

Labor Market Impact of the COVID-19 Pandemic in the West Bank and Gaza

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Abstract

This paper studies the impact of the COVID-19 pandemic on men's labor market outcomes in the West Bank and Gaza, examining adjustments at the extensive (participation) and intensive (hours of work) margins of the labor supply. Quarterly panel data from national labor force surveys allow observing labor market transitions, job loss and job gain rates, and labor market stocks. The findings show that the COVID-19 pandemic was associated with a decline in employment and labor market participation among men in the immediate aftermath of the pandemic. Moreover, the analysis finds evidence of large adjustments at the intensive

margin of employment, as working hours declined. The changes in aggregate labor market indicators seem to be driven by an increase in job loss and a decline in job gain in the West Bank and Gaza. Despite the apparent resilience of the labor market, as labor market indicators quickly bounced back to their pre-pandemic levels, the results show that the most vulnerable segments of the workforce, such as informal workers, workers in blue collar occupations, the least educated, and residents in refugee camps, bore a disproportionately heavier burden.

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1 Introduction

The COVID-19 pandemic was a global economic crisis as much as a public health one. The pandemic itself and the measures necessary to combat it wrought severe disruptions to labor markets everywhere in the world. However, even as the pandemic has already ended, its toll is still not yet well-understood in some parts of the world. Evidence from the Middle East and North Africa (MENA) region is conspicuously lacking. And while there is some evidence on the impact of the pandemic on labor market stocks in MENA, the pandemic’s effect on labor market transitions is not well-documented. This paper aims to shed light on the extent to which the pandemic affected the labor market in the West Bank and Gaza, analyzing both labor market stocks and flows, while also exploring the specific segments of the workforce that were more adversely affected.

Within the under-studied MENA region, the West Bank and Gaza deserves special attention. The country’s labor market is effectively divided into two segments, with the West Bank interacting closely with Israel, while Gaza remains under continuous economic isolation and constriction. In the former, almost a quarter of workers commute to Israeli-controlled territories for work, creating a highly idiosyncratic labor market phenomenon. In both, a sizable minority resides under the dire conditions of refugee camps. Gaza, in particular, has 14% of its population in refugee camps. The effective division between the West Bank and Gaza itself led to significant within-country differences in pandemic progression, and created scenarios where national policy may significantly mismatch local conditions. These country-specific conditions allow for a rich and nuanced examination of the pandemic’s effects on labor markets.

We first document large effects of the pandemic on both labor market stocks and flows, in both the West Bank and Gaza. We estimate that the pandemic induced an immediate 5 percentage point loss in employment rate, compared with 2018 and 2019 among men aged 20-59. The loss is accounted for by a corresponding rise in non-participation in the two territories, while total unemployment as a share of population changed little. Our results also showcase large intensive margin adjustments. In the immediate aftermath of the COVID-19 shock, weekly hours worked among men aged 20-59 declined by 15 hours in 2020Q2 in the West Bank before quickly bouncing back, compared with a smaller but more persistent decline of 5 hours in Gaza.

The rate of job loss rose by over 5 percentage points in the West Bank compared to pre-pandemic levels, in 2018 and 2019. A smaller increase is observed in Gaza, though again persisting for three quarters. The rate of job gain in the West Bank fell by just under 5 percentage points in 2020Q2 before recovering and then overshooting. Meanwhile, in Gaza, job gain dropped slightly below normal in 2020Q2 and 2020Q3, and later plunged by 10 percentage points below normal in 2020Q4.

Second, we find both labor markets to be highly resilient despite repeated waves

of the pandemic, especially in the West Bank. By 2020Q3, all aggregate labor market indicators in the West Bank had returned to their pre-pandemic levels (2018 and 2019). By 2020Q4, the job gain rate had risen to 5 percentage points above normal in the West Bank. Gaza faced a more prolonged struggle with the pandemic, as its major wave only hit in 2020Q4. Yet just one quarter later in 2021Q1, all aggregate indicators in Gaza had also returned to normal, with the job loss rate falling below normal.

However, important heterogeneities underlay the aggregate narrative. Both in the West Bank and in Gaza, job loss is almost entirely accounted for by private sector workers, informal workers, and those employed in blue collar occupations. Next to no effect is found among public sector, formal sector, and white collar workers. Cross-border commuters experienced higher job losses during the disease-ridden quarters of Q2 and Q4 in 2020. Both in the West Bank and in Gaza, job loss among refugee camp residents increased significantly compared to others, especially in the West Bank. They also recovered much more slowly, suffering larger declines in job gain due to the pandemic on top of having lower job gain rates pre-pandemic. In the West Bank, the better educated, specifically those with a secondary degree, almost always fared better. However, in Gaza, the pandemic’s effect on job loss was as large for them as for their less-educated peers during the major shock of 2020Q4. Additionally, in Gaza, the effect on job gain was almost identical for the two groups throughout the periods of analysis under consideration.

The importance of heterogeneous effects in the West Bank and Gaza is illustrative of common effects found in labor markets with large informal sectors and significant cross-border commuting. First, job separation can be rapid and sudden, but so can be finding a job post-pandemic. A similar result is found, for example, by Viollaz, Salazar-Saenz, Flabbi, Bustelo, and Bosch (2023) on women working in the informal sector of some major Latin American countries. Second, disadvantaged groups suffered more during the pandemic, in particular those lacking good Internet access to sustain remote work. A large number of contributions came to a similar conclusion, including Peluffo and Viollaz (2021) in their study of Mexican households and Wahby and Assaad (2023) in their study of Syrian refugees in Jordan. Finally, labor markets where cross-border commuting and migration are significant are disproportionately affected. While not all studies in this area come to this conclusion, many do, including Borjas and Cassidy (2020) on data from the US and Barker et al. (2020) on data from Bangladesh.

This paper contributes to the broader literature on the impact of the COVID-19 pandemic on labor markets. While there is a considerable body of literature on the impact of COVID-19 on labor markets in developed economies, the evidence on developing economies in general, and in MENA economies in particular, remains sparse.

In the developed economies’ context, Baek, McCrory, Messer, and Mui (2021) find that, in the United States, there was a 1.9% increase in a state’s weekly initial unemployment insurance claims for every week of stay-at-home exposure relative to other

states. Using a highly granular dataset of economic activities in the United States, Chetty, Friedman, Stepner, and Team (2020) find that the closure of small businesses involving in-person contact was a major driver of job loss. Alon, Coskun, Doepke, Koll, and Tertilt (2022) provide evidence from 26 European countries, the United States, and Canada and find disproportionate effects on women, a result supported also by Albanesi and Kim (2021). Adams-Prassl, Boneva, Golin, and Rauh (2020), using data from the UK, the US and Germany, report disproportionate effects also on workers in alternative work arrangements and on the less educated.

In the developing economies' context, Bottan, Hoffmann, and Vera-Cossio (2020) found large effects of the pandemic on job loss and business closures in 17 countries in Latin America and the Caribbean (LAC). With more systematic evidence on labor market stocks and flows in LAC, Viollaz et al. (2023) found a larger impact on women in the region, driven by childcare responsibilities. Providing evidence from Africa, Alon, Doepke, Manysheva, and Tertilt (2022) also highlight that, similar to high-income nations, mothers with school-age children also faced the largest decreases in employment due to the pandemic. These findings were also echoed in the context of other developing countries such as India (Allard et al., 2022) and Zimbabwe (Mabugu, Maisonnave, Henseler, Chitiga-Mabugu, & Makoche Kanwa, 2023).

In the MENA economies' context, the evidence is considerably sparser. Early work on the impact of the COVID-19 pandemic on labor markets in the MENA region relied on high-frequency phone surveys and highlight important job losses among wage workers and an uneven impact across industries (Krafft, Assaad, & Marouani, 2021, 2022). Providing evidence from Labor Force Surveys in the Islamic Republic of Iran, Dang and Salehi-Isfahani (2023) find that the pandemic exacerbated the pre-existing low participation of females in the labor force. Wahby and Assaad (2023), on the other hand, focus on the impact of the pandemic on Syrian refugees in Jordan and find a divergence in job finding and separation rates of Syrian refugees relative to their Jordanian hosts after the onset of the pandemic. Focusing on cross-border commuters in the West Bank and Gaza, Adnan and Etkes (2022) find that undocumented commuters benefited relative to their documented peers after the pandemic, as Israeli policies inadvertently created incentives for employers to favor the former. This sharply contrasts the results by Borjas and Cassidy (2020) on the impact of the pandemic on immigrants in the United States.

The rest of this paper is organized as follows. Section 2 provides background information on labor markets in the West Bank and Gaza, as well as background information on the COVID-19 pandemic and government responses. Section 3 describes the data. Section 4 discusses our methodology. Section 5 presents the main regression results and investigates heterogeneous effects. Section 6 provides robustness checks. Finally, we provide concluding remarks in Section 7.

2 Background Information

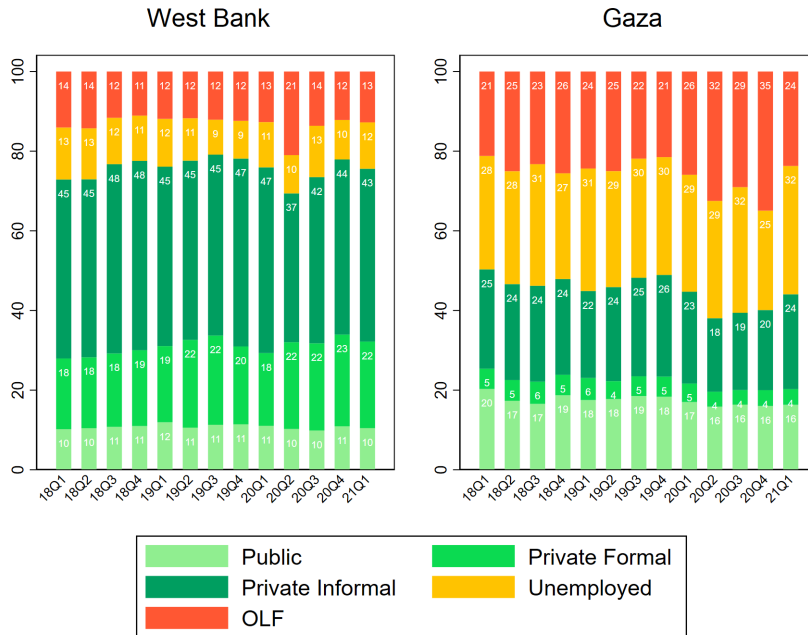
2.1 Characteristics of West Bank and Gaza’s labor markets

The labor markets of the West Bank and Gaza exhibit features typical of the broader Middle East and North Africa (MENA) region, but also have attributes that are highly unique. Additionally, important differences exist between the West Bank and Gaza. This section provides an overview of these characteristics.

We use data from the Labor Force Surveys (LFS) of the West Bank and Gaza and we focus on 20-59 years old men. In Section 3.1, we provide more information about the data sources and sample selection.

We divide each labor market into five mutually exclusive and jointly exhaustive states: public sector employment, private formal sector employment, private informal sector employment, unemployment, and out of labor force.¹ We focus our discussion exclusively on men, as women’s labor force participation in both the West Bank and Gaza is very low, never reaching values above 25%. This low participation rate is common in MENA countries and makes the role of the pandemic on women’s labor market outcomes relatively less important than other, more relevant structural factors.

Figure 1: Labor market stock in West Bank and Gaza over time, by quarter



Notes: The figure shows distribution of labor market states among men aged 20 to 59, over the periods of analysis. The five labor market states are mutually exclusive and jointly exhaustive. Informality is defined as either having no work contract, or having only a verbal contract and no health insurance. We include the self-employed in the private informal sector, and employers in the private formal sector. The latter category is numerically immaterial.

¹Data sources will be discussed in greater detail in Section 3.1.

Clear differences between the West Bank and Gaza can already be seen in Figure (1), and more shall be discussed in the succeeding paragraphs. Among men, non-participation runs twice as high in Gaza than in the West Bank. Persistently high unemployment characterizes Gaza, with just under a third of these prime working-age men in this state. Non-employment is also more persistent in Gaza than in the West Bank, as Figure (3b) will show. The public sector is much larger in Gaza than in the West Bank. In 2019Q4, 37% of employment in Gaza, among the demographic in question, was in the public sector, compared with 14% in the West Bank.

Figure (1) shows that the two labor markets are characterized by very large informal sectors, bigger than the respective formal sectors in both the West Bank and Gaza. This large informal sector is more characteristic of MENA than comparable economies in other regions. For example, in Jordan, there's a slightly higher number of men aged 20 to 59 working in the informal sector compared to those in the formal sector.² Likewise, in the Arab Republic of Egypt, among the same demographic group, the informal sector is significantly larger than the formal (Deng, Elmallakh, Flabbi, & Gatti, 2022). However, of the four Latin American and Caribbean countries surveyed in Viollaz et al. (2023), only the Dominican Republic exhibits this pattern. Among men aged 25 to 55, Chile's formal sector employs more than thrice as many workers as does the informal sector, Mexico's more than twice as many, while Brazil's half as many. The large share of informal employment makes the West Bank and Gaza particularly vulnerable. As highlighted in the literature, informal workers bear a disproportionate brunt of the pandemic's impact (Viollaz et al., 2023).

A number of features uniquely set the West Bank and Gaza apart from almost all other economies. Chief among them is the presence of a large minority of workers who commute to Israel and the occupied territories for work, but reside in the West Bank.³ This group usually accounts for between a fifth to a quarter of all employed workers from the West Bank. None however can be found in Gaza, which had been under a *de facto* state of siege throughout and long before the period under consideration. *De jure*, the commuters must enter and work in Israel and occupied territories either with valid work permits, or with Israeli or Jerusalem IDs. However, permit-holding status is neither sufficient for, nor necessary to, working in Israel. As of 2019Q4, just under a fifth of West Bank residents had the right to work in Israel and the occupied territories, but almost a quarter among them were not commuting across the border for work. The vast majority of such individuals are holders of Israeli or Jerusalem IDs. Conversely, among those who do commute to Israel and occupied territories, 17% do not hold valid permits or IDs. Likewise, permit-holding status does not logically affect the formality status of the commuter. The frequent border crossings between the West

²This is derived from authors' own calculations using the 2016 Jordan Labor Market Panel Survey.

³It is worth noting that the LFS is representative of the residents of the West Bank and Gaza, whose work may not lie in the country.

Bank and Israel and occupied territories strongly suggest that commuters would be differently affected during the pandemic when border closures were enacted.

Another unique feature is the presence of a large refugee population in the West Bank and Gaza. However, it is important to note that refugees in this context are defined quite differently from other contexts. Here, not only the individuals immediately displaced are considered refugees, but also their patrilineal descendants, even if born many decades later. In particular, the LFS dataset follows the United Nations Relief and Works Agency (UNRWA) definition of refugees, which is “persons whose normal place of residence was Palestine during the period 1 June 1946 to 15 May 1948, and who lost both home and means of livelihood as a result of the 1948 conflict,” as well as “the descendants of Palestine refugee males, including adopted children” (UNRWA, 2023). Consequently, most refugees are indistinguishable in socio-economic outcomes and labor market behavior from non-refugees.

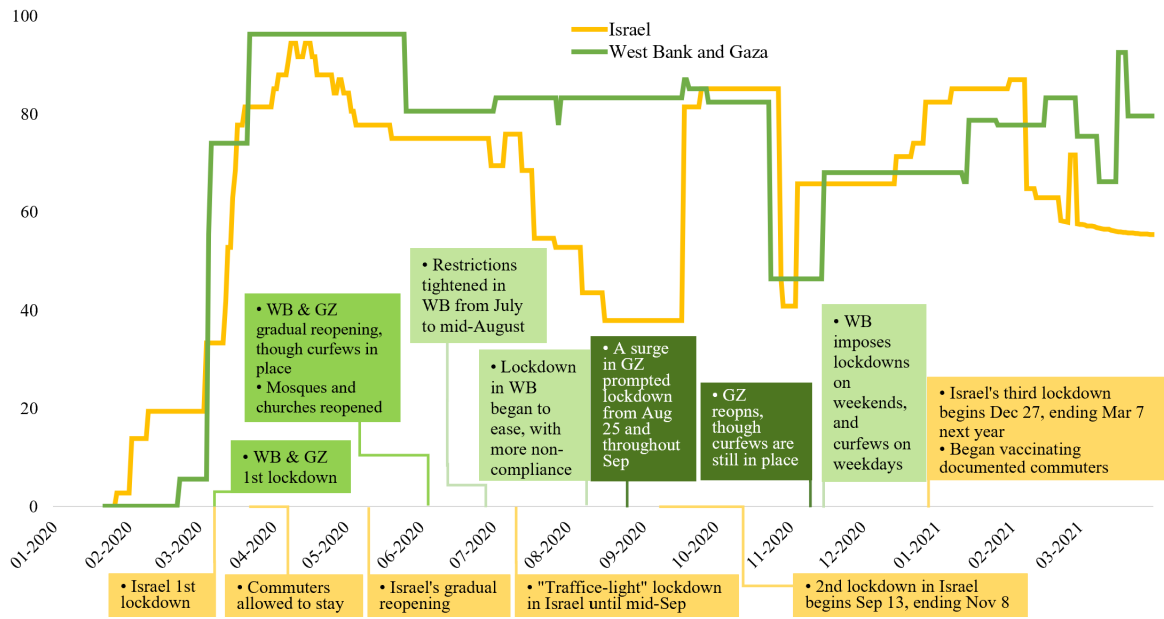
However, residence in refugee *camps* does make a significant difference. As of 2019Q4, 5% of the West Bank’s residents live in refugee camps, as do 14% in Gaza. These camps are run by UNRWA, which effectively acts as a government in the provision of public goods and services.⁴ The agency defines a refugee camp as “a plot of land placed at the disposal of UNRWA by the host government to accommodate Palestine refugees and set up facilities to cater to their needs” (UNRWA, 2023). The conditions in the refugee camps are poor. UNRWA (2023) describes them as follows, “socioeconomic conditions in the camps are generally poor, with high population density, cramped living conditions, and inadequate basic infrastructure such as roads and sewers.” Camp residents lack many basic public services, including primary healthcare or education beyond primary school. Further, refugee camps lack internet access, forestalling any possibility of remote work during the pandemic. In Wahby and Assaad (2023)’s study of Syrian refugees in Jordan during the pandemic, they found refugee camp residency to be primarily responsible for the refugees’ worse outcomes during the pandemic, as camp residents faced restrictions on movement and were less able to compete with other refugees.

2.2 COVID-19 pandemic and government responses in the West Bank, Gaza, and Israel

This section provides background information on the pandemic and government responses during our period of analysis. Figure (2) plots the daily Stringency Index, compiled by the Blavatnik School of Government, with signposts highlighting events of potential interest.

⁴In addition to the official refugee camps, all of which are UNRWA-run, there are four unofficial camps in the West Bank not run by the agency. The LFS defines refugee camps as only those run by UNRWA. See: <https://www.pcbs.gov.ps/Downloads/book2622.pdf>.

Figure 2: Timeline of COVID response measures in West Bank, Gaza, and Israel



Notes: The two lines plot the Stringency Index compiled by the Blavatnik School of Government. The index records the strictness of “lockdown style” policies that primarily restrict people’s behavior. See BSG’s site for a more detailed description. The index is measured at daily intervals and at the national level, hence not distinguishing between West Bank and Gaza. Yellow text boxes describe relevant measures undertaken by Israel, medium green ones by West Bank and Gaza jointly, light green ones by West Bank, and dark green ones by Gaza.

The COVID-19 pandemic affected all three territories in question, but over substantively different time horizons. Each territory’s response also differed significantly in scope and intensity. Israel recorded its first identified case of the coronavirus disease COVID-19 in late February 2020, and the West Bank shortly afterwards in early March. Gaza did not record any cases of COVID-19 outside quarantine centers until late August. Nevertheless, beginning in early March, governments in all three territories swiftly imposed measures that gradually increased in stringency. Schools were closed in both the West Bank and Gaza on March 6. In mid-March, Egypt and Israel closed their respective borders with Gaza. By March 22, the West Bank imposed a comprehensive lockdown of 14 days, exempting only the purchase of daily necessities (OCHA, 2020).

In the meantime, Israel progressively limited the movement of workers commuting from the West Bank. This brought the status of the commuters to the forefront, resulting in an agreement between Israel and the West Bank’s Palestinian Authority whereby commuters who wish to continue their current work must stay in Israel and occupied territories, but Israeli employers must provide accommodations for them (OCHA, 2020). This arrangement however increased the cost of employing commuters for the Israeli employers, with the associated labor demand implications. It also led to an adverse incentive to favor undocumented commuters over documented ones (Adnan & Etkes, 2022).

The West Bank began to gradually ease its first lockdown on May 25, but consis-

tently kept social-distancing measures in place. However on July 3, rising caseloads in the West Bank led to a reinstatement of lockdown measures for two weeks. Weekend lockdowns only ended in mid-August (ILO, 2021). On August 24, COVID-19 finally began communal transmission in the isolated Gaza. This led to a lockdown starting August 25 and lasting throughout September.

In November, after Gaza had eased its restrictions, the West Bank tightened its own, imposing lockdowns over weekends and curfews over weekdays. Such restrictions became normalized over the winter. In February 2021, the West Bank and Gaza began receiving vaccines from Israel, the Russian Federation, and the WHO COVAX initiative. Nevertheless, towards the very end of 2021Q1, the West Bank experienced a major surge in cases and fatalities, which lasted until April.

In Israel and the occupied territories, the course of the pandemic is punctuated by three major lockdowns in our period of analysis. Israel imposed its first almost contemporaneously with the West Bank and Gaza, but began easing the restrictions a month earlier in late April. The period of reopening lasted well into late September, when a resurgence of case loads led to Israel’s second lockdown between September 25 and October 17. After a short respite in November, Israel imposed a third lockdown from December to February the next year. Gradual easing continued throughout March. During this lockdown, vaccination was rolled out, including to commuters with valid permits.

Given this context, we expect the main shock to occur in 2020Q2 in the West Bank, with negative effects of smaller magnitudes to persist over the next quarters. In Gaza, we expect another major shock in 2020Q3 that carries over to Q4. We expect the commuters’ outcomes to instead track events in Israel and occupied territories more closely, with a major shock in 2020Q2, recovery in Q3, and another dip in Q4.

3 Data

3.1 Data sources and definitions

We employ data from the Labor Force Surveys (LFS) of the West Bank and Gaza, collected by the Palestinian Central Bureau of Statistics and prepared by the Economic Research Forum. The surveys are conducted on a quarterly basis, covering periods from 2000 onwards. The LFS is meant to represent all households whose ordinary residence is in the West Bank and Gaza, though their place of work need not be. The LFS is representative at the region level (respectively of the West Bank and Gaza), as well as at the level of locality types (urban, rural, and refugee camps) (*Palestine - Labor Force Survey, LFS*, 2021).

Importantly for the purpose of our analysis, the data have a panel dimension, enabling the study of labor market transitions. The sample rotation scheme is described

as follows (*Palestine - Labor Force Survey, LFS*, 2021),

Each round of the Labor Force Survey covers all the 536 master sample areas. The areas remain fixed over time, but households in 50% of the EAs are replaced each round. The same household remains in the sample over 2 consecutive rounds (Q1, Q2), skips the next two rounds and is represented again in the sample for the next two consecutive rounds (Q5, Q6) before it is dropped from the sample. A 50% overlap is then achieved between both consecutive rounds and between consecutive years to make the sample efficient for monitoring purposes.

The sample rotation therefore allows us to observe each individual four times in four quarters, over the same seasons in two consecutive years. This allows us to construct two types of panels for each individual. First, we can construct a “short panel” from the two consecutive quarters, allowing us to observe quarterly labor market transitions of the same individual. Second, since we observe two sets of consecutive quarters, we could also construct a “panel of short panels”, or a panel of labor market transitions of the same individual over the same seasons in two different years. However, there are two limitations that prevent us from using this full set of observations.

First, each “panel of short panels” necessarily contains only one cohort of sampled individuals, who all enter the survey in the same quarter and are then subject to attrition when re-sampled in the subsequent quarters. This introduces attrition bias, and also concerns over representativeness, as the LFS is designed to be representative for each cross-section but not necessarily for each cohort.

Second, in the dataset, we observe that the aforementioned ideal rotation scheme has been significantly altered since the onset of COVID-19, sometimes enabling panel observations over longer periods, but usually disrupting panels that we would otherwise expect to observe. The irregularities prevent a uniform application of the “panel of short panels”, even though it would be more conceptually interesting (see Appendix A.1 for issues in the rotation). The paper will instead focus on the quarter-on-quarter “short panels”, and only use the longer panels as robustness checks when they are available.

We restrict the sample to the quarters between 2018Q1 and 2021Q1. The upper limit of the timeline is again limited by the availability of the “short panels”, as the Q3/Q4 transition is the only transition we can observe in 2021. The choice of the lower limit hinges on our research design. As our counterfactual for the COVID-19 treated labor market is the period before COVID-19, we would ideally prefer a set of observations with the same characteristics as the treatment period but without the treatment itself. However, selecting a window that is too close to the onset of COVID-19 could result in emphasizing quarter-level idiosyncrasies and yielding a small sample size. Consequently, we commence our sample from 2018Q1, slightly over two years

prior to the pandemic, a period characterized by less distinct time trends in the labor market.

Since the focus of the paper is on the impact of COVID on labor market stock and dynamics, we also restrict the sample of interest to include only prime-aged working adults (aged 20 to 59). The dataset contains standard variables expected of a labor force survey, including those denoting employment, unemployment, and inactivity. It also contains information on the intensive margin of the labor supply, including hours worked and full-time and part-time status. Information on employment sector, industry, contract status, health insurance coverage, and mode of work (distinguishing between employees and self-employed, for example) is also available, allowing us to construct indicators of formality and to differentiate different modes of employment. Information on occupation is also available, but only at the level of 2-digit ISCO-08 classification. This information is enough to distinguish between white- and blue-collar occupations but it is not enough to observe additional relevant pandemic-related job characteristics such as the degree of contact with the public.

3.2 Descriptive statistics

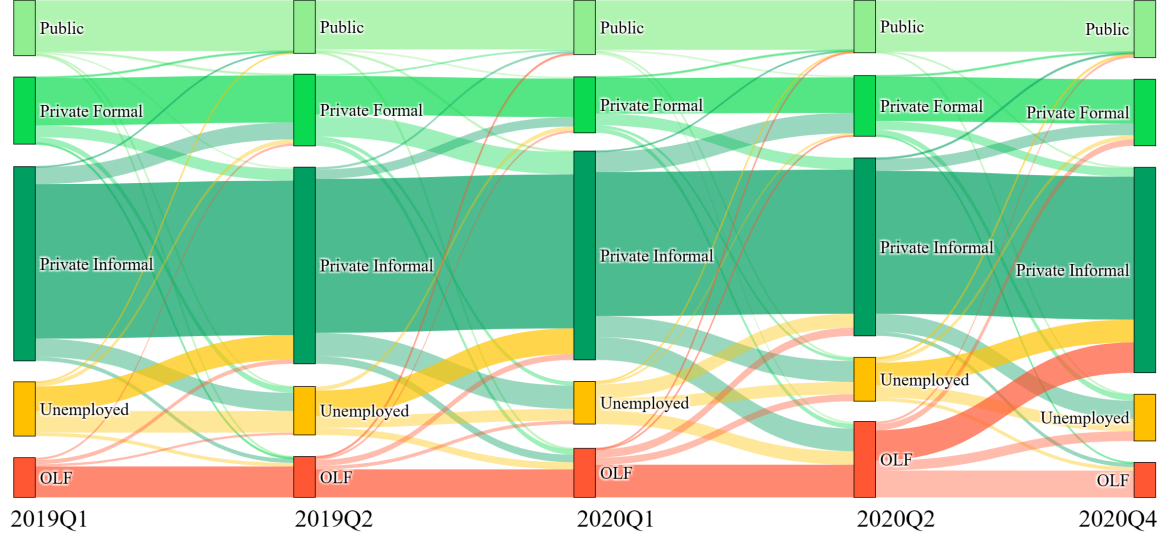
Figure (1) tracks the evolution of labor market stocks in the West Bank and Gaza respectively over time. A significant increase in non-participation among men can be clearly seen in the West Bank in 2020Q2, mostly at the expense of the private informal sector. The labor market then quickly bounces back. By 2020Q3, labor market stocks in the West Bank appear indistinguishable from pre-pandemic periods. Gaza, on the other hand, experienced three consecutive quarters of depressed employment from 2020Q2 to 2020Q4. Non-participation spiked twice, first in 2020Q2 and then in 2020Q4, corresponding respectively to the initial lockdown orders and the subsequent outbreak in Gaza. Recovery also appears to be slow and uneven.

Figure (3) shows the labor market flows. We exploit the specific panel structure of the LFS dataset, described in Section 3.1 by focusing on one cohort of the same respondents who were surveyed in 2019Q1, 2019Q2, 2020Q1, 2020Q2, and finally 2020Q4. This cohort of individuals allows us to observe labor market transitions into the pandemic; to compare with a period over the same quarters in 2019; and, finally, to observe their recovery outcomes in 2020Q4.

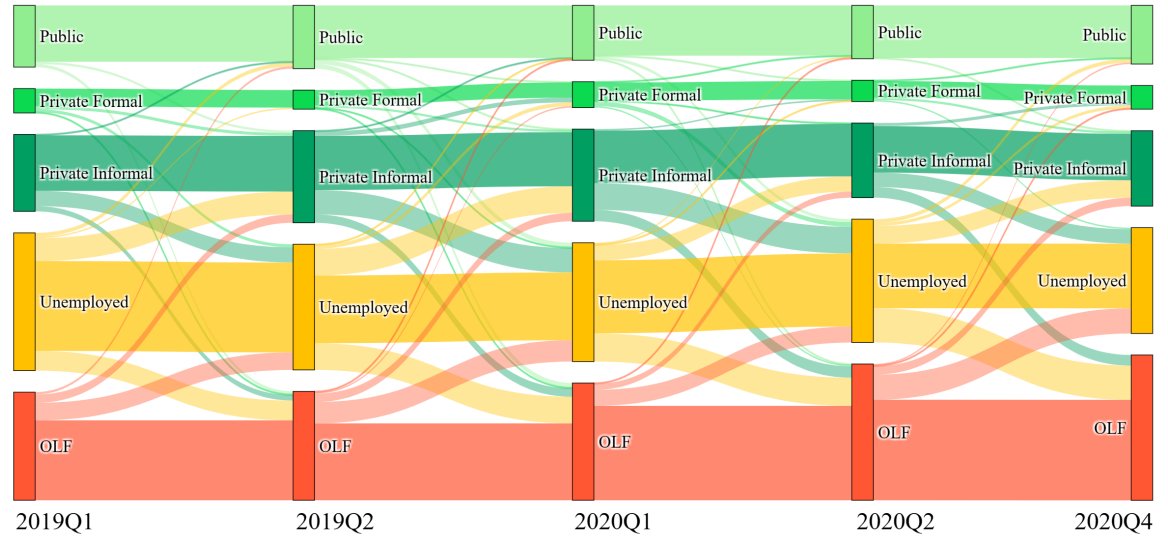
Overall, Figure (3) shows two labor markets with high levels of churning. On average, 29% of individuals in the sample would change their labor market states after just one quarter. These churns are especially prominent between informal employment and unemployment, and in Gaza between unemployment and non-participation. The figure also illustrates the significant differences between the West Bank and Gaza in labor market dynamics, differences already observed in the labor market stocks presented in Figure (1). In addition to the significant flows between unemployment

and non-participation, Gaza also exhibits few flows occurring between the private formal and informal sectors. The unemployment state is far more persistent.

Figure 3: Labor market transitions in West Bank and Gaza over time, by quarter



(a) West Bank



(b) Gaza

Notes: The figure shows labor market transitions of the same individuals whose labor market states are observed consistently in all five quarters in question. The sample is restricted to men aged 20 to 59. The figure shows 704 unique individuals in West Bank and 537 in Gaza. The five labor market states are mutually exclusive and jointly exhaustive. Informality is defined as either having no work contract, or having only a verbal contract and no health insurance.

In the West Bank, the informal employment is by far the most numerous labor market state. Before the pandemic, flows between the informal employment on the one hand and private formal employment and unemployment on the other are frequent, but the sizes of the three states are generally invariant. Public employment and non-participation rarely interact with other states, and are comparatively small by themselves. This pattern very clearly changed in 2020Q2, when COVID-19 hit

the West Bank. The public sector is virtually unscathed, while exchanges between the private formal and informal sectors continue. However, large numbers of informal workers are driven into unemployment and non-participation. Far fewer unemployed gain (informal) jobs; many drop out of labor force. Hence the stock effect of the pandemic is most visible in the rise of non-participation. The effect of the pandemic therefore appears to be dominated by *job loss*. The recovery in 2020Q4 is a straightforward reversal of the above, with individuals moving back to informal employment from non-employment.

Figure (3b) paints a very different picture for Gaza. Pre-pandemic labor market dynamics are dominated by the vast churns in and out of informal employment and unemployment. Entrance into the pandemic in 2020 Q1 to Q2 appears very similar to previous transitions, with only slight upticks in job loss, which is mostly accounted for by informal workers like in the West Bank. However, much fewer are gaining jobs than before. The flows from unemployment to informal employment are cut by half. Hence we should expect the pandemic to affect Gaza primarily through *job gain*. Gaza was in the midst of its own major outbreak in Q4, and hence we do not observe a recovery. Instead, respective exchanges between informal employment, unemployment, and non-participation stabilized to keep the stocks broadly similar to Q2.

4 Methodology

In order to identify the impact of the COVID-19 pandemic on labor market dynamics, we compare the proportions of workers in different labor market states and the transitions of those workers between those states *before* and *after* the beginning of the pandemic. Since the advent of the pandemic was such a significant and sudden shock to the economy, it is unlikely that the usual confounding factors affecting the identification – such as anticipation effects or other concurring shocks to the economy – play an important role. Moreover, the descriptive statistics show a period of relative stability before the pandemic, providing a control group free from major trends or contamination from other events. A final identification concern is that the impact of the pandemic shock is persistent over time and that perhaps our period of observation is not long enough to assess it. This is a valid concern since we can observe individuals only up to 2021Q1, less than a year from the beginning of the pandemic. We then propose our estimates as short-term effects of the pandemic, leaving to future work the study of long-term effects.

4.1 Stock regressions

The first specification we propose is the standard regression estimated by now in many countries across the world.⁵ An indicator variable for a given labor market state, for example employment, is regressed on a series of dummies denoting the pandemic periods. Possible heterogeneous effects are captured by interaction terms. To our knowledge, this is the first paper replicating this specification on data from the West Bank and Gaza. Formally, we estimate the following model:

$$Y_{iyq} = \alpha + \sum_{yq \in T} \beta_{yq} D_{yq} + \gamma_q + x'_{iyq} \tau + \epsilon_{iyq} \quad (1)$$

where Y_{iyq} is the outcome of interest for individual i , in quarter q of year y . For example $Y_{iyq} = 1$ if i is employed in yq . D_{yq} define the treatment since it denotes a set of indicators equal 1 for each different quarter potentially affected by the pandemic. The set of these quarters, as discussed in Sections 2 and 3, runs from 2020Q2 to 2021Q1 and therefore $T = \{2020Q2, 2020Q3, 2020Q4, 2021Q1\}$. For example, $D_{2020Q2} = 1$ for all individuals observed in the second quarter of 2020. Since we compare different quarters of different years and we want to account for seasonality, we add quarters fixed effects γ_q . We also add individual-level controls, which we denote with x_{iyq} .

The coefficient of interest is β_{yq} , estimating the difference in the dependent variable between a quarter-year combination affected by the pandemic and all the quarter-year combinations not affected by the pandemic, conditional on seasonal variations and individual-level controls.

4.2 Flow regressions

The second specification we propose identifies the impact of the pandemic on labor market dynamics. We define as dependent variable the *transition* between labor market states for a given worker. We focus on the indicator *job loss*, which records when an individual leaves the state of employment; and *job gains*, which records when an individual gains the state of employment. To our knowledge, no previous contribution has estimated such models on MENA countries, in part because these models richer data set to be implemented. For the same reason, only a handful of contributions have done so for other areas of the world.⁶ Formally, we estimate the following model:

$$F_{iyq} = \alpha + \sum_{yq \in T} \beta_{yq} D_{yq} + \gamma_q + x'_{iyq-1} \tau + \mu_{iyq} \quad (2)$$

⁵For high-income countries, see for example Alon, Coskun, et al. (2022) and Fairlie, Couch, and Xu (2021); for low- and middle-income countries, see for example Viollaz et al. (2023); in the MENA regional context, see Dang and Salehi-Isfahani (2023).

⁶See Albanesi and Kim (2021) for high income countries and Viollaz et al. (2023) for a sample of middle-income countries.

where F_{iyq} measures the quarterly job loss status of individual i between periods $yq - 1$ and yq . The variable is defined as follows. If the individual was employed in period $yq - 1$ but no longer in yq , then his job loss status F_{iyq} is 1. If his employment persisted through the quarterly transition, then $F_{iyq} = 0$. If he was not employed in the initial period $yq - 1$, then his job loss status in yq is undefined.

Job gain is defined conversely. If an individual was not employed in period $yq - 1$, but is employed in period yq , then his job gain status in the current period is 1. If he was not employed in period $yq - 1$ and still is not in yq , then his job gain status is 0. If he is already employed in period $yq - 1$, then his job gain status is undefined.

5 Estimation Results

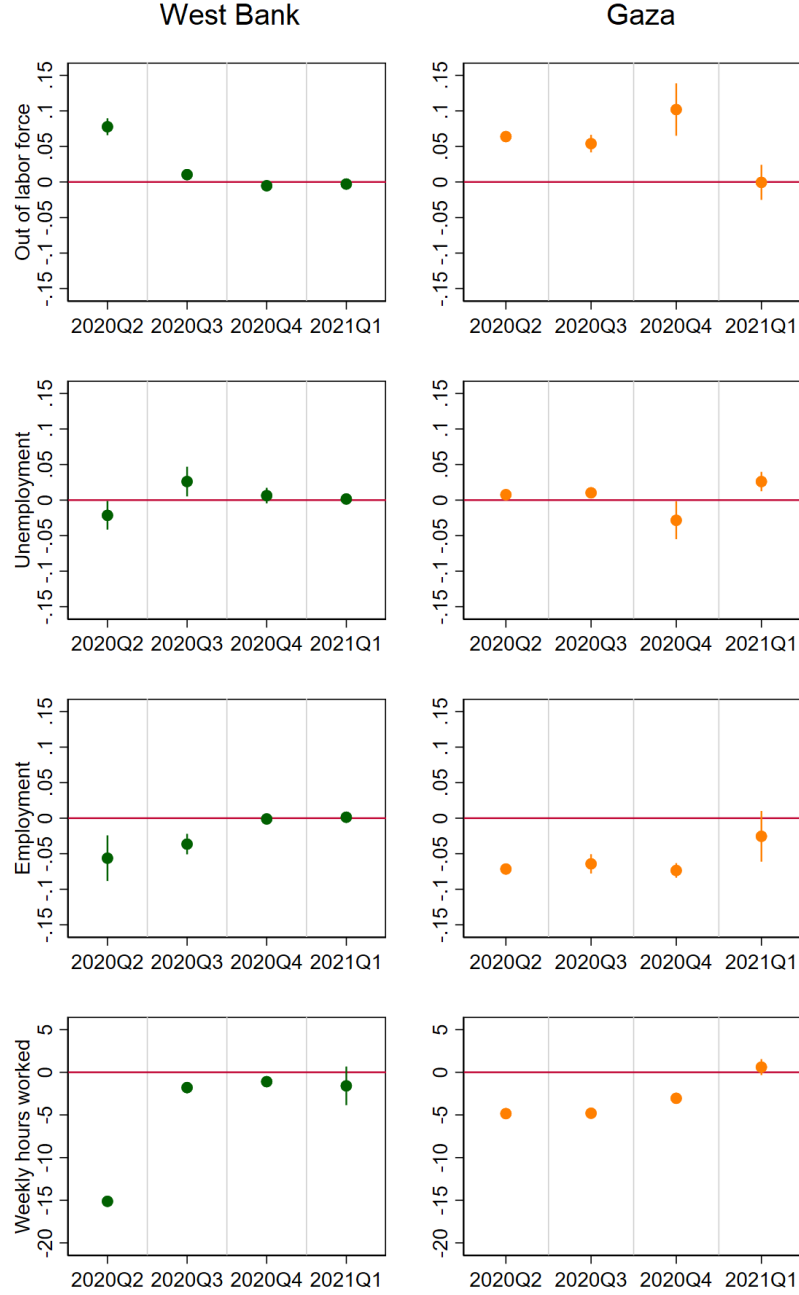
5.1 Stock results

Turning to the empirical results, first, we examine the effect of the COVID-19 pandemic on labor market stocks such as inactivity, employment, unemployment, and hours of work. This allows us to quantify the impact of the pandemic on both the extensive and intensive margins of labor market adjustments.

Figure (4) reports the results from Equation (1). Our results show that labor markets in the West Bank and Gaza adjusted to the COVID-19 shock through both margins. In the first quarter following the onset of the pandemic (2020Q2), we observe a large increase in the probability of exiting the labor force. In 2020Q2, the pandemic was associated with 8 and 7 percentage points increase in the probability of dropping out of the labor force for men in the West Bank and Gaza, respectively. In the West Bank, in 2020Q2, the decline in male labor force participation seems to coincide with both a decline in employment (6 percentage points) and a decline in unemployment (2 percentage points). Male unemployment, on the other hand, increased by 3 percentage points in 2020Q3.

Large intensive margin adjustments in the aftermath of the COVID-19 pandemic are also taking place through a reduction in weekly hours worked. Indeed, men worked on average 15 hours less per week in the immediate aftermath of the crisis (2020Q2) in the West Bank versus 5 hours less per week in Gaza. This reduction in weekly working hours seems to persist up to 2020Q4, although the largest declines are documented in the immediate aftermath of the shock.

Figure 4: Effect of the pandemic on labor market stocks



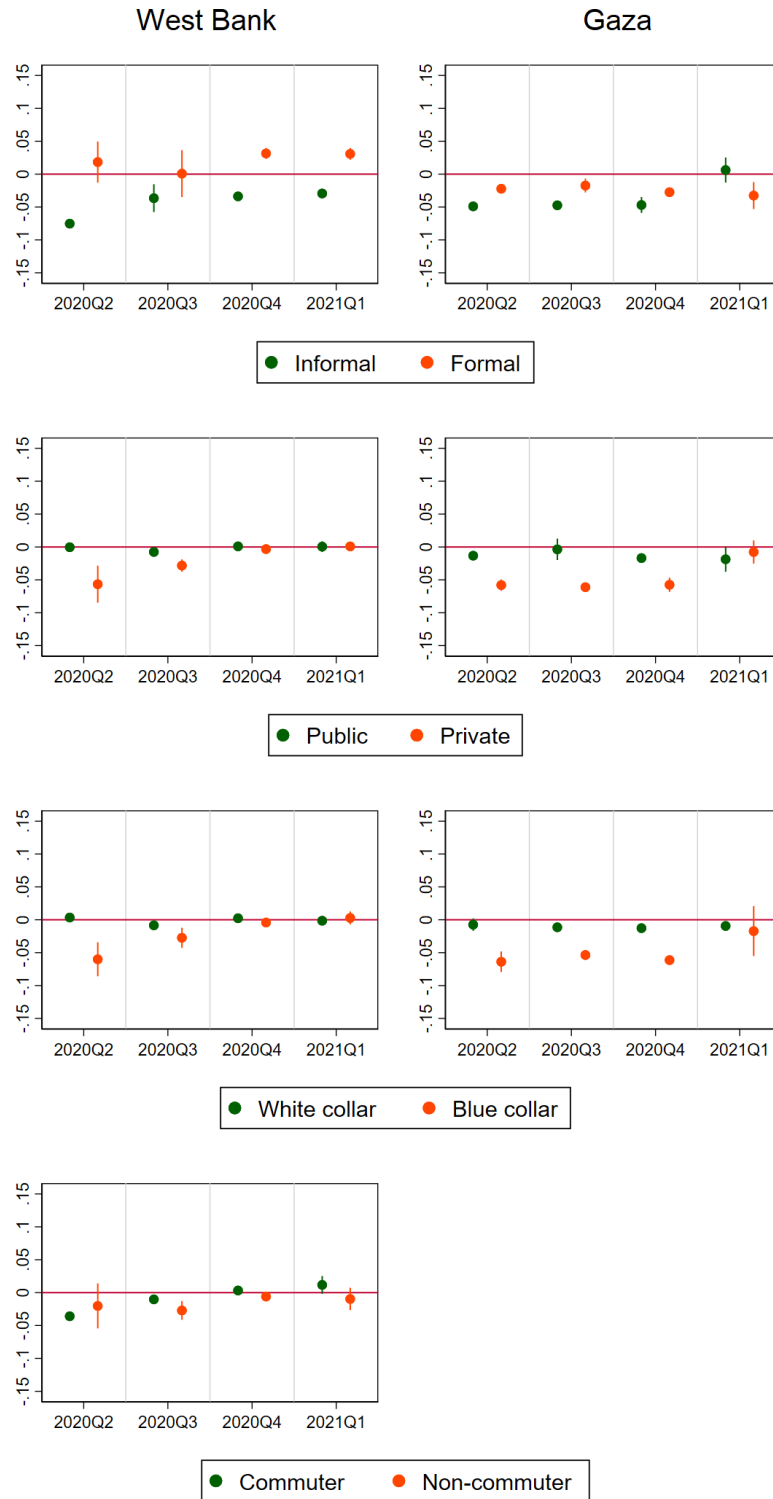
Notes: The figure reports coefficients on period dummies and associated 95% confidence intervals from Table (A1) in Appendix A2, where further information can be found. The labor market state outcomes - OLF, Unemployed, Employed - are defined as 1 if the individual is in said state and 0 if in any other state, and thus these coefficients are interpreted as changes in percentage points of each labor market state as a share of the total sample. Hours worked refer to the total hours worked in the past week. The sample for this outcome is restricted to the employed. The estimation sample is restricted to men aged 20-59. The control group is all observations between 2018Q1 to 2020Q1. The regression controls for seasonality fixed effects and the basic demographic characteristics of age and marital status.

The employment declines documented in Figure (4) may mask differential effects among segments of the labor force. To have a better understanding of the underlying

dynamics, in Figure (5), we investigate the effect of the pandemic on labor market stocks distinguishing between the various types of employment. This exercise reveals some interesting patterns. First, we find large declines in informality, unconditional on employment. In the first quarter after the onset of the pandemic (2020Q2), we document 8 and 5 percentage point declines in informality in the West Bank and Gaza, respectively. Relative to pre-pandemic mean of 0.470 and 0.228, these declines correspond to a 17% and a 22% decline in informality in the West Bank and Gaza, respectively. This decline in informality persists up until 2021Q1 in the West Bank and 2020Q4 in Gaza. As we will show in the following sections, the decline in informality reflects larger job separation rates among informal workers. On the other hand, formal workers are found to be more sheltered from the COVID-19 labor market disruptions.

These dynamics extend to other labor market segments such as private sector workers, workers in blue-collar occupations, and commuters. Indeed, our results suggest that these groups were disproportionately more affected by the pandemic relative to public sector workers, those employed in white-collar occupations, and non-commuters. For instance, we find a 6 percentage point decline in private sector employment, unconditional on employment, in each of the West Bank and Gaza in 2020Q2. Employment in blue-collar occupations equally decreased by approximately 7 percentage points in 2020Q2 in the West Bank and in Gaza, while the probability of commuting declined by 4 percentage points in the West Bank in the first quarter after the pandemic. It is also worth noting that the labor market in the West Bank seems to bounce back faster than in Gaza.

Figure 5: Effect of the pandemic on labor market stocks, by employment type



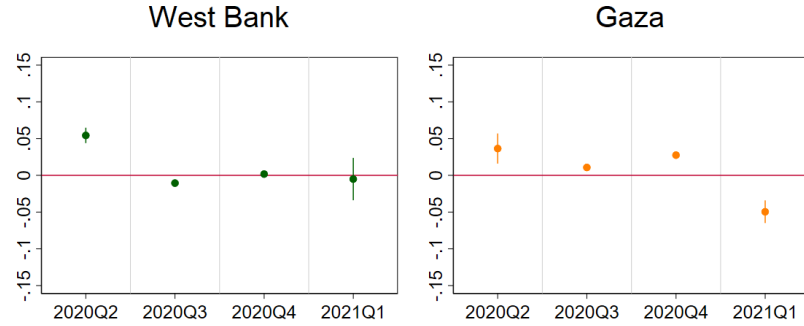
Notes: The figure reports coefficients on period dummies and associated 95% confidence intervals from Tables (A2) and (A3) in Appendix A2, where further information can be found. Each labor market state outcome is defined as 1 if the individual is in said state and 0 if in any other state, and thus these coefficients are interpreted as changes in percentage points of each labor market state as a share of the total sample. The estimation sample is restricted to men aged 20-59. The control group is all observations between 2018Q1 to 2020Q1. The regression controls for seasonality fixed effects and the basic demographic characteristics of age and marital status.

5.2 Job loss

The labor market stocks presented in Section 5.1 tend to fluctuate based on changes in the frequency of individuals transitioning into unemployment or into inactivity (job loss rates) and out of unemployment or out of inactivity (job finding rates). During the pandemic, these transitions may be influenced by several factors, including a decrease in job creation resulting in fewer available positions, an increase in job destruction resulting in the elimination of existing positions, and a decline in job churning or reallocation as fewer workers decide to voluntarily leave their jobs in search of better opportunities.

Figure (6) reports the results from Equation (2) with a focus on job separation rates in the West Bank and in Gaza, separately. In the immediate aftermath of the pandemic (2020Q2), job separation rates among men increased by 5 and 4 percentage points in the West Bank and Gaza, respectively. The recovery in the West Bank was once again faster than in Gaza as job separation rates remained relatively higher in Gaza up until 2020Q4. The increase in job loss in the aftermath of the pandemic is very large when compared with the pre-pandemic means. Relative to a job loss rate of 0.090 and 0.181 in the West Bank and Gaza, respectively, the increase in job loss is estimated to be 60% in the West Bank and 20% in Gaza in 2020Q2. In 2020Q3, we already observe a decline in job loss in the West Bank, while Gaza still suffered from an increase in job loss rate up until 2020Q4.

Figure 6: Benchmark impact of the pandemic on job loss



Notes: The figure reports coefficients on period dummies and associated 95% confidence intervals from Table (A4) in Appendix A2, where further information can be found. If an individual is employed in the previous period, but no longer in the current, then his job loss status in the current period is 1. If he is employed in previous period and still is in the current, then his job loss status is 0. If he is not employed in the previous period, then his job loss status is undefined. The estimation sample is restricted to men aged 20-59. The control group is all job loss transitions between 2018Q2 and 2020Q1. The regression controls for seasonality fixed effects and the basic demographic characteristics of age and marital status.

Figure (7) further corroborates the findings on the unequal toll of the pandemic on different segments of the workforce. Indeed, job losses among men in the West Bank and Gaza were much more pronounced among the most vulnerable groups such

as informal workers, private sector workers, those employed in blue-collar occupations, and West Bank commuters. For instance, informal male workers were much more likely to lose their jobs relative to formal workers. In 2020Q2, informal workers were 7 percentage points and 9 percentage points more likely to lose their jobs in the West Bank and Gaza, respectively, compared to the pre-pandemic period. Formal workers in the West Bank were only 2 percentage points more likely to lose their jobs in 2020Q2, while formal workers in Gaza were 2 percentage points less likely to lose their jobs compared to the pre-pandemic period.

Likewise, private sector workers were 6 percentage points and 7 percentage points more likely to lose their jobs in 2020Q2 in the West Bank and Gaza, respectively, while their public sector counterparts were 3 percentage points less likely to lose their jobs in the West Bank and only 2 percentage points more likely to lose their jobs in Gaza. Workers in blue-collar occupations bore a disproportionately heavier burden in both the West Bank and Gaza, as reflected by higher job loss rates. While both commuters and non-commuters from the West Bank witnessed an increase in job loss rates in 2020Q2 after the onset of the pandemic, commuters witnessed an even larger penalty.

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