2021) for Morocco, Institut National de la Statistique (INS) (2021) for Tunisia.
Notes: Economic growth is growth of value added at constant prices in 2021 (2020) relative to the same quarter in 2020 (2019). Quarterly economic growth data are not available for Sudan.

3. Data

3.1 Survey data

This study uses data from the COVID-19 MENA Monitor (CMM) Surveys, which collected data from Egypt, Jordan, Morocco, Sudan, and Tunisia. The CMM collected data through phone surveys among respondents aged 18 to 64 who had mobile phones. The analyses in this study rely on both retrospective data (data about labour market statuses in February 2020) and contemporaneous data (data about labour 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 owners. Start-ing 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.

3.2 Outcomes

To understand how workers fared during the COVID-19 pandemic our analysis focused on three outcomes: wages, hours of work, and labour market status. The outcome of labour market status was defined as employed, unemployed, or out of the labour force. Respondents were employed if in the 7 days prior to the day of the survey they worked for one or more hours 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 labour force it they did not work and were not wanting, willing, or available to work. We present unemployment and labour force participation outcomes based on the broad definition (not requiring active search for work) and 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[10]. 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 USD based on exchange rates on January 1, 2021[11]. We focus on hourly wages and model separately 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 at least one hour in the seven days preceding the interview. The hours per week outcome is based on the number of hours worked in the seven days preceding the interview.

3.3 Covariates

To understand how labour market outcomes differed across different groups of workers and individuals and how they evolved over time, we included a number of key covariates. First, we account for the time dimension by including controls for the survey wave (categorically). Respondents' February 2020 labour 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. This variable allows us to control for varying degrees of vulnerability pre-pandemic. Labour 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 unemployed (broad definition), or those out of the labour 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). Individuals are distinguished by sex, age groups (18-29, 30-49 or 50-64), and education level (basic or less, secondary, or higher education). For our labour 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.

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[10] 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.

[11] 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.

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' labour 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.

For the labour market status outcome, we use a multinomial logit model and present relative risk ratios. For the hours of work outcome, we use a tobit model. 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 labour market status and income/wage quartile; we discuss 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)[12], so they allow us to isolate patterns driven by characteristics 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 labour market status, then those for hours of work, followed by for wages. We present first the pooled models comparing across country and wave for each outcome. We present the (lengthy) country models in the appendix, and in the body figures for two of our key covariates in the country models: initial labour market status and household income/wage quartile in February 2020 as key foci in terms of inequality. We discuss results for other covariates in the text as well.

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[12] 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.
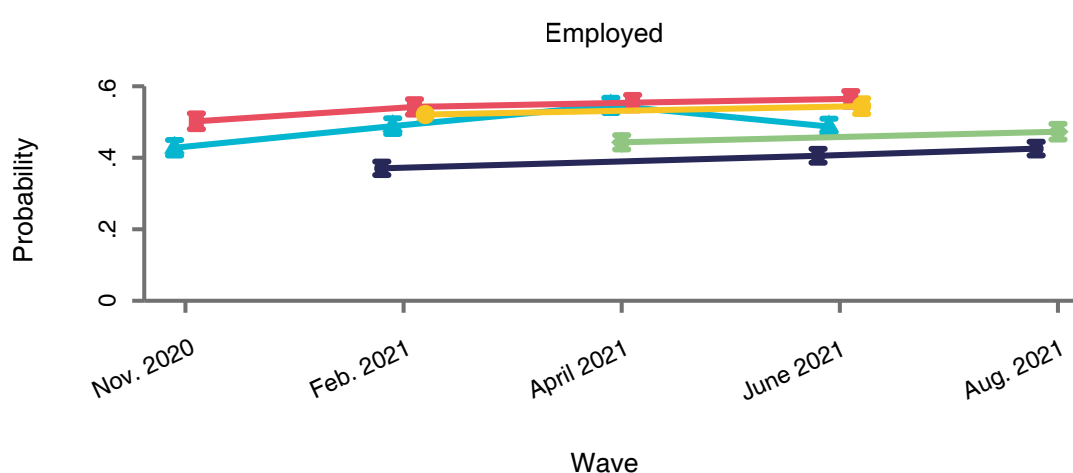
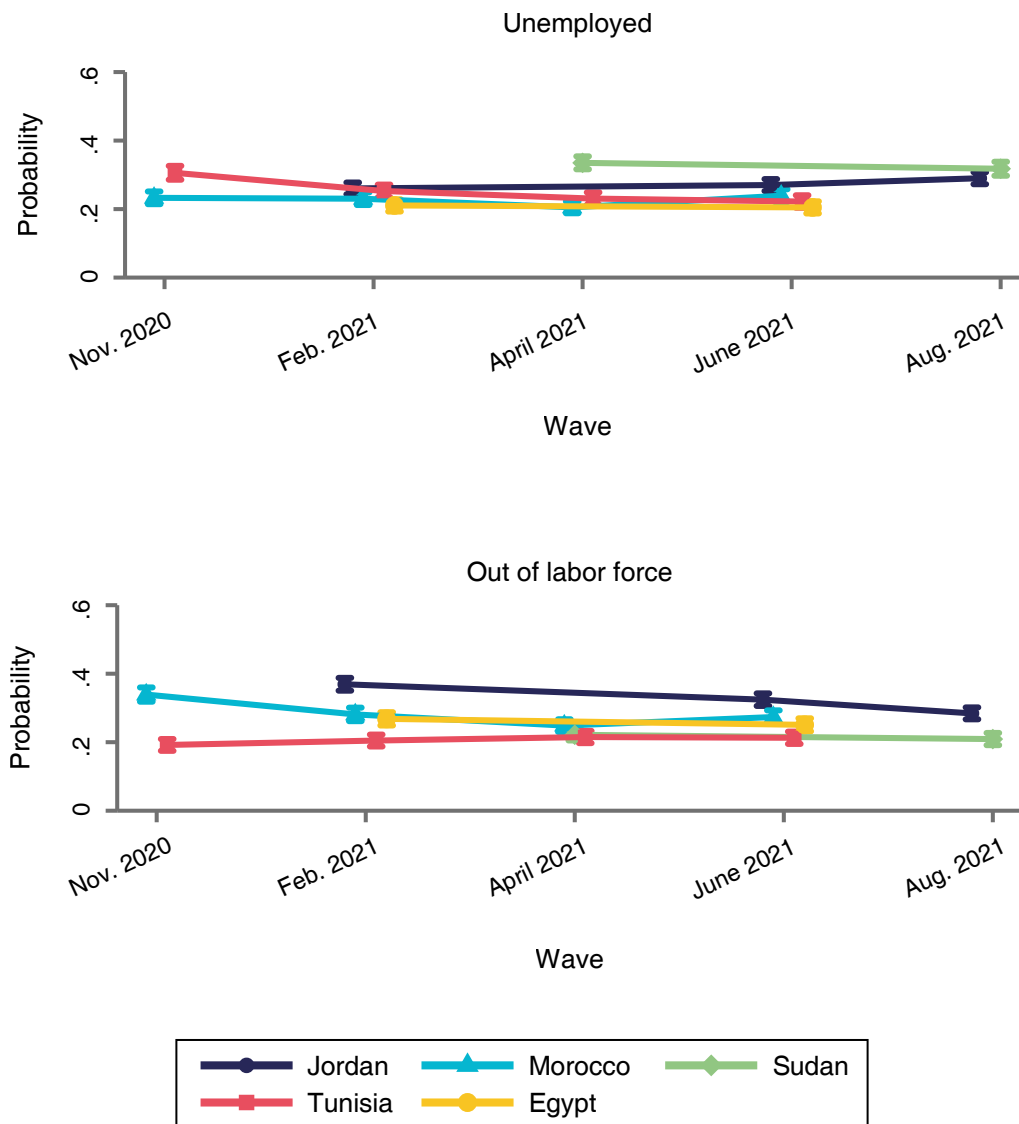## 5.1 Labour market status

5.1.1 Pooled models for labour market status

Figure 3 presents predicted labour market statuses by wave and country, along with their confidence intervals. Table 1, 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 per cent, the level it was at in February 2021, after rising to 55 per cent in April 2021). Increases in employment were of a relatively similar magnitude across countries. 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, Ghazouani, & Krafft, 2018; Assaad, Krafft, & Keo, 2019; Krafft, Assaad, & Keo, 2022).

Broad unemployment (as a share of the population) increased over time in Jordan, from 26 per cent in February 2021 to 29 per cent in August 2021, but this is in part due to workers who were out of the labour force in earlier periods returning, as employment increased. Accordingly, the proportion out of the labour 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 labour 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 the share of those out of the labour force in Tunisia from November 2020 to April 2021, which suggests that some of the reduction in unemployment may be due to individuals leaving the labour force rather than becoming employed. This may especially be the case for women, an issue which we will return to below. Overall, the picture that emerges is one largely of recovery in labour market status.

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

Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 1.
Notes: Bars represent 95% confidence intervals.

5.1.2   Country-specific models for labour market status

We now turn to the country-specific models for labour market status. We present the models in the appendix, Table 2 shows the model with just main effects and Table 3 with 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 labour force than men, even after accounting for initial (February 2020) labour market status. This may, however, represent the fact that women were more likely to leave the labour force even pre-pandemic (Assaad, Krafft, & Selwaness, 2022). The regression model with wave interactions indicates that, except for Tunisia, there were not sex-specific patterns of recovery. In Tunisia, women were relatively more likely to be unemployed or out of the labour force in later waves, suggesting men's recovery happened faster or that men were particularly struggling in November 2020.

Compared to the reference group (youth aged 18-29), only the older age group (50-64) was significantly more likely to transition to out of the labour force. This may be due to weaker attachment of this age group to the labour force and the possibility that the pandemic may have forced some of them to retire earlier than planned. However, this could also be a continuation of pre-pandemic patterns of retirement at older ages; we are unable to distinguish these possibilities. This 50-64 age group was also more likely to be unemployed in Jordan and Egypt (where 30-49 year-olds were also more likely to be unemployed). However, in Morocco, 50-64 and 30-49 year-olds were less likely to be unemployed than the reference 18-29 year olds. In Tunisia 30-49 year-olds were likewise less likely to be unemployed than 18-29 year olds. The model with wave interactions did not reveal any clear trends as to how the effects of age on labour outcomes varied through the pandemic with the possible exception of increasing exits from the labour force in Sudan for older age groups.

Relative to the omitted category (basic education or less), other education levels were significantly less likely to be unemployed or out of the labour force, particularly at the higher education level. This may be driven in part by the higher participation of educated women in most countries (Assaad, Ghazouani, & Krafft, 2018; Assaad, Krafft, & Keo, 2019; Krafft, Assaad, & Keo, 2022). However, since we control for the main effects of sex and initial labour market status, this may also be the least educated struggling, relatively, in the labour market while the more educated and especially higher educated experienced more recovery. 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 in recovery has been persistent.

We now turn to initial (February 2020) labour market status, but first provide important context on how this varied by country, among those who were employed in February 2020. In Jordan, Tunisia, and Egypt substantial proportions were employed in public sector wage work (Jordan 39 per cent, Tunisia 29 per cent, Egypt 27 per cent). The public sector share was lower in Morocco (15 per cent) and Sudan (14 per cent). The share employed in private formal wage employment was highest in Jordan (23 per cent), followed by Tunisia (19 per cent), Morocco (15 per cent), Egypt (14 per cent) and Sudan (4 per cent). These are the two employment categories that are most resilient to employment loss due to the pandemic. With regard to the more vulnerable categories of informal wage work and non-wage work, Egypt has the highest proportion of informal private wage workers (39 per cent), with a substantial proportion of those working outside establishments, and Sudan and Morocco had the highest proportions of non-wage workers (72 per cent and 44 per

cent, respectively).These high proportions of non-wage employment in Sudan and Morocco are closely linked to the sizeable role of the agricultural sector in these countries' economies (Ebaidalla & Nour, 2021; Krafft et al., 2022).

Figure 4 displays the predicted probabilities and confidence intervals from the interacted model for the evolution of recovery by initial labour market status. Labour market statuses are generally persistent, but to varying degrees by initial labour 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 economies, although we control for February 2020 industry for those who were employed in February 2020. Morocco particularly shows a number of significant wave interactions for other statuses compared to public sector wage work, with former public sector workers experiencing a more rapid return to work than other statuses.

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 & 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 labour force, in many cases significantly so. Looking at the wave interactions, Jordan does not have significant wave interactions with industry; nor does Egypt. Over time in Morocco trade and retail and accommodation and food services workers were particularly likely to become unemployed or out of the labour force, compared to November 2020 disparities. There are some significant wave interactions with industry in Tunisia and Sudan as well, but without a clear pattern.

A particularly important question for assessing inequality is how the labour market recovery affected different income segments of the population. Figure 5 shows predicted labour 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 labour 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 (Assaad, Krafft, & Salemi, 2019; Krafft & Assaad, 2014). Although there 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.

Figure 4. Predicted labour market status by initial (February 2020) labour market status, wave, and country
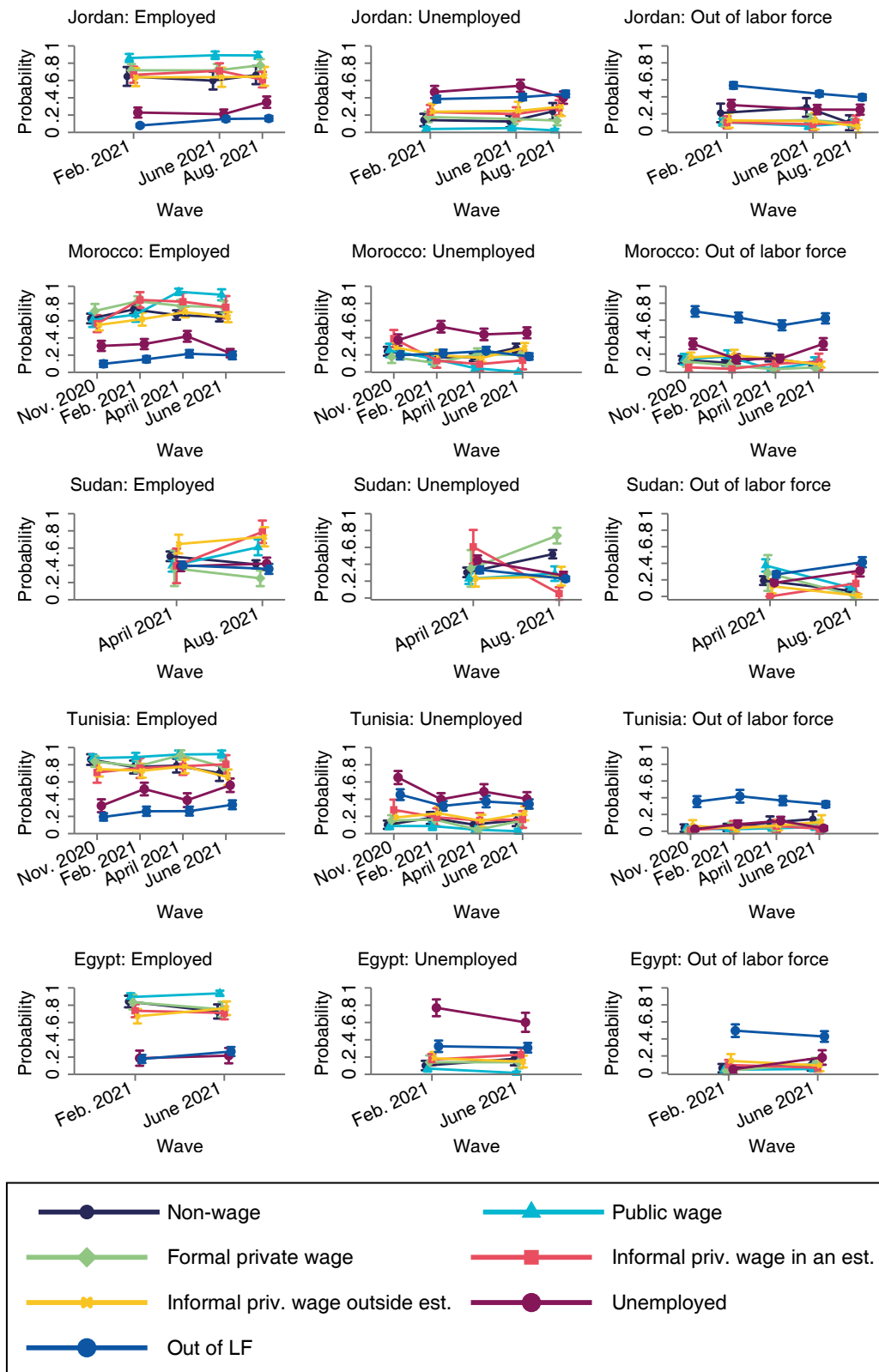
Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 3.

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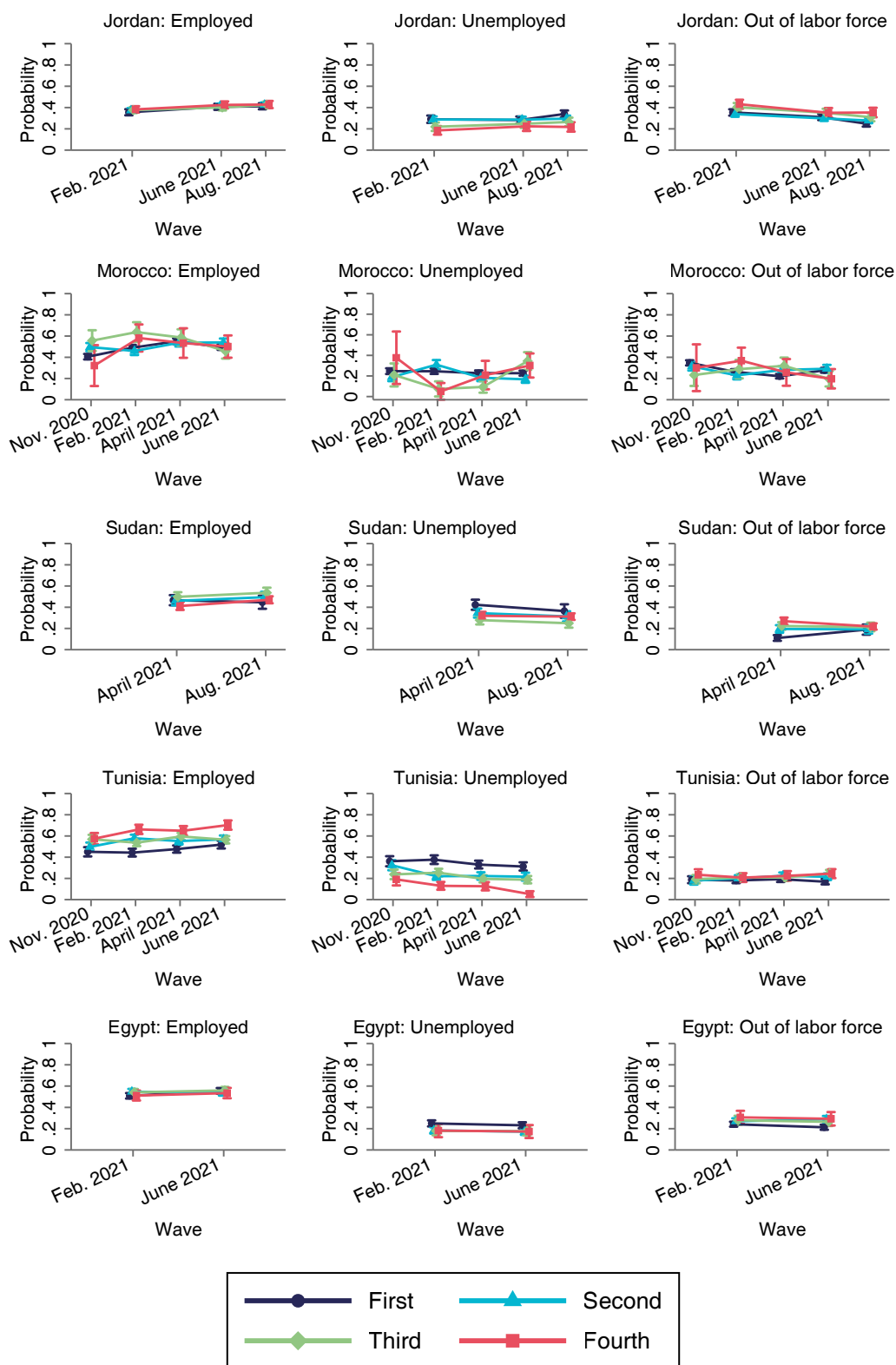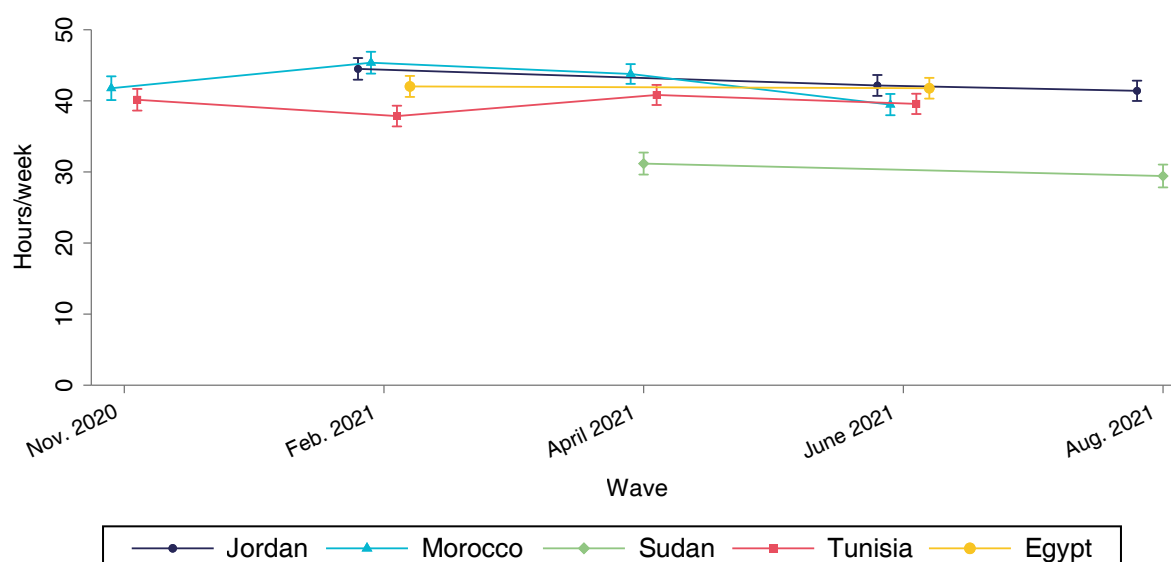

Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 3.
Notes: Don't know/refused/missing not shown. Bars represent 95% confidence intervals.

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 1, 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 cyclicality). 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.

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

Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 1.
Notes: Bars represent 95% confidence intervals.

### 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 4 in the appendix presents the main effect only models and Table 5 models including wave interactions. In the main effects model, women had significantly fewer hours of work than men, a pattern that predates the pandemic in the region (Assaad, AlSharawy, & Salemi, 2022; Assaad & Salemi, 2019). 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 men's, while in Morocco and particularly in June 2021 women's hours decreased (which may be related to agricultural cyclicality).

Every other age group, in the main effects model, works fewer hours than ages 18-29, except ages 50-64 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 labour demand in 2021.

Except in Egypt, where there were no significant differences, everywhere the more educated worked fewer hours than those with basic and below, with almost all differences being statistically significant in the main effects model.

Figure 7. Predicted hours of work per week by initial (February 2020) labour market status, wave, and country
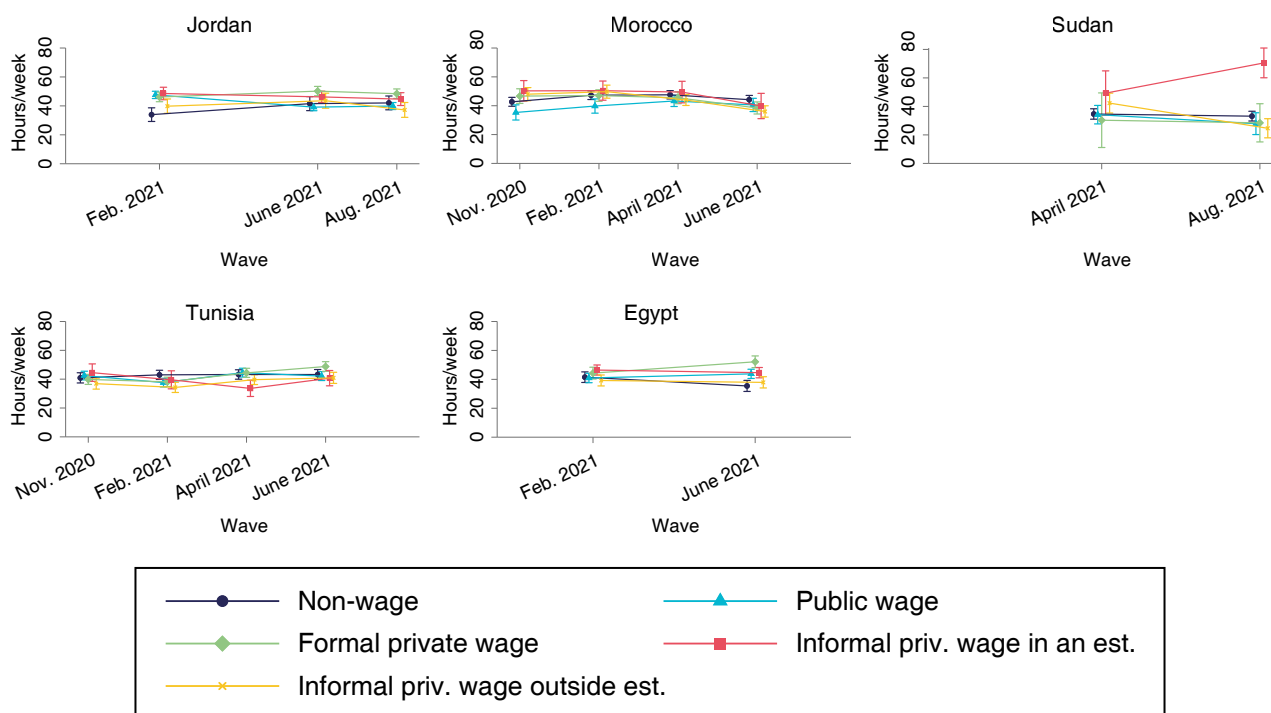
Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 5. Notes: February 2020 unemployed and out of labour force not shown. Bars show 95% confidence intervals.

Figure 8. Predicted hours of work per week by household income quartile in February 2020, wave, and country
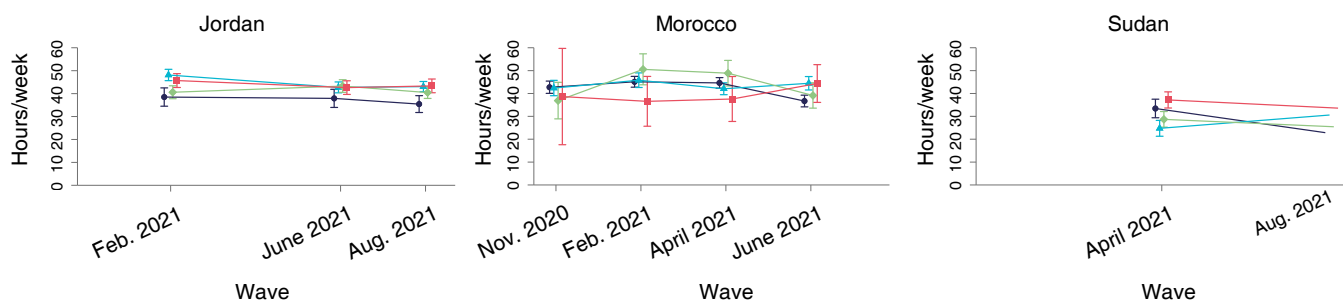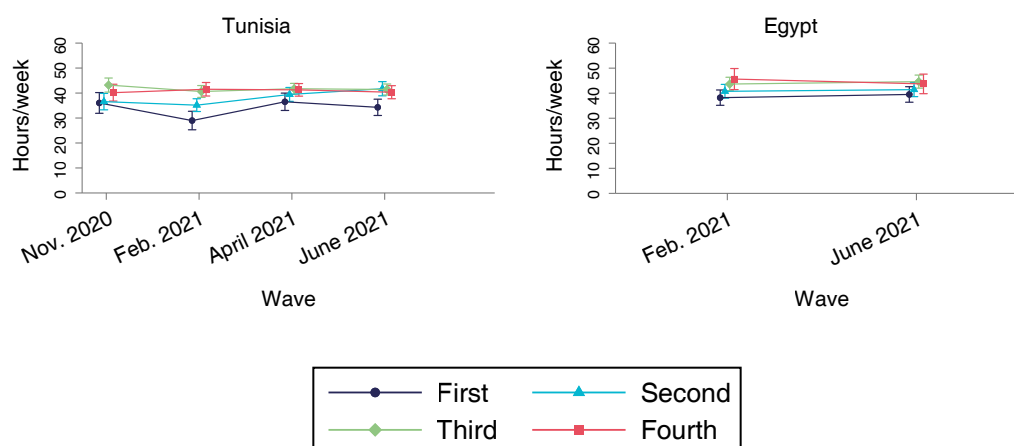
Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 5. Bars show 95% confidence intervals.
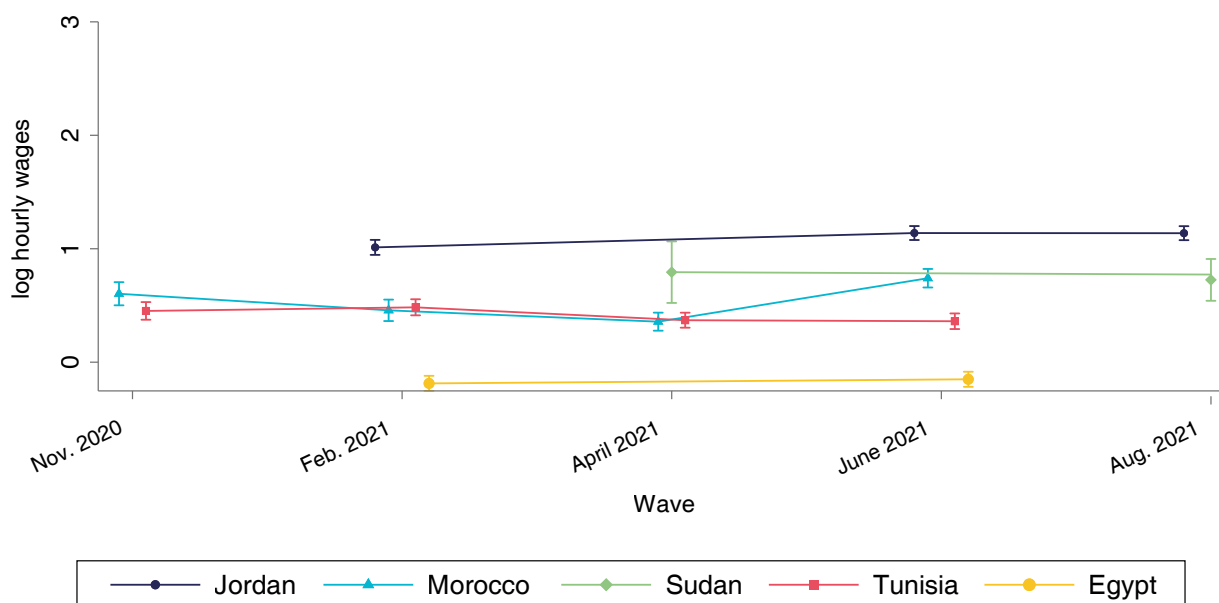
5.3 Hourly wages

5.3.1 Pooled models of hourly wages

Another important margin of labour 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 wages transformed from local currency to USD, based on exchange rates 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 particularly 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 severe, wages rose somewhat over time (primarily from February 2021 to April 2021 in Jordan, then stabilized). 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 shift potentially represents a number of dynamics; employment recovering and low-earners returning to the labour market or wage work; or hours of work recovering such that salaried workers earned less per hour. 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 COVID-19 MENA monitor, all waves, and interacted models in Table 1.
Notes: Bars represent 95% confidence intervals. Log hourly wages were transformed into USD terms based on January 1, 2021, exchange rates.

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 (p75/p25) of monthly wages, by country and wave, for those who were wage workers. The figure also includes February 2020 wages. Egypt maintained similar inequality (p75/25=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 of the pandemic, and then some reductions in inequality as recovery occurred. For example, in Jordan the p75/p25 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 exacerbated, with some fluctuations and some (incomplete, particularly in Morocco) reduction of inequality back towards 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.

Figure 10. 75ᵗʰ/25ᵗʰ percentile ratio of monthly wages, by country and wave
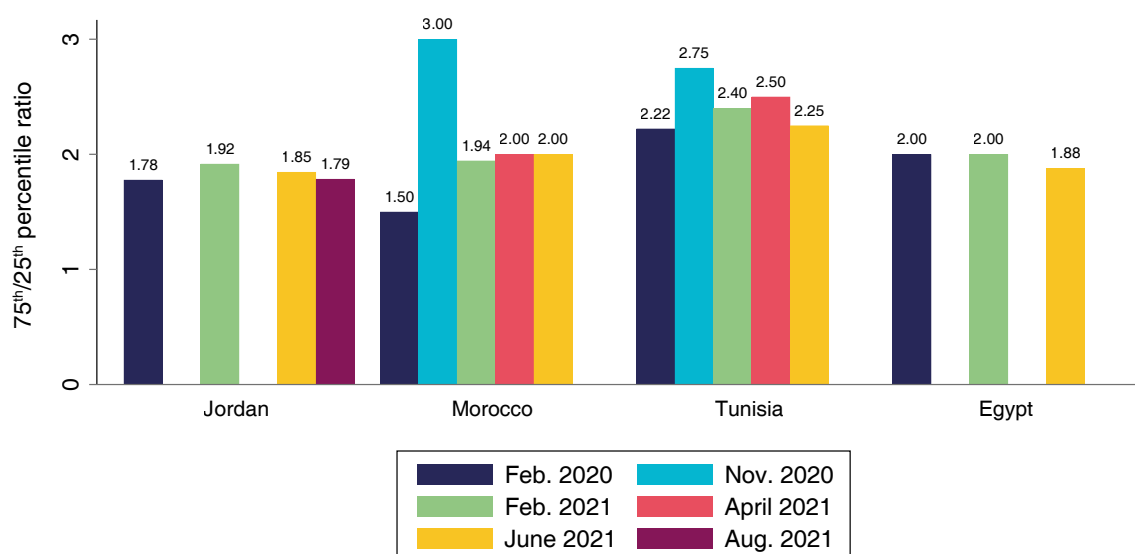
Source: Authors' calculations based on COVID-19 MENA monitor. Given small sample size of wage earners in Sudan, Sudan is not shown.

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 6 shows the models with only main effects and Table 7 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 (by 19.8 per cent in Jordan and 25.4 per cent in Egypt). This higher wage is likely due to the selection of women into the labour market (e.g. only working in higher earning jobs) as well as selective mobile phone-ownership (Assaad et al., 2022; Galal & Said, 2019; Said, Galal, & Sami, 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 in those countries. Except in Sudan, more educated workers earned significantly more (main effects). Differences were small and insignificant at the secondary level in Jordan and Egypt, and only sizeable and significant at the higher education level in those countries, while in Morocco and Tunisia differences were sizeable and significant for both secondary and higher education compared to less than secondary. In Tunisia, the more educated particularly increased their wages after November 2020.

Figure 11 presents the evolution of wage recovery by initial labour 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 statues). 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 heterogenous patterns of main effects for industry (compared to services) across countries. In Jordan, accommodations and food services had the only significant main effect; in Morocco other industries, compared to services, paid significantly higher wages, except for accommodations and food services. In Sudan, only trade/retail paid significantly more, while in Tunisia every other industry than services paid significantly less and there were no significant differences in Egypt. In terms of recovery (based on the model with wave interactions), there were heterogenous interactions, although food services and accommodation in Egypt and Tunisia appear to have recovered somewhat 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. There were not many significant differences in the wave interactions, primarily that in Tunisia the recovery somewhat reduced inequality.

Figure 11. Predicted log hourly wages by initial (February 2020) labour market status, wave, and country
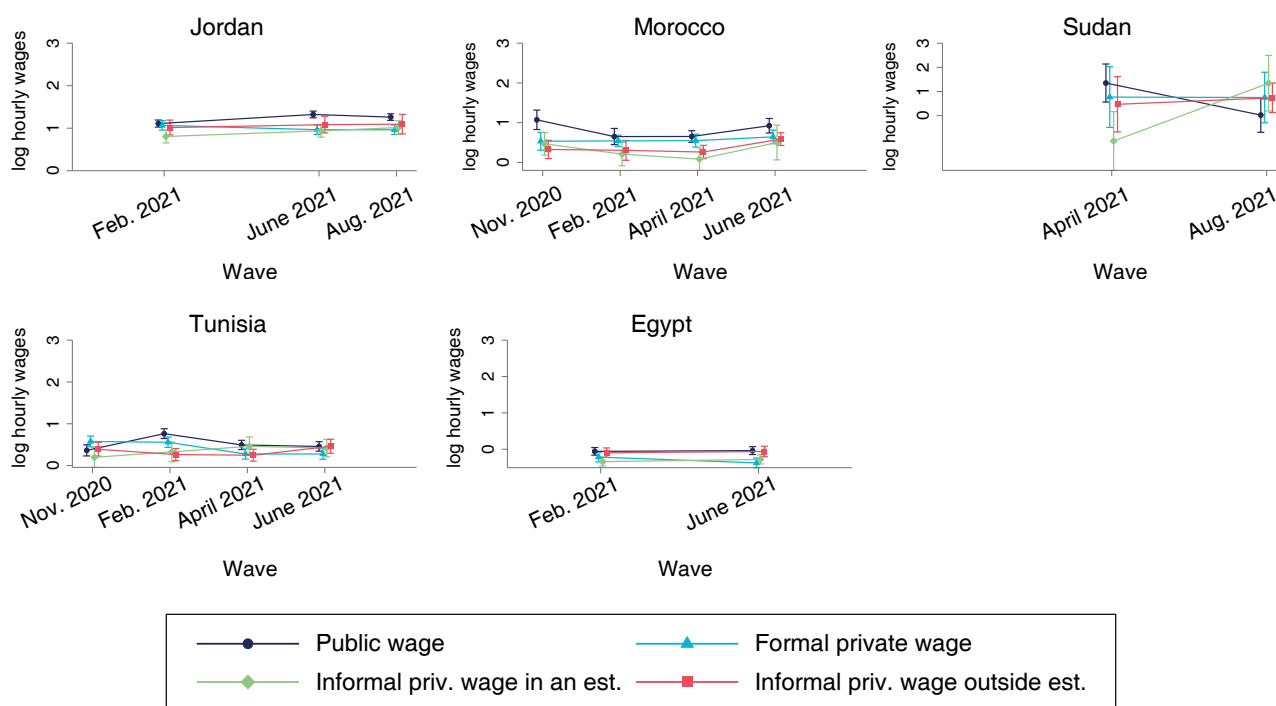
Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 7.
Notes: February 2020 non-wage, unemployed, and out of labour force not shown. Bars represent 95% confidence intervals.

Figure 12. Predicted log hourly wages by wage quartile in February 2020, wave, and country
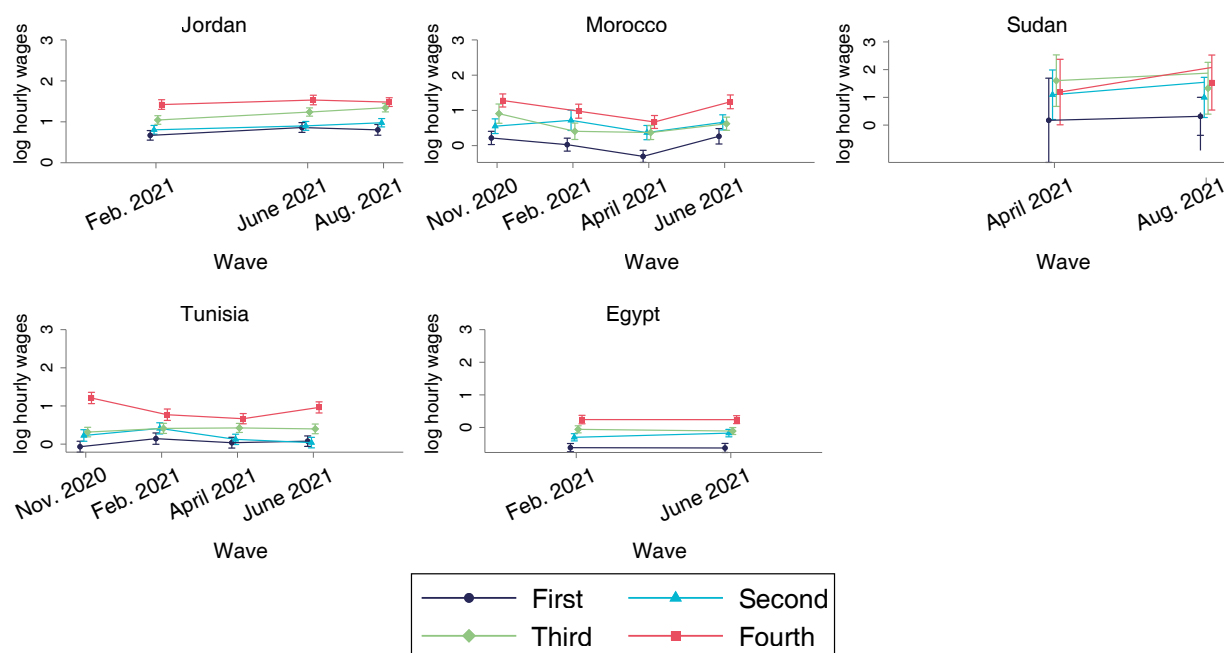
Source: Authors' calculations based on COVID-19 MENA monitor, all waves, and interacted models in Table 7.
Notes: Don't know/refused/missing not shown. Bars represent 95% confidence intervals.

6. Discussion and conclusions

6.1 Summary

The pandemic and initial lockdowns led to large, negative labour market effects globally and in low- and middle-income countries in particular (Bundervoet, Dávalos, & Garcia, 2021; Khamis et al., 2021; World Bank, 2020a). MENA had particularly stringent policy responses and an under-funded social assistance response (Assaad et al., 2022; Krafft et al., 2022; Krafft, Assaad, & Marouani, 2021a, 2021b, 2021c, 2022; 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, labour 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 cyclicality in its agricultural sector. While labour force participation recovered in most countries, it decreased in Tunisia as Tunisians were more likely to exit the labour force in February and April 2021, with some recovery in June 2021. Older age groups were more likely to exit the labour 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

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 that 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 labour 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 labour 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 labour 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 labour 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 cyclicality as well as, in Sudan, other political and economic developments.

6.2 Limitations

Although the COVID-19 MENA monitor microdata are a valuable source for understanding pandemic-era labour markets, they have a number of limitations. The surveys are focused on mobile phone owners; this is a relatively privileged segment of the labour market, and to varying degrees across countries (Assaad et al., 2022; Krafft et al., 2022; 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 which may be particularly related to labour 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 COVID-19 MENA Monitor data do include some important pre-pandemic characteristics. Recall may, however, be an issue, particularly for variable statuses, such as unemployment (Assaad, Krafft, & Yassin, 2018). There were also pre-pandemic a number of existing disparities, such as low female labour 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 & 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 labour market policy responses.

6.3 Policy implications

Social assistance has retreated since the start of the pandemic and during the course of the recovery (Assaad et al., 2022; Krafft et al., 2022; Krafft, Assaad, & Marouani, 2021a, 2021b, 2021c, 2022; Marouani et al., 2022). Such assistance remains only weakly targeted to the workers who have struggled the most (Krafft, Assaad, & Marouani, 2022). 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 measure devised expressly for the pandemic (Assaad et al., 2022; Krafft et al., 2022; 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 labour force participation rates. We demonstrated a recovery in employment rates, and one corroborated by official statistical reports (ILO and ERF, 2022; Krafft, Selwaness, & Sieverding, 2022), which show the labour 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.

Employment and unemployment metrics both historically (Krafft & Assaad, 2014) and in the current pandemic recovery do not provide adequate indicators of labour market health. Vulnerable workers are particularly likely to have fluctuating hours and earnings but remain employed. Measures such as the time-related underemployment rate may work better to capture the employment challenges facing these workers than the open unemployment rate (Assaad, 2019)[13]. Policies also 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 labour market, e.g., female-headed households (Kawar, Nimeh, & Kool, 2022; Selwaness & Ehab, 2022).

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[13] Time related underemployment is the proportion of workers working less than full-time due to an inability to find enough work.

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., 2022; Krafft et al., 2022; 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 labour market.

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Appendix: Tables

Table 1. 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 (0.009)	0.273 (0.010)	39.472 (0.762)	0.740 (0.042)
Sudan # April 2021	0.443 (0.010)	0.335 (0.009)	0.222 (0.008)	31.176 (0.789)	0.793 (0.138)
Sudan # Aug. 2021	0.443 (0.010)	0.318 (0.009)	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)	0.231 (0.010)	0.205 (0.009)	37.861 (0.742)	0.484 (0.036)
Tunisia # April 2021	0.554 (0.011)	0.222 (0.010)	0.215 (0.009)	40.828 (0.722)	0.370 (0.034)
Tunisia # June 2021	0.565 (0.011)	0.211 (0.010)	0.213 (0.009)	39.573 (0.728)	0.361 (0.035)
Egypt # Feb. 2021	0.521 (0.011)	0.521 (0.010)	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.)	32296	32296	32296	15253	7206

Source: Authors' calculations based on COVID-19 MENA monitor, all waves
Notes: Predicted outcomes with standard errors in parentheses.

Table 2. Relative risk ratios from multinomial logit models for labour market status, main effects

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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 labour market status (Public wage omitted)										
Education (basic or less omitted) Secondary	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)
Non-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)
Formal private wage	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)
Informal private wage in 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 & 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*	0.527	1.271	1.547*	0.511***	0.782	1.827**	0.629	2.664***	1.292

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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)	1.954*** (0.361)	0.400* (0.156)	1.016 (0.277)	1.182 (0.443)
Accommodations/food	1.906** (0.429)	0.889 (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)
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 (18-29 omitted) 30-49	1.028 (0.087)	1.129 (0.106)	0.666*** (0.048)	0.669 (0.086)	1.071 (0.088)	0.843 (0.083)	0.797** (0.064)	0.823 (0.084)	1.341* (0.084)	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)
Feb. 2020 income (first quarter 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 Pseudo R-sq.	7625.000 0.338		8120.000 0.257		4401.000 0.096		8143.000 0.325		4007.000 0.381	

Source: Authors' calculations based on COVID-19 MENA monitor, 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.*

Table 3. Relative risk ratios from multinomial logit models for labour 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 labour market status (Public wage omit.)										
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)
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 omit.)										
Manufacturing & 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)

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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 omit.)										
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)
50-64	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)
Age group (18- 29 omitted)										
30-49	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)
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 omit.)										
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)
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)

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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)
Wave and Feb. 2020 labour 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)		
April 2021 # Non-wage			1.066 (0.489)	0.387 (0.191)			0.730 (0.316)	2.021 (1.339)		
April 2021 # Formal private wage			6.568*** (3.360)	14.799*** (9.519)			2.487 (1.706)	3.744 (3.695)		
April 2021 # Informal priv. wage in an est.			10.724*** (6.037)	2.187 (1.828)			0.552 (0.403)	4.700 (6.420)		
April 2021 # Informal priv. wage outside 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)		

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
June 2021 # Non-wage	0.866 (0.535)	3.641 (2.518)	648.087* (2127.191)	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 (1949.768)	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.	0.713 (0.397)	1.435 (1.213)	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.	0.909 (0.538)	2.033 (1.748)	471.054 (1546.759)	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)	1041.680* (3418.862)	3.398* (1.906)			1.260 (0.798)	0.653 (0.538)	2.959 (2.227)	3.713 (3.437)
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)				
Education (basic or less omit.)										
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)				

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
Wave and Feb. 2020 industry int.										
Feb. 2021 # Manufacturing & agriculture			0.873 (0.274)	2.049 (0.845)			0.803 (0.351)	1.615 (1.434)		
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 & 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 & 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)
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 & agriculture	1.321 (0.636)	0.686 (0.733)			0.078*** (0.027)	2.274 (1.133)				

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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 # Out of LF	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)
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)

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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)				
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)		
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)		
Aug. 2021 # Secondary	1.005 (0.260)	0.881 (0.240)			2.916*** (0.565)	1.692* (0.373)			0.580* (0.151)	0.860 (0.240)
Aug. 2021 # Higher education	1.060 (0.265)	1.180 (0.319)			1.086 (0.232)	2.039** (0.512)			1.316 (0.435)	1.250 (0.438)
Wave and Feb. 2020 income int.										

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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)		
Feb. 2021 # 50- 64			1.477 (0.397)	0.576 (0.166)			0.374*** (0.109)	1.069 (0.366)		
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)
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)

	Jordan		Morocco		Sudan		Tunisia		Egypt	
	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF	Unemployed	OLF
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/re-fused/missing	1.520 (0.670)	1.705 (0.787)			1.154 (0.348)	0.483* (0.164)				
(N (Obs.)	7625	7625	8120	8120	4401	4401	8143	8143	4007	4007
Pseudo R-sq.	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 COVID-19 MENA monitor, 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.

Table 4. 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 labour 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 & 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 omit.)					
Female	-12.386*** (1.066)	-6.673*** (1.155)	-8.841*** (1.687)	-4.997*** (0.806)	-10.617*** (1.510)
Age group (18- 29 omitted)					

	Jordan	Morocco	Sudan	Tunisia	Egypt
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)
Education (basic or less omit.)					
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 quart. omit.)					
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	3182	3849	1484	4590	2148
Pseudo R-sq.	.0164	.00503	.0168	.0088	.0118

Source: Authors' calculations based on COVID-19 MENA monitor, all waves

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

Table 5. 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 labour market status (Public wage omit.)					
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)
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 omit.)					
Manufacturing & 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 omit.)					
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)					

	Jordan	Morocco	Sudan	Tunisia	Egypt
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 omit.)					
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 quart. omit.)					
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 labour 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)	
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)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
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)		
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 & 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 # Accommo-dations/food		5.391 (5.329)		-6.222 (5.264)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
April 2021 # Manufacturing & 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 # Accommo-dations/food		2.373 (5.304)		-8.583 (5.145)	
June 2021 # Manufacturing & 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 # Accommoda-tions/food	-7.011 (5.091)	15.423** (5.302)		-7.730 (5.314)	-14.113** (5.032)
Aug. 2021 # Manufacturing & 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 # Accommo-dations/food	-8.352 (5.139)		10.352 (12.382)		
Wave and sex int.					
Feb. 2021 # Female		-2.650 (3.650)		5.040* (2.364)	
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)		

	Jordan	Morocco	Sudan	Tunisia	Egypt
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)		
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)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
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.)	3182	3849	1484	4590	2148
Pseudo R-sq.	0.019	0.010	0.023	0.012	0.014

Source: Authors' calculations based on COVID-19 MENA monitor, all waves
*Notes: $p<0.05$; **$p<0.01$; ***$p<0.001$. Cells display tobit coefficients, with standard errors in parentheses.*

Table 6. OLS models of log hourly wages, main effects

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

	Jordan	Morocco	Sudan	Tunisia	Egypt
30-49	0.127*** (0.034)	0.029 (0.049)	0.548 (0.301)	-0.086* (0.039)	0.171*** (0.052)
50-64	0.206** (0.067)	-0.018 (0.064)	1.247* (0.495)	-0.019 (0.051)	0.379*** (0.069)
Education (basic or less omit.)					
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 quart. (first quart. omit.)					
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	2052	1415	148	2353	1238
Pseudo R-sq.	0.368	0.326	0.295	0.369	0.256

Source: Authors' calculations based on COVID-19 MENA monitor, all waves
*Notes: *p<0.05; **p<0.01; ***p<0.001. Cells display OLS coefficients, with standard errors in parentheses.*

Table 7. OLS models of log hourly wages, models with wave interactions

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

	Jordan	Morocco	Sudan	Tunisia	Egypt
30-49	0.234*** (0.060)	-0.040 (0.111)	-0.600 (0.643)	-0.215* (0.089)	0.211** (0.072)
50-64	0.179 (0.125)	-0.230 (0.136)	0.129 (0.801)	-0.353** (0.112)	0.453*** (0.092)
Education (basic or less omit.)					
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 quart. (first quart. omit.)					
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 labour 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)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
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)	
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 & 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 # Accommo-dations/food		0.549* (0.249)		0.411 (0.219)	
April 2021 # Manufacturing & 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)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
April 2021 # Accommodations/food		0.141 (0.239)		0.669** (0.217)	
June 2021 # Manufacturing & 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)
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 & 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)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
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)			
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/re-fused/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)	

	Jordan	Morocco	Sudan	Tunisia	Egypt
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)		
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.)	2052	1415	148	2353	1238
R-sq.	0.400	0.382	0.520	0.413	0.256

Source: Authors' calculations based on COVID-19 MENA monitor, all waves

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

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