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Resilience in the Time of Covid-19: Lessons Learned from MENA SMEs

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Resilience in the Time of Covid-19: Lessons Learned from MENA SMEs

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Abstract
We investigate the effects of the Covid-19 pandemic on small and medium-sized enterprises (SMEs) in four non-oil-exporting MENA countries (Jordan, Morocco, Tunisia, and Egypt). Using data from a recent enterprise survey, we highlight several new findings. MENA SMEs resorted to wage and work hours reductions more readily than layoffs in the wake of the pandemic. Within SMEs, larger firms are more resilient, recover faster, and adapt more often. On the sector level, the accommodation and food services sector is the worst affected in most outcomes. There is, however, clear recovery in Q2 (versus Q1) 2021 across sectors and countries. Furthermore, SMEs that switch to remote work are less likely to face closures, recover faster, and adapt more frequently, signaling higher resilience and adaptability. On the other hand, participation in government assistance programs does not improve firm outcomes, whereas firms that participate in international trade are more resilient and adaptable in the face of the shock. The results of the study carry very important policy implications to support SMEs in developing countries in time of extreme exogenous shocks.

Keywords
Covid-19, Small and Medium-sized Enterprises, Middle East and North Africa, heterogeneous firms, enterprise survey

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Résumé
Cette étude explore les effets de la pandémie Covid-19 sur les petites et moyennes entreprises (PME) dans quatre pays MENA non exportateurs de pétrole (Jordanie, Maroc, Tunisie et Égypte). À l'aide des données d'une récente enquête en panel auprès des entreprises, nous mettons en évidence plusieurs nouveaux résultats. Les PME de la région MENA ont eu recours aux réductions de salaires et d'heures de travail plus facilement qu'aux licenciements à la suite de la pandémie. Au sein des PME, les grandes entreprises sont plus résilientes, elles se rétablissent plus rapidement et s'adaptent plus souvent. Au niveau sectoriel, le secteur de l'hébergement et des services de restauration est le plus touché dans la plupart des pays. Il y a cependant une nette reprise au T2 (par rapport au T1) 2021 dans tous les secteurs et tous pays. En outre, les PME qui passent au travail à distance sont moins susceptibles de faire face à des fermetures, elles sont capables de récupérer plus rapidement et de s'adapter plus fréquemment, ce qui indique une résilience et une adaptabilité plus élevées. D'autre part, la participation aux programmes d'aide gouvernementale n'améliore pas les résultats des entreprises, tandis que les entreprises qui participent au commerce international sont plus résilientes et adaptables face au choc. Les résultats de l'étude ont des implications de politiques publiques très importantes pour soutenir les PME dans les pays en développement en période de chocs exogènes extrêmes.

Mots-clés
Covid-19, Petites et moyennes entreprises, Moyen-Orient et Afrique du Nord, entreprises hétérogènes, enquête auprès des entreprises

Remerciements
Cet article fait partie de l'appel à propositions lancé par le partenariat de recherche AFD-ERF Covid-19 MENA Monitor Research Partnership. Le contenu et les recommandations ne reflètent pas nécessairement les vues du Forum de recherche économique.

Introduction

The world economy was hit hard by the outbreak of the Covid-19 pandemic (henceforth the pandemic) in early 2020. The pandemic has led to sudden changes in the business environment, resulting in critical challenges for many firms in most sectors and in many parts of the world. The impact of the pandemic on the wider economy was large and no region was spared from the dire consequences of arguably the worst health crisis in over a century. The economic contagion of the pandemic was broad and its spillovers were large, affecting the demand and supply sides, and the real and nominal economies, both domestically and internationally. Therefore, the pandemic presented the firms with insurmountable challenges (Duarte Alonso et al. 2020).

It is expected that developing countries are disproportionately more affected by the crisis. This is due to the fragile economic structures and institutions in many developing countries, which makes it more difficult to deal with crises. For example, many countries do not have resilient health systems capable of dealing with the influx of a large number of people that may simultaneously become sick. On the other hand, governments may not have the expertise and/or resources to manage the crisis and mitigate the worst economic (and health) consequences for both citizens and businesses. The countries of the MENA (Middle East and North Africa) region, especially the non-oil-exporting ones among them, similarly observed deteriorating economic conditions. It is expected that businesses in the MENA observed negative effects from the pandemic but it is not clear what these effects are. This paper aims to explore how firms - particularly the SMEs (small and medium-sized enterprises) - in the MENA region have been affected by the ongoing pandemic, and how they adapted to its challenges. Namely, we are interested in how SME outcomes that include labor, wages, status, capacity to adapt, and revenues are affected by the onset of the pandemic. Such an investigation may allow us to draw conclusions about the resilience of these firms in time of crisis. The paper is concerned with SMEs because they represent a very important socioeconomic pillar that contributes to the overall economic activity through producing goods and services, generating jobs, and reinforcing economic competitiveness (Eggers 2020). In addition, SMEs are considered the backbone of many MENA economies. For this purpose, we employ a recent enterprise survey of representative samples of SMEs from Jordan, Tunisia, Morocco, and Egypt, all of which are non-oil-exporting and middle-income countries. The survey takes a snapshot of the SMEs just before the pandemic hit and follows them after the event. The data set includes information on many firm characteristics such as the size of workforce, participation in international trade, ownership, sales, investment, adaptation, and participation in government assistance programs, among others. The data obtained from the survey allows us to compare firm outcomes after the pandemic first started (in Feb 2020) to pre-pandemic levels. We are also able to estimate difference-in-difference equations to compare the effects of the pandemic on firms that were able to work remotely, receive government assistance, or participate in international trade versus their counterparts that do not do these things.

We find that firms largely resorted to reducing wages and hours of work instead of outright layoffs to deal with the negative consequences of the pandemic. As expected, we find that some MENA SMEs were forced to (temporarily) close their business at some point during the pandemic, but the majority of firms adapt their business models to deal with closures and lock-downs. In addition, the SMEs expect significantly lower sales and investment levels in 2021 compared to 2019 levels, but there is clear evidence of recovery in Q2 versus

Q1 2021. Even within SMEs, the larger firms are more resilient and adaptable. The firms that are able to switch to remote mode were less likely to (temporarily) close their business and were found to adapt their business model to a higher extent. We also estimate that participation in government assistance programs did not improve firm outcomes and that international trade improves the firm's resilience in the face of crises.

This paper contributes to the emerging literature on the effects of the Covid-19 pandemic. While a few studies have looked at the effects of the current pandemic on firms, this paper distinguishes itself in its thematic focus on SMEs, its geographic focus on the MENA region, and the unique variety of outcome variables explored. This study benefits from the use of recent firm-level data from four MENA countries, which allows us to study the direct effects of the pandemic at the firm-level. The paper most similar to this research paper is the recent work by Guerrero-Amezaga et al. 2022 who explore the effect of the pandemic on small firms in Latin America. We distinguish ourselves from this paper in several ways. Beside the different geographic focus, we are able to explore many more firm outcomes such as wages and hours of work, adaptability, sales, and investment. Our data also allows us to investigate the differential roles of remote work, participation in government assistance, and international trade in firm outcomes, something that we do not find in other studies. Many of the findings are also unique to this study as we elaborate below. The four MENA countries being considered are non-oil-exporting with limited resources. Two of these countries, Egypt and Tunisia, have been implicated with what is known as the Arab Spring ten years ago. Recent events suggest that MENA countries are still dealing with the consequences of the Arab Spring. As a prime example, while having successfully transitioned to democratic rule in the years following the Arab Spring, Tunisia is still suffering from significant political instability that undermine the country's economic prospects in development and growth. Consequently, many MENA SMEs have continued to face challenges to their operations and continuity even before the pandemic hit. As a result, the MENA region offers us with a unique context to study SMEs that are accustomed to crises and challenges and may have developed systems to adjust to external crises. It is well known that the pandemic was detrimental to the firms' performance, but it also threatened their resilience. Business resilience is defined as a firm's capacity to persist (survive), recover (adapt) and converge to equilibrium after a shock interrupts its operations (Torres et al. 2019, Simmie and Martin 2010). De Vries and Shields 2006 argue that resilience consists of various desired attributes which include flexibility, incentive, persistence and optimism that give a firm a set of skills to face ongoing risks. Disruptions can be an opportunity for firms to adapt, which could invigorate them post-crises. This is especially relevant to SMEs due to their limited resources (Eggers 2020). Supardi and Hadi 2020 point out that the Covid-19 pandemic has changed the firm's goal from being 'profit seeking' to 'resilience searching'. Firms reacted in different ways to the pandemic. Some firms adjusted their practices, implemented remote working, adapted their distributions ways, switched to new products, and/or cut their spending (Huang and Jahromi 2021). We contribute to the discussion surrounding firm adaptability, diversification, and resilience in the face of uncertainties that are inherent to the global economy (Branicki et al. 2017). We show, for example, that larger firms (even within SMEs) are more resilient, adaptable, and recover faster in the wake of the current pandemic. We also show that firms involved in international trade are more resilient and adapt more often, even after controlling for factors such as firm size and productivity. In addition, we show that firms that switch to remote work (partially) are more resilient. These are new findings in the literature as far as we are aware.

The paper proceeds as follows. In section 1, we review the relevant literature. In section 2, we describe the data, present summary statistics, and discuss briefly what the survey tells us about how firms adapt to the pandemic and the difficulties that they face. Subsequently, we turn to investigating the effects of the pandemic on the firms in section 3. Section 4 explores the differential effects of remote work, participation in government assistance programs, and international trade on firms in the aftermath of the pandemic. Finally, we conclude in section 5.

1. Literature Review

While this paper is related to several strands in the literature, we will mainly focus on the effects of crises on firms in general, and SMEs in particular, including the recent Covid-19 pandemic. Cowling et al. 2017 investigate the impact of the financial crisis of 2008 on SMEs. They reveal that the financial crisis had a negative impact on well-established firms. However, there is no substantial impact on SMEs and young firms. The reasons for this surprising result could be that their small size and limited liabilities shield them from the financial downturn and allow them to adapt more quickly to the changing environment. Similarly, Branicki et al. 2017 argue that the resilience of SMEs is mainly created and affected by entrepreneurial behavior. They find that entrepreneurial behavior, capacity building, and innovation support the resilience of SMEs in a sample of 19 firms in the UK. Eggers 2020 reviews 69 papers that explore the effects on SMEs of preceding events and crises. The author suggests that SMEs can play an important role in overcoming the worst effects of extreme crises with high uncertainty through innovation. Additionally, new small firms that may sprout during the crisis to deal with a certain consequence, new expertise and the combination of entrepreneurial orientation and market orientation are found to mitigate the negative outcomes during the crisis.

A growing number of papers are looking at the effects of the Covid-19 pandemic on firms and these largely find that the effects are asymmetric across firms and sectors. They also generally find that smaller firms are more affected than larger ones. Gu et al. 2020 employ data on electricity usage in China to detect the impact of Covid-19 on firms and sectors. They find that industrial firms experienced negative effects whereas firms in construction, IT, health, and services benefited from the pandemic. In addition, public and large firms were more resilient compared to private and smaller firms. Shen et al. 2020 similarly find that small firms are more affected by the pandemic than large firms in the case of China, and some sectors are more exposed than others. Borino et al. 2021 use a global survey of firms to show that international firms (multinationals) choose more resilient actions in the face of the pandemic. These include, for example, working remotely, sourcing from new suppliers, developing new products, or temporarily loaning employees to other businesses, such as manufacturers of personal protective equipment, who need workers. Espitia et al. 2021 investigate the effects of the pandemic on trade in the early stages of the pandemic and show that sectors more amenable to remote work were less affected but participation in global value chains increased vulnerability to shocks suffered by trading partners, while reducing vulnerability to domestic shocks. Alstadsæter et al. 2021 show that government programs targeting employees and fixed costs have a comparable impact on firms in Norway and the United States by reducing financial and economic distress. They find such supportive policies were effective in alleviating the negative effects of Covid-19 on firms' liquidity and profitability. However, a recent contribution by Guerrero-Amezaga et al. 2022 based on a large survey of small firms in Latin America finds that government aid had limited impact on small firms. The authors stress that awareness of and participation in government assistance programs is generally very low especially among small as well as informal firms. Some governments resorted to policies that aim to keep firms in 'hibernation' mode such as Denmark and the Netherlands. Didier et al. 2021 argue that such policies are beneficial and can help firms survive the crisis but the legal and regulatory infrastructure in place may be ill-equipped to deal with the pandemic. Moser and Yared 2021 argue that government restrictions improve the health situation but harm economic growth. They propose that governments have to better manage future restrictions to enhance economic perspective.

Naturally, the Covid-19 pandemic affected firm valuations given the magnitude of its impact on firm performance. Ramelli and Wagner 2020 show that stock prices of international firms responded negatively to the pandemic, particularly those exposed to international trade with China. They argue that multinationals are highly exposed to the tail risks through financial channels. In the same context, Ding et al. 2021 investigate the relationship between stock prices and Covid-19 pandemic by using a large data set of 6000 firms in 56 countries. They provide clear evidence that stock prices of firms with better liquidity and profit profiles before the crisis suffer lower price drops than highly leveraged firms and firms with high exposure to global supply chains. Song et al. 2021 arrive at the same conclusion with a sample of publicly traded US firms in the restaurant industry. Specifically, they find that restaurant firms with larger size, more liquidity, and more international profile are more resilient to the negative influences of the pandemic. Narayan et al. 2020 examine the relationship between stock returns and exchange rates and find that currency depreciation exerts a stronger positive impact on stock returns during the Covid-19 period compared to the pre-pandemic period. In addition, governance seems to matter in the resilience of firms. Albuquerque et al. 2020 find that stocks of firms that adopt environmental and social policies experience higher returns and less volatility when the pandemic first hit in Q1 2020.

On the sector level, Baum and Hai 2020 explore the impact of the pandemic on tourism and hospitality. They find that the effects were unprecedented in many parts of Asia, Europe, and North America. Similarly, Gössling et al. 2020 examine the impact of Covid-19 pandemic on the travel sector. The pandemic has resulted in unprecedented domestic and international travel restrictions around the world with devastating effects. In the same vein, Dube et al. 2020 reveal how the pandemic severely hit the restaurant and hospitality industry. They argue that these sectors are very important and contribute largely to the domestic and world socio-economic environment. However, these sectors are vulnerable to crises similar to the pandemic where government restrictions and lock-downs have caused a wide loss in jobs and revenue for these sectors.

Following this brief literature review, we will now turn to data description, descriptive statistics, and estimations of the effects of Covid-19 on SMEs in the MENA region.

2. Data and descriptive statistics

2.1. Data description

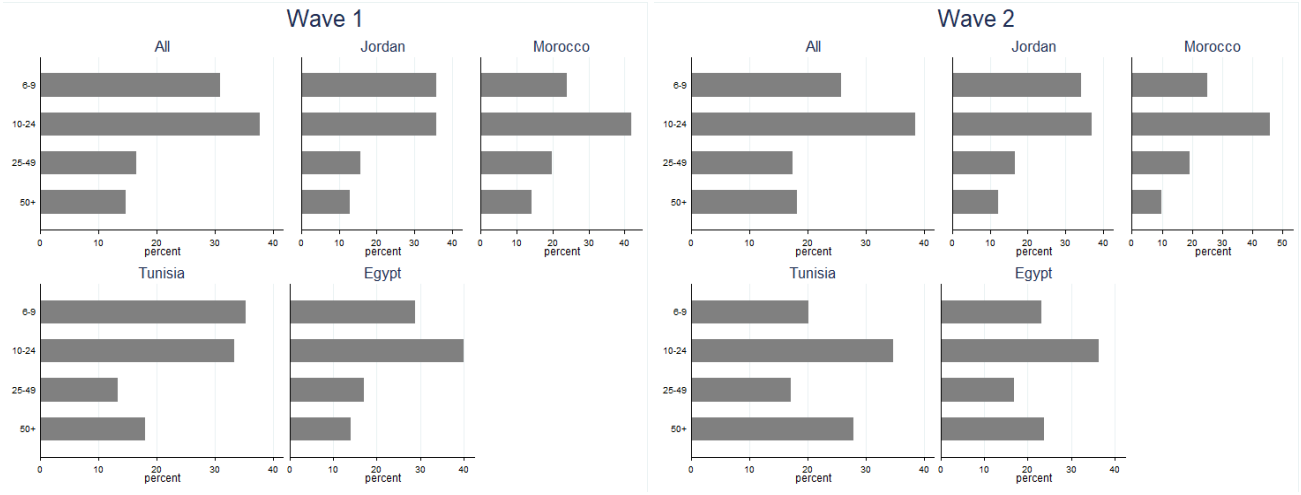
Data used in this study are obtained from the Covid-19 MENA Monitor Enterprise Survey (CCMMENT) of the Economic Research Forum (ERF)[1]. The survey includes representative samples of SMEs with less than 200 employees from four countries in the MENA region and these are Egypt, Jordan, Morocco, and Tunisia. The purpose of the survey is to take a snapshot of the sampled firms just before the pandemic started spreading in the four countries (February 2020) and thereafter. The firms were surveyed one year after the pandemic first hit (March 2021) in the first wave of the survey, and around 16 months later (June 2021) in the second wave. The firms were contacted by phone and all the firms included in the data set have agreed to participate in the survey after up to five contact attempts. To deal with attrition, the survey introduces a refresher sample in wave 2. Since not all firms sampled complete the survey, the survey introduces weights that should be used in the analysis to correct for non-response and account for the sampling strategy. The survey collects basic characteristics about the participating firms such as industry, the initial workforce size (Feb 2020), foreign ownership, and export and import status. Subsequently, the firms are asked a series of question about their operations after the pandemic hit. Some of this information will be used in this paper to investigate how the firms' operations were affected by the pandemic.

- We start with summary and descriptive statistics of the data. Figure 1 shows the distribution of firms that are surveyed by workforce size and country as captured in waves 1 and 2 of the survey. The highest proportion of firms is in the '10-24' workers category (38%), followed by the smallest firms (less than 10 workers), then the '25-49' and '50+' workers categories. Recall that all firms sampled in the survey are SMEs with less than 200 employees. Figure 2 shows the distribution of firms surveyed across the main activities (industries), of which there are eleven. The figure shows that the highest number of firms is in 'retail or wholesale' followed by 'accommodation and food services' while the lowest numbers are in the 'health' and 'agriculture, fishing, mining' industries. These numbers vary by country. Furthermore, we present summary statistics of firm characteristics in Table 1 with means, standard deviations, minima, and maxima. The firm characteristics we summarize are non-contemporaneous variables - variables that pertain to the firm before the pandemic in February 2020 and are assumed not to vary thereafter - except for the firm workforce which is contemporaneous, meaning we have updated data on the variable in waves 1 and 2 too. For example, the table shows that the firms captured in wave 1 had an average of 25.92 employees pre-pandemic (Feb 2020) and 27.58 employees in wave 1 (Feb 2021). There is variation across the countries, however. The average number of employees remains virtually unchanged in the case of Egypt and Jordan, but increases in the case of Jordan (from 24.91 to 26.06) and Tunisia (24.89 to 30.14). We also summarize the proportion of firms who are

[1] Combined, COVID-19 MENA Monitor Enterprise Survey, CCMMENT- Wave 1-2. 2021 OAMDI, 2021. COVID-19 MENA Monitor Enterprise Survey (CCMMENT), http://www.erfdataportal.com/index.php/catalog. Version 2.0 of the licensed data files; CCMMENT Wave 1-2. Egypt: Economic Research Forum (ERF).

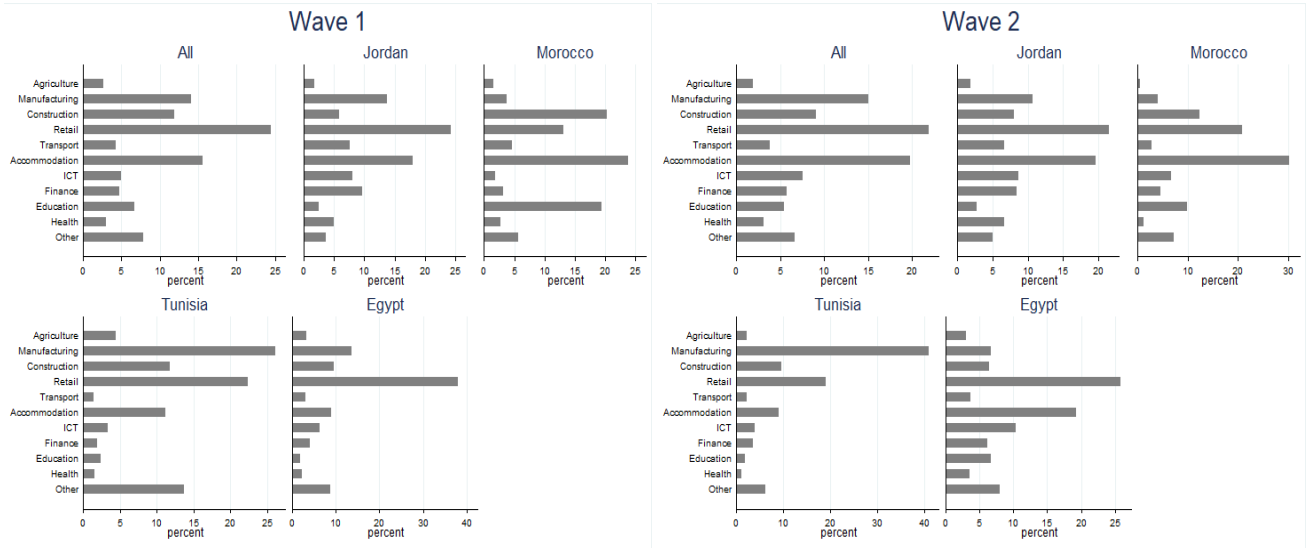
exporters, importers, and have partial or full foreign ownership for the samples in waves 1 and 2 of the survey. Recall that these variables are non-contemporaneous, and the change in these variables across the two waves reflects the sampling refresher in wave 2. We observe around 13% of all firms in the sample are exporters in wave 1 and 16% in wave 2. The highest share of exporters is observed for Tunisian firms (21 and 35% in waves 1 and 2 respectively), and the largest firms (26% and 32% in waves 1 and 2 respectively). As for import status, 24 and 27% of all firms are importers in waves 1 and 2 respectively, and the share is highest in Jordan in wave 1 (30%) and Tunisia in wave 2 (41%). Similar to export status, the largest firms are most likely to be importers; 35 and 40% of firms with 50+ workers are importers in waves 1 and 2 respectively. Finally, 9% of all firms are fully or partially owned by foreigners in both waves, and this share in highest in Tunisia and the largest firms in both waves.

Figure 1. The distribution of firms by firm size



Source: Author's own compilation based on data from the CCMMENT.

Figure 1. The distribution of firms by industry



Source: Author's own compilation based on data from the CCMMENT.

Table 1. Firms' summary statistics

	Obs	Mean	Std. Dev.	Min	Max	Obs	Mean	Std. Dev.	Min	Max
Work force			***Feb-20***					***wave 1***		
All	1,960	25.92	30.46	1	201	1,960	27.58	36.93	0	600
Jordan	500	24.91	31.59	5	201	500	26.06	36.19	0	260
Morocco	499	26.46	29.13	6	190	499	26.78	29.73	0	190
Tunisia	461	24.89	29.60	1	200	461	30.14	46.16	0	600
Egypt	500	27.37	31.38	5	200	500	27.53	34.41	1	301
			Feb-20					***wave 2***		
All	1945	29.76	35.30	1	200	1878	32.00	40.20	0	351
Jordan	496	23.57	29.45	5	195	468	24.50	30.65	1	211
Morocco	487	21.16	24.33	6	190	480	23.98	28.36	0	240
Tunisia	462	36.44	38.67	1	190	440	42.12	49.83	0	300
Egypt	500	38.10	42.60	6	200	490	38.05	45.33	0	351
Export status			**wave 1**					**wave 2**		
All	1,960	0.13	0.33	0	1	2002	0.16	0.36	0	1
Jordan	500	0.16	0.37	0	1	500	0.15	0.36	0	1
Morocco	499	0.07	0.26	0	1	501	0.05	0.22	0	1
Tunisia	477	0.21	0.41	0	1	500	0.35	0.48	0	1
Egypt	500	0.08	0.27	0	1	501	0.06	0.24	0	1
<10	532	0.07	0.26	0	1	529	0.07	0.26	0	1
10-24	775	0.10	0.30	0	1	752	0.12	0.32	0	1
25-49	362	0.17	0.37	0	1	348	0.12	0.32	0	1
50+	291	0.26	0.44	0	1	316	0.32	0.47	0	1
Import status										
All	1,976	0.24	0.43	0	1	2002	0.27	0.44	0	1
Jordan	500	0.30	0.46	0	1	500	0.28	0.45	0	1
Morocco	499	0.22	0.41	0	1	501	0.19	0.39	0	1
Tunisia	477	0.15	0.35	0	1	500	0.41	0.49	0	1
Egypt	500	0.29	0.45	0	1	501	0.20	0.40	0	1
<10	532	0.18	0.38	0	1	529	0.17	0.38	0	1
10-24	775	0.23	0.42	0	1	752	0.26	0.44	0	1
25-49	362	0.27	0.44	0	1	348	0.31	0.46	0	1
50+	291	0.35	0.48	0	1	316	0.40	0.49	0	1
Foreign ownership										
All	1,976	0.09	0.28	0	1	2002	0.09	0.29	0	1
Jordan	500	0.09	0.29	0	1	500	0.08	0.27	0	1
Morocco	499	0.11	0.32	0	1	501	0.09	0.29	0	1
Tunisia	477	0.11	0.31	0	1	500	0.14	0.35	0	1
Egypt	500	0.03	0.17	0	1	501	0.06	0.23	0	1
<10	532	0.07	0.25	0	1	529	0.06	0.24	0	1
10-24	775	0.08	0.27	0	1	752	0.08	0.26	0	1
25-49	362	0.09	0.28	0	1	348	0.12	0.32	0	1
50+	291	0.15	0.35	0	1	316	0.15	0.36	0	1

Note: All numbers are percentages except for the number of observations. Author's own compilation based on data from the CCMMENT.

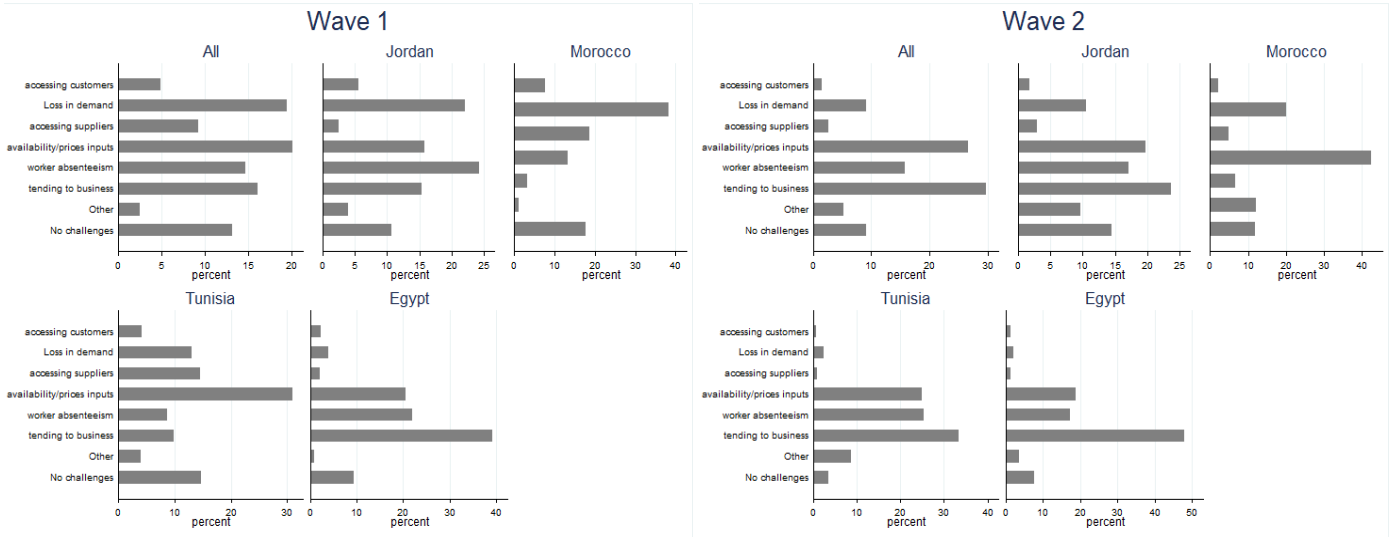
2.2. Covid-19: Difficulties and Adaptation

It is inevitable that the pandemic has presented the MENA firms with unprecedented challenges and difficulties. The survey allows us to highlight some of the most common challenges faced by the firms during the first year of the pandemic. Figure 3 lists the most common difficulties reported by the surveyed firms. Problems with (availability and/or price of) intermediate inputs is the most common difficulty reported by 20% of the firms in wave 1, and 'difficulties tending to business' is the most commonly reported challenge in wave 2, mentioned by 29% of the firms. A breakdown of the reported difficulties by country show some variation in the ranking of the difficulties. Firms in Jordan report worker absenteeism as the most common difficulty in wave 1 (24%), and difficulties tending to the business in wave 2 (24%). Moroccan firms report difficulties with demand most frequently in wave 1 (38%), but report problems with intermediate inputs most frequently in wave 2 (43%). In Tunisia,

problems with inputs is the most common difficulty in wave 1 (31%), and difficulties tending to the business is the most common in wave 2 (33%). As for Egypt, tending to the business is the most common challenge in both waves (39 and 48% respectively). Hence, this suggests that policies geared to assist managers and owners to tend to their businesses and reduce worker absenteeism would be appropriate to alleviate some of the difficulties faced by the SMEs. If managers and workers need to be home to take care of children who stopped going to school due to lock downs, one can think of policies aimed at helping businesses transition to remote mode such as better and cheaper internet, and subsidies for businesses to purchase computers for their employees where appropriate.

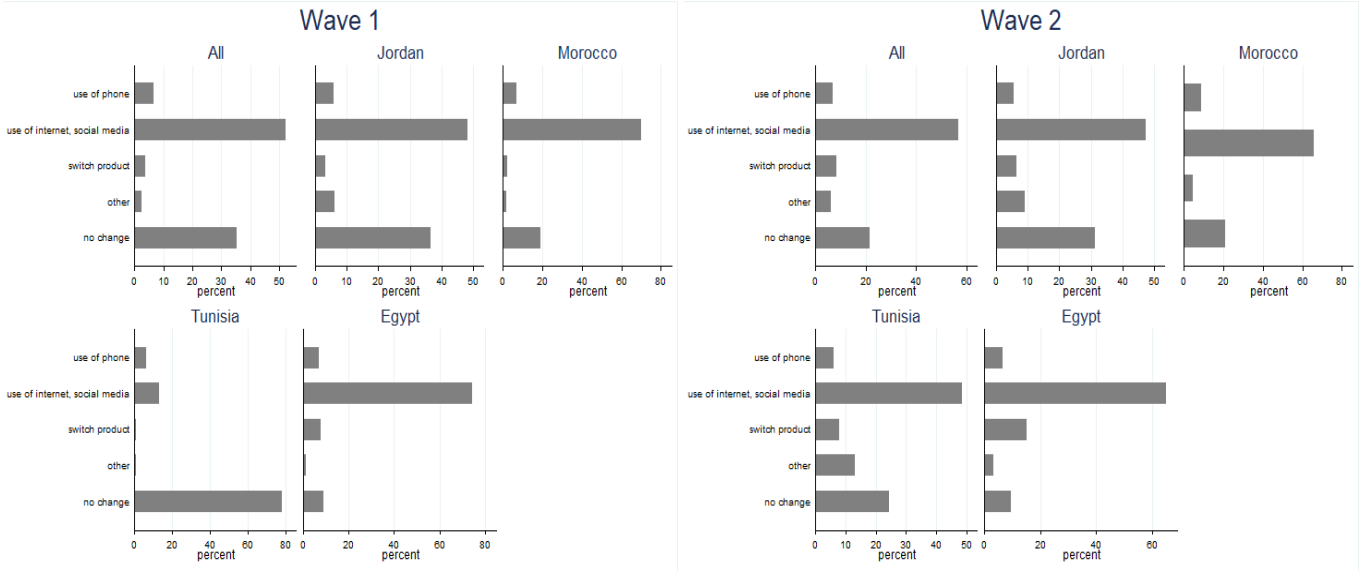
We know that firms adapt to the changing business environment. The survey posits the question as to how businesses adapt to the challenges brought about by the pandemic. When asked how the firm adjusted its business model to deal with the rules of physical distancing dictated by the pandemic, around 52 and 57% of all firms in waves 1 and 2 respectively reported using mainly the internet or social media to make orders and stay in touch with their clientele (refer to Figure 4). This is higher in Morocco (70 and 66% respectively) and Egypt (74 and 65% respectively), but lower in Tunisia (13 and 49% respectively). Hence, wide internet availability in the four countries seems to have helped firms adjust to the negative shock. In the next section, we will move to estimate the effects of the pandemic on defined firm outcomes.

Figure 2. The type of difficulties faced by SMEs during the pandemic in the MENA region



Source: Author's own compilation based on data from the CCMMENT.

Figure 3. How do firms adapt to the pandemic?
Answers to the question 'Has your business adjusted its business model to reduce being directly in physical proximity with customers?'



Source: Author's own compilation based on data from the CCMMENT.

3. The Effects of Covid-19 on Firms in the MENA Region

Recall that the main purpose of this paper is to study the effects of the pandemic on firms in the MENA region. The survey design allows us to identify the effects of Covid-19 by comparing firm outcomes during the pandemic (waves 1 and 2) to the pre-pandemic period (Feb 2020). Since we have four countries in this study and we know the industries in which the firms operate, we use interactions to explore how the firm outcomes differ by country and industry, as well as firm size categories. To generate how the different firm outcomes behave in the pandemic versus the pre-pandemic periods, we estimate the following equation:

$$outcome_{ft} = \beta_0 + \sum_{t=1}^{2}(\beta_t\, wave_t) + \sum_{t=1}^{2}\gamma_t\left(wave_t * X_{(c|i|s)}\right) + \alpha_f + \epsilon_{ft} \qquad (1)$$

In Equation 1, the dependent variable outcomeft is the firm outcome of firm f in wave t. On the right hand side, wave is an independent dummy variable which takes the value of one for the respective data wave (we have two waves). The same variable will also be interacted with firm size, country or industry indicators (the variable X) to capture the average differential effects of the pandemic in each wave on the different size categories (subscript s), the four countries (subscript c), and the separate industries (subscript i). We include a set of firm fixed effects because this allows us to control for non-observable and time non-varying firm characteristics. Conveniently, this also allows us to remove the level coefficients of the indicators of the firm size categories, countries, and/or industries (since these

are perfectly collinear with the firm fixed effects) and focus on the coefficients of the interacted terms. We cluster standard errors by the firm. The nature of this estimation will capture the average change to the outcome variable in the pandemic period (either waves 1 or 2) compared to the pre-pandemic period. The coefficients of the interacted terms allow us to explore heterogeneity in the results. Namely, the estimated coefficients γ_t of the interacted terms will capture the differential average change in the outcome variable in the firm size category, country or industry relative to a reference group to be defined later. The outcome variables that we obtain from the survey are: the size of the workforce, the proportion of the workforce that experience wage or work hours reduction, expected layoffs, business closures, firm capacity to adapt, sales and investment. In subsequent estimations, we focus on two aspects that are important to the Covid-19 crisis and these are remote work and government intervention and then explore whether international trade may have acted as a shock absorber.

3.1. Labor effects

We start our estimations with the effects of Covid-19 on the firm workforce. In Table 2, we present the results of estimating equation 1 where the dependent variable is the log firm workforce size. The (natural) log of the firm workforce is taken to estimate the percentage change of the workforce (elasticity) relative to the baseline which is pre-pandemic (Feb 2020). Note that the coefficients of the two waves are juxtaposed for ease of exposition but these are born out of the same regression. The interacted terms are introduced in different columns. As mentioned earlier, the coefficients of the variables 'wave 1' and 'wave 2' will pick up the effect in the reference groups in the regressions with interaction terms. The reference groups are Jordan in the case of countries, the smallest firms (<10 workers) in the case of firm size indicators, and 'agriculture, fishing, and mining' in the case of industry interaction terms. The results suggest the following. The firm workforce shrinks by 2.7% on average in wave 1 compared to pre-pandemic levels (baseline) with the coefficient being significant at the 10% significance level, but there is no statistically significant difference between the workforce in wave 2 and the baseline (columns 1). There is no statistically significant differences between the different firm size categories in either wave (columns 2). There is, however, some heterogeneity when it comes to countries. In the first wave, the firm workforce drops on average 5.2% in Jordan (the reference country picked up by the 'wave' coefficient) but increases by 4.2% in Tunisia (0.094-0.052) and is not statistically different in Morocco and Egypt from that in Jordan. In the second wave, the average Jordanian workforce is back to where it was pre-pandemic, but increases by 10% in Morocco and remains 6.8% lower in Egypt, whereas the coefficient is positive and similar in magnitude to the effect in wave 1 but becomes statistically insignificant for Tunisia, all being relative to Jordan. Hence, Tunisian workforce is on average not affected in terms of employment - it actually increases initially, and Moroccan workforce seems to have rebounded the fastest in wave 2, whereas Egyptian workforce is still impacted negatively in wave 2. Finally, when it comes to industry, the only statistically significant coefficient estimated is that of the health sector in wave 1, suggesting the sector expanded initially, which makes sense given the health nature of the crisis.

Table 2. Effects of Covid-19 on the log of firm labor. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	-0.027*	0.010	-0.052*	-0.231	0.018	0.044	-0.000	-0.241
	(0.016)	(0.024)	(0.028)	(0.176)	(0.013)	(0.028)	(0.020)	(0.244)
Morocco			0.020				0.099***	
			(0.048)				(0.028)	
Tunisia			0.094**				0.045	
			(0.046)				(0.044)	
Egypt			-0.013				-0.068**	
			(0.033)				(0.034)	
10-24		-0.049				-0.024		
		(0.032)				(0.033)		
25-49		-0.102				-0.041		
		(0.064)				(0.036)		
50+		-0.005				-0.059		
		(0.035)				(0.055)		
Manuf				0.260				0.297
				(0.180)				(0.245)
Constr				0.188				0.237
				(0.181)				(0.246)
Retail				0.203				0.259
				(0.178)				(0.244)
Transp				-0.037				0.213
				(0.278)				(0.254)
Accom. & food				0.194				0.288
				(0.178)				(0.245)
ICT				0.199				0.289
				(0.194)				(0.247)
Financial				0.241				0.191
				(0.180)				(0.263)
Educ				0.256				0.316
				(0.177)				(0.245)
Health				0.359**				0.315
				(0.183)				(0.248)
Other serv				0.220				0.178
				(0.184)				(0.264)
Constant	2.863***	2.863***	4.733	4.733	2.863***	2.863***	4.733	4.733
	(0.007)	(0.007)	(0.000)	(0.000)	(0.007)	(0.007)	(0.000)	(0.000)
Number obs.	7,057	7,057	7,057	7,057	7,057	7,057	7,057	7,057
N firms	3,219	3,219	3,219	3,219	3,219	3,219	3,219	3,219
R^2	0.00	0.00	0.01	0.01	0.00	0.00	0.01	0.01

While the size of the workforce is informative about the effects of the pandemic on the firm workforce, we may be missing other labor force outcomes such as wages. To explore this further, we use information from the survey on the number of workers that experience reductions in wages or work hours during the pandemic. Subsequently, we estimate equation 1 where the dependent variable is the percentage of the workforce that experience wage or hours reductions. The results of these estimations are presented in Tables 3 and 4. We find that up to 8.3 and 1.9 percent of the firm workforce on average face wage reductions in waves 1 and 2 respectively (columns 1). The share of the workforce that face wage reductions is significantly lower in the largest firms (at 10% significance level) in wave 2 only (columns 2). In addition, Tunisian workers experience significantly less wage reductions in wave 1 relative to the reference country (Jordan). Furthermore, the wage reductions are significantly larger in all industries than the reference industry, with the highest coefficients being estimated for 'education' and 'accommodation & food services'. We observe a significant improvement in wave 2 of the survey where the proportion of workers that experience wage reductions drops significantly and becomes even lower for the largest firms, countries converge, and most industries work away their wage reductions with the exception of accommodation and food services, other services, and

manufacturing. Similar patterns are largely found when the dependent variable is the share of workers who experience reduction in work hours. Two lessons can be drawn from these results: (1) while there is little evidence that firms reduce their workforce in the wake of the pandemic, firms resorted to wage and work hours reductions to deal with the negative consequences of the crisis; (2) there is clear improvement in the second quarter of 2021 (wave 2) compared to the first quarter (wave 1), which mirrors the recovery phase that is observed worldwide in the same period.

Table 3. Effects of Covid-19 on the percentage of firm workers with wages reduced. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	0.083***	0.093***	0.112***	0.002	0.019***	0.023***	0.027***	0.000
	(0.006)	(0.012)	(0.013)	(0.002)	(0.003)	(0.007)	(0.008)	(0.000)
Morocco			-0.009				-0.011	
			(0.019)				(0.010)	
Tunisia			-0.091***				-0.011	
			(0.015)				(0.010)	
Egypt			-0.020				-0.004	
			(0.017)				(0.010)	
10-24		-0.012				0.000		
		(0.015)				(0.009)		
25-49		-0.005				-0.000		
		(0.018)				(0.010)		
50+		-0.022				-0.017*		
		(0.018)				(0.009)		
Manuf				0.060***				0.012**
				(0.014)				(0.005)
Constr				0.066***				0.015
				(0.016)				(0.012)
Retail				0.077***				0.004
				(0.011)				(0.006)
Transp				0.087***				0.017
				(0.031)				(0.019)
Accom. & food				0.136***				0.051***
				(0.019)				(0.010)
ICT				0.048**				0.013*
				(0.019)				(0.008)
Financial				0.052**				0.011
				(0.021)				(0.015)
Educ				0.151***				0.005
				(0.034)				(0.015)
Health				0.092*				-0.003
				(0.047)				(0.032)
Other serv				0.046***				0.034**
				(0.015)				(0.014)
Number obs.	7,057	7,057	7,057	7,057	7,057	7,057	7,057	7,057
N firms	3,219	3,219	3,219	3,219	3,219	3,219	3,219	3,219
R^2	0.08	0.08	0.10	0.10	0.08	0.08	0.10	0.10

Table 4. Effects of Covid-19 on the percentage of firm workers with work hours reduced. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	0.156***	0.155***	0.140***	0.111***	0.054***	0.066***	0.088***	0.010
	(0.008)	(0.015)	(0.014)	(0.042)	(0.005)	(0.011)	(0.012)	(0.016)
Morocco			0.052**				-0.057***	
			(0.023)				(0.015)	
Tunisia			-0.101***				-0.049***	
			(0.018)				(0.014)	
Egypt			0.112***				-0.033**	
			(0.022)				(0.015)	
10-24		-0.007				-0.008		
		(0.019)				(0.013)		
25-49		0.027				-0.005		
		(0.025)				(0.017)		
50+		-0.004				-0.048***		
		(0.026)				(0.014)		
Manuf				0.033				0.038*
				(0.047)				(0.019)
Constr				0.038				0.030
				(0.049)				(0.023)
Retail				0.066				0.039**
				(0.045)				(0.020)
Transp				-0.001				0.043
				(0.055)				(0.034)
Accom. & food				0.090*				0.075***
				(0.048)				(0.021)
ICT				0.034				0.047**
				(0.053)				(0.024)
Financial				-0.008				0.047
				(0.052)				(0.032)
Educ				0.052				0.026
				(0.053)				(0.023)
Health				0.011				0.027
				(0.056)				(0.028)
Other serv				0.005				0.043*
				(0.050)				(0.026)
Number obs.	7,057	7,057	7,057	7,057	7,057	7,057	7,057	7,057
N firms	3,219	3,219	3,219	3,219	3,219	3,219	3,219	3,219
R^2	0.15	0.15	0.19	0.16	0.15	0.15	0.19	0.16

The improving picture in wave 2 of the survey is also evident from exploring the firm prospects for layoffs and wage reductions. In the survey, the firms were asked to report on the number of workers they expect to lay off or reduce their wages in the next 6 months. We convert these numbers to shares of the workforce and estimate the same regressions as before. If the prospects of layoff and wage reductions are taken to proxy for the firms' sentiment and uncertainty perception, the picture that emerges supports the hypothesis that these have improved remarkably in wave 2 compared to wave 1. Interestingly, Tunisian firms (wave 1) as well as the largest firms (50+ workers in wave 2) seem to expect the least negative outcomes for their workforce, something we observe in the previous results as well.[2]

[2] These results are not included in the paper to maintain brevity and can be obtained from the author upon request.

3.2. Firm closures

The survey allows us to look at other firm outcomes. The first outcome that we explore is firm (temporary) closure. The firms are asked to report on the status of their business at the time of the survey. From the answers, we generate a dummy variable that takes the value of 1 if the firm is temporarily or permanently closed at the time of the interview and estimate equation 1 with this dummy variable as the outcome variable. The results of these estimations are presented in Table 5. The interpretation of the estimated coefficients becomes in terms of the share of firms that are closed or the likelihood that a firm closes. It is important to note that while there are a few firms that report being permanently closed, firms that have exited the market are naturally less likely to respond to the survey. We estimate that around 9 and 7 percent of all firms are closed in waves 1 and 2 respectively. This share is highest for the smallest firms (12% and 10% in waves 1 and 2 respectively), whereas this share is 5% lower than the smallest firms for firms between 24-49 workers in wave 1, and 8.4% and 6.6% lower for the largest firms (50+ workers) in waves 1 and 2 respectively. This suggests that the larger firms were less likely to close shop in the wake of the pandemic. In terms of countries, the share of firms that closed is highest in Jordan and Egypt (10.5 and 10% in the two waves respectively), and lower in Morocco (by 3.5 and 7% in waves 1 and 2 respectively relative to Jordan) and Tunisia (by 4 and 6.6% in waves 1 and 2 respectively). With respect to sectors, the highest share of closures is estimated for the reference industry (agriculture, fishing, and mining) and accommodation and food service in wave 1, whereas all other industries, have significantly lower shares of closures relative to the reference industry, with the lowest being recorded in the education sector. In wave 2, the shares of closures are not statistically different across the industries from the reference industry (around 7%). Therefore, once again, we learn that larger firms are less likely to close (temporarily) and we observe the least negative outcomes in terms of firm closures for Tunisian and Moroccan firms, whereas accommodation and food services along with agriculture, mining, and fishing are most likely to close down, reflecting the importance of human interaction in these sectors. Hence, if firm closure is a measure of resilience, the larger firms are significantly most resilient, and it seems that the industries that require human physical interaction are the least resilient (agriculture, fishing, and mining and accommodation and food services).

Table 5. Covid-19 and the percentage of businesses that had to close permanently or temporarily. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	0.088***	0.119***	0.105***	0.247***	0.072***	0.099***	0.100***	0.074*
	(0.007)	(0.015)	(0.014)	(0.070)	(0.006)	(0.015)	(0.014)	(0.041)
Morocco			-0.035*				-0.071***	
			(0.019)				(0.016)	
Tunisia			-0.039**				-0.066***	
			(0.020)				(0.016)	
Egypt			0.010				0.027	
			(0.020)				(0.022)	
10-24		-0.025				-0.029		
		(0.019)				(0.018)		
25-49		-0.051**				-0.026		
		(0.021)				(0.021)		
50+		-0.084***				-0.066***		
		(0.019)				(0.018)		
Manuf				-0.171**				-0.011
				(0.072)				(0.043)
Constr				-0.191***				-0.028
				(0.072)				(0.045)
Retail				-0.183**				0.001
				(0.071)				(0.043)
Transp				-0.204***				0.071
				(0.075)				(0.060)
Accom. & food				-0.048				0.027
				(0.074)				(0.046)
ICT				-0.169**				-0.004
				(0.077)				(0.047)
Financial				-0.194***				-0.007
				(0.074)				(0.048)
Educ				-0.232***				-0.035
				(0.071)				(0.047)
Health				-0.172**				-0.036
				(0.079)				(0.047)
Other serv				-0.169**				-0.025
				(0.074)				(0.047)
Number obs.	7,266	7,124	7,266	7,266	7,266	7,124	7,266	7,266
N firms	3,288	3,219	3,288	3,288	3,288	3,219	3,288	3,288
R^2	0.07	0.08	0.08	0.09	0.07	0.08	0.08	0.09

3.3. Adjustment and adaptation

We explored firm adaptation briefly in section 3.1. However, we are also interested in firm adaptation as an outcome variable because it indicates the capacity of firms to adapt to external stresses, and therefore, improves its resilience. We create a dummy variable which takes the value of 1 if the firm adjusts its business model to adapt to the new situation dictated by the pandemic (physical distancing, lock-downs, etc…). The results for this outcome are presented in Table 6. We calculate that 65 and 78% of all firms adapt their business model in the wake of the pandemic in waves 1 and 2 respectively. This share is highest for larger firms relative to the smallest ones, especially in wave 1. Tunisian firms adapt the least in wave 1 relative to the reference country Jordan; this share is 42% lower in Tunisia relative to Jordan where the share is around 64%. The shares of Tunisian firms that adapt converges, however, to that of the other countries in wave 2. Egyptian firms are the most likely to adapt their business models in both waves - more than 90% of Egyptian firms choose to adapt their businesses. Finally, the sectors that are most likely to adapt are education (89%), financial services (77%), and ICT (76%) in wave 1. There is convergence in wave 2 where the shares of firms adapting are statistically similar in all sectors to the reference sector except for education, which remains the sector

with the highest share of firms adapting (94%). Therefore, we learn that the majority of SMEs choose to adapt their business models to adjust to the shock, and there is convergence in the shares of firms adapting across size categories and sectors in wave 2. Their ability to adapt to this particular shock is enhanced by the wide availability of the internet in the sample countries as reflected by our analysis in section 3.1.

Table 6. Covid-19 and the percentage of businesses that adapt their business processes in the wake of the pandemic. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	0.649***	0.566***	0.638***	0.476***	0.781***	0.753***	0.679***	0.749***
	(0.012)	(0.024)	(0.022)	(0.075)	(0.010)	(0.021)	(0.022)	(0.073)
Morocco			0.161***				0.110***	
			(0.030)				(0.029)	
Tunisia			-0.424***				0.081***	
			(0.031)				(0.030)	
Egypt			0.269***				0.225***	
			(0.026)				(0.028)	
10-24		0.115***				0.021		
		(0.030)				(0.027)		
25-49		0.170***				0.069**		
		(0.034)				(0.030)		
50+		0.078**				0.049		
		(0.038)				(0.031)		
Manuf				0.003				0.009
				(0.082)				(0.077)
Constr				0.141*				0.042
				(0.082)				(0.079)
Retail				0.169**				0.001
				(0.079)				(0.076)
Transp				0.199**				0.003
				(0.094)				(0.091)
Accom. & food				0.225***				0.020
				(0.079)				(0.078)
ICT				0.286***				0.115
				(0.091)				(0.080)
Financial				0.293***				0.028
				(0.091)				(0.085)
Educ				0.413***				0.186**
				(0.081)				(0.078)
Health				0.107				-0.003
				(0.107)				(0.094)
Other serv				0.172**				0.067
				(0.086)				(0.080)
Number obs.	7,266	7,124	7,266	7,266	7,266	7,124	7,266	7,266
N firms	3,288	3,219	3,288	3,288	3,288	3,219	3,288	3,288
R^2	0.69	0.69	0.74	0.70	0.69	0.69	0.74	0.70

3.4. Sales and Investments

The last two firm outcome variables that we consider are sales and investments. These two variables report the expected change in sales or investment over 2021 compared to 2019. We present the results for these outcomes in Tables 7 and 8. Lessons learned from these estimations can be summarized as follows. On average, the firms expect a drop of one third in their revenues in 2021 compared to 2019 according to wave 1, but this shrinks to 17% only in wave 2. This is clear evidence that firms are experiencing a recovery in their businesses in Q2 2021. The largest firms (50+) expect the least sales

losses in both waves. Jordanian and Moroccan firms report on average the worst expected sales losses in wave 1, but Moroccan firms experience the best recovery in wave 2. In fact, if we add up the estimated coefficients for Morocco and the reference country Jordan in wave 2 (column 3), then Moroccan firms expect to be back to sales levels that are very close to 2019 levels in 2021. Tunisian firms report on average the least expected losses in Q1 but this worsens slightly in Q2 2021, possibly reflecting a deadly wave of Covid-19 infections that was sweeping across the country at the end of Q2. 3 Finally, the sectors that expect the highest revenue losses in wave 1 are the accommodation and food (55% loss) and transport (44% loss) sectors. In wave 2, the differences across the sectors disappear. Largely identical patterns can be seen in investments.

Table 7. Covid-19 and the effects on firm sales expectations for 2021 compared to 2019 levels. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	-33.277***	-35.201***	-36.091***	-23.204***	-17.165***	-19.944***	-26.278***	-18.724***
	(0.939)	(1.809)	(1.753)	(6.021)	(0.961)	(1.909)	(1.789)	(4.587)
Morocco			-15.087***				24.537***	
			(2.477)				(2.620)	
Tunisia			17.575***				2.490	
			(2.409)				(2.345)	
Egypt			10.694***				10.393***	
			(2.508)				(2.795)	
10-24		-1.932				1.557		
		(2.341)				(2.520)		
25-49		4.152				2.810		
		(2.728)				(2.821)		
50+		12.695***				9.565***		
		(3.138)				(2.972)		
Manuf				-3.382				-1.444
				(6.479)				(4.955)
Constr				-9.098				0.948
				(6.546)				(6.006)
Retail				-4.397				5.003
				(6.275)				(4.889)
Transp				-20.352***				-2.955
				(7.139)				(6.816)
Accom. & food				-31.774***				-4.978
				(6.501)				(5.436)
ICT				2.321				5.587
				(7.092)				(5.510)
Financial				5.627				4.849
				(7.456)				(5.667)
Educ				-18.744***				8.178
				(6.768)				(6.070)
Health				-12.962*				-0.334
				(7.314)				(6.178)
Other serv				-3.069				8.058
				(6.800)				(5.749)
Number obs.	7,036	6,910	7,036	7,036	7,036	6,910	7,036	7,036
N firms	3,288	3,219	3,288	3,288	3,288	3,219	3,288	3,288
R^2	0.30	0.31	0.37	0.34	0.30	0.31	0.37	0.34

Table 8. Covid-19 and the effects on firm sales expectations for 2021 compared to 2019 levels. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	wave 1				wave 2			
	(1)	(2)	(3)	(4)	(1)	(2)	(3)	(4)
wave	-16.134***	-19.546***	-15.386***	-6.907*	-8.348***	-10.313***	-10.066***	-7.373**
	(0.650)	(1.353)	(1.340)	(3.601)	(0.592)	(1.141)	(1.302)	(3.014)
Morocco			-12.304***				3.525**	
			(1.951)				(1.706)	
Tunisia			7.535***				-1.717	
			(1.787)				(1.665)	
Egypt			3.092*				4.677**	
			(1.718)				(1.826)	
10-24		1.360				1.692		
		(1.735)				(1.529)		
25-49		4.961**				2.398		
		(1.949)				(1.787)		
50+		10.753***				6.273***		
		(1.934)				(1.667)		
Manuf				-4.449				-1.700
				(3.880)				(3.286)
Constr				-9.800**				-1.126
				(4.096)				(3.495)
Retail				-8.088**				1.278
				(3.816)				(3.171)
Transp				-10.150**				-2.490
				(4.547)				(4.036)
Accom. & food				-17.312***				-5.404
				(4.092)				(3.593)
ICT				2.060				-1.877
				(4.229)				(3.780)
Financial				-0.257				0.621
				(4.163)				(3.783)
Educ				-21.781***				1.777
				(4.487)				(3.954)
Health				0.765				0.366
				(4.773)				(4.084)
Other serv				-14.525***				1.083
				(4.422)				(3.693)
Number obs.	9,628	9,439	9,628	9,628	9,628	9,439	9,628	9,628
N firms	3,288	3,219	3,288	3,288	3,288	3,219	3,288	3,288
R^2	0.09	0.10	0.12	0.11	0.09	0.10	0.12	0.11

4. Remote Work, Government Assistance Programs, and the Role of International Trade

4.1. Remote work

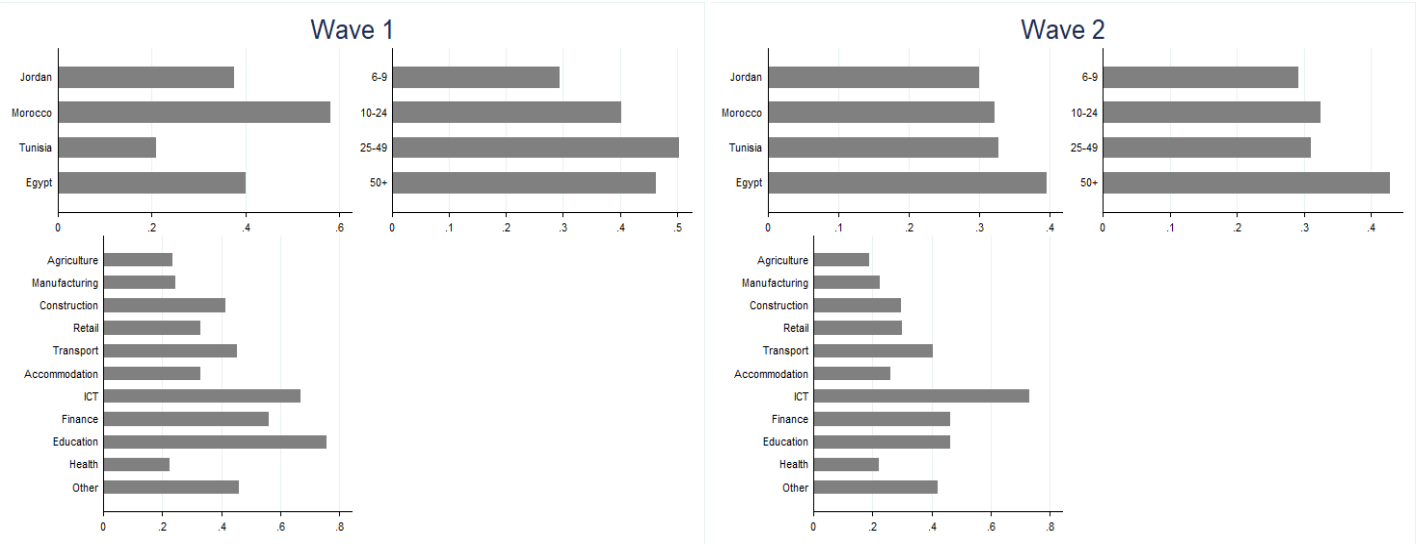
One of the hallmarks of the Covid-19 crisis is the move to work remotely. This is made possible by the strides made in technical advances in ICT. MENA countries do not enjoy similar levels of communication infrastructure but most countries in the region have capacity to allow some workers to work remotely given the wide availability of internet in these countries. The survey asks the firms whether any of their workers worked remotely in the 60 days preceding the interview. We use this information to create a dummy variable 'remote' that takes the variable of 1 when the firm was able to operate (partially) remotely as measured in waves 1 and 2. We summarize the share of SMEs that

choose some remote work across the firm size categories, countries, and sectors in figure 5. Overall, we observe that around 39% of all firms moved some of their workers to work remotely in wave 1 and this share drops to around 34% in wave 2. The highest share belongs to Morocco (58%) in wave 1 and Egypt (40%) in wave 2. In terms of firm size, the second largest size group (25-49 workers) has the highest shares of firms working remotely in both waves. Furthermore, one would expect the sectors that require physical presence such as manufacturing or health to have lower shares of firms allowing some of their workers to work remotely. This is exactly what we encounter in the data where the sectors with the highest shares of firms allowing remote work are education, ICT, and financial services while the lowest shares belong to health, manufacturing, and agriculture. Finally, and on this topic, the survey asks the firms that were able to transition to some form of remote work about the most significant difficulties attributed to remote work. This question was asked to firms that could (partially) operate remotely only, regardless of whether they chose to or not. Figure 6 shows the options that were given to the firms and the frequency of the recorded answers. Difficulty to monitor work is the most frequently mentioned difficulty followed by poor internet quality and this applies to all four countries consistently with a few exceptions.

One expects that firms that are able to (partially) operate remotely may have had different outcomes than firms that are not. This is because these firms may have been able to circumvent some of the negative effects of lock downs and physical distancing. We explore this by adding to the RHS of equation 1 an interaction of the wave dummy variable and the dummy variable 'remote', which indicates whether a firm operated (partially) during the pandemic. We estimate the following equation:

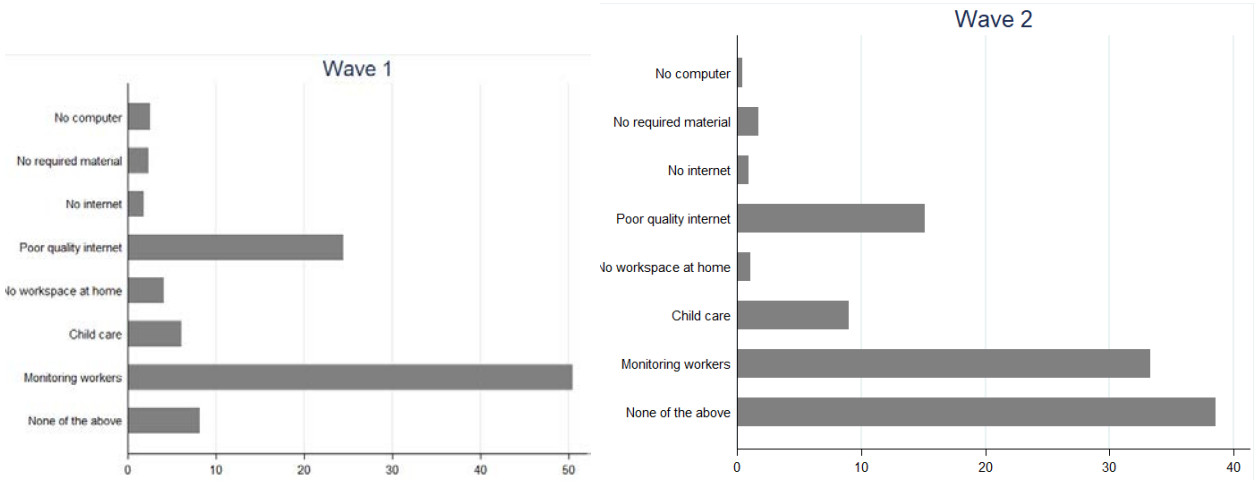
$$outcome_{ft} = \beta_0 + \sum_{t=1}^{2}(\beta_t\, wave_t) + \sum_{t=1}^{2}\gamma_t\left(wave_t * remote_{ft}\right) + \alpha_f + \epsilon_{ft} \qquad (1)$$

Figure 4. The distribution of firms with some or all workers working remotely across the four countries, firm size categories, and industries



Source: Author's own compilation based on data from the CCMMENT.

Figure 5. Difficulties faced by firms that choose for (partial) remote work. Does not include firms that stated that remote work was not at all possible.



Source: Author's own compilation based on data from the CCMMENT.

Introducing the interaction term renders equation 2 a difference-in-difference equation where the estimate of the coefficient γ measures the differential effect of the pandemic on the firms operating remotely relative to those that do not. The outcomes variables in this estimation are similar to those captured in the previous estimations. The results of the estimation are presented in Table 9. The coefficients in the table capture the change in the outcome variable relative to the baseline scenario (Feb 2020) in the two waves whereas the coefficients of the interacted terms capture the differential change relative to the respective wave coefficient. We find that firms that operated partially remotely had a higher share of their workforce that experienced reductions in wages and work hours in wave 1 only relative to the non-remote firms. On the other hand, these firms were less likely to close temporarily or permanently in wave 2 relative to their non-remote counterparts. In addition, they are significantly more likely to adapt their business models in both waves. Finally, with respect to sales and investment, the picture that emerges is mixed. The firms that operate remotely anticipate worse sales and investments for 2021 in wave 1, but better outcomes in wave 2 compared to 2019 sales and investment levels. Hence, the firm's capacity to operate remotely seems to safeguard the firm at least against closure, and these firms are more adaptable to the shock. These results may be of relevance to policy makers as they suggest that if policy makers take away some of the barriers that prevent firms from operating partially remotely, this could mitigate the effects of the crisis on the firms and their workforce.

Table 9. Covid-19 and remote work.
The differential effects of firms that operated partially remotely on firm outcomes.
Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	Total workers	Wages reduced	Hrs reduced	Layoffs	Closure	Adapt	Sales	Inv
wave 1	-0.047*	0.069***	0.126***	0.128***	0.103***	0.537***	-32.356***	-25.165***
	(0.024)	(0.007)	(0.010)	(0.009)	(0.010)	(0.016)	(1.200)	(1.259)
wave 2	0.012	0.020***	0.055***	0.121***	0.088***	0.733***	-19.712***	-17.535***
	(0.018)	(0.004)	(0.006)	(0.008)	(0.008)	(0.013)	(1.181)	(1.193)
remote*wave 1	0.034	0.038**	0.078***	-0.020	0.010	0.133***	-10.302***	-11.113***
	(0.030)	(0.015)	(0.021)	(0.019)	(0.019)	(0.030)	(2.724)	(2.787)
remote*wave 2	0.017	-0.003	-0.002	-0.006	-0.046***	0.146***	7.668***	6.217***
	(0.023)	(0.008)	(0.011)	(0.014)	(0.012)	(0.019)	(2.011)	(2.015)
Number obs.	7,057	7,057	7,057	6,730	7,266	7,266	7,036	7,030
N firms	3,219	3,219	3,219	3,219	3,288	3,288	3,288	3,288
R^2	0.00	0.09	0.16	0.15	0.07	0.70	0.31	0.23

4.2. The Role of Government

It is indisputable that the role of governments is crucial in time of crises such as the one at hand. However, governments in the MENA countries may not have the same tools and resources as their counterparts in North America or Western Europe. In addition, trust in the government in the MENA region may be low in many countries. This would diminish the effectiveness of any government assistance programs in the wake of the pandemic. The survey gauges participation in and sentiment to government assistance programs. Table 10 lists the types of government programs and the distribution of firms that choose the different programs, if any. When asked whether they participated in a government assistance program and the type of program, around 60% of all firms reported they did not participate in any such programs in both waves 1 and 2. The highest level of participation is in Tunisia (around 48 and 59% in waves 1 and 2 respectively), whereas Jordan, Morocco, and Egypt have roughly similar but much lower levels of participation. The most frequent types of government assistance programs are business loans, partial or total salary subsidies, and delays in paying social security. For those who did not participate in any government assistance programs, when asked for the reasons for not participating (refer to Table 11), the most frequent answer is 'no such programs exists' (44% of all firms chose this option), although one of the options given is 'not aware of any such programs'. This probably highlights the lack of trust in governments in these countries. The share of firms that chose this option is a staggering 67% in Morocco in wave 1. Other popular reasons given are not being aware of any such programs, bureaucracy and avoidance of interaction, and the uncertainty in getting the assistance if applied. By just looking at these statistics, one concludes that there is room for improvement in the implementation of the government assistance programs and how these are communicated to SMEs in the MENA countries. Governments needs to communicate their assistance programs more effectively and reach out to SMEs in order to inform them of their options and assure them of their intentions.

Table 10. Participation in government assistance programs

Size	All	Jordan	Wave 1 Morocco	Tunisia	Egypt	All	Jordan	Wave 2 Morocco	Tunisia	Egypt
Loan payment deferrals	2.73	3.21	0.84	1.56	5.23	2.92	2.35	1.45	4.03	3.84
Partial or total salary subsidies	8.31	2.69	7.99	21.44	1.72	4.26	7.16	3.41	5.36	1.1
Cash transfers of unemployment benefits	0.94	0.33	0	2.36	1.12	2.93	0	0.66	9.87	1.21
Rental or utilities subsidies or deferrals	1.39	1.89	0.09	2.1	1.52	1.57	1.09	1.16	2.07	1.97
Subsidies (products/inputs/services)	1.28	2.02	0.85	0.9	1.35	1.33	0.61	1.06	1.31	2.34
Reduction or delay in taxes	3.21	1.82	1.32	3.99	5.75	4.59	2.15	5.72	5.97	4.52
Delays in paying social security	8.41	17.14	1.19	7.5	7.76	13.96	16.09	5.44	23.72	10.63
Not participated	60.89	59.14	67.28	51.71	65.02	59.43	63.81	66.76	41.32	65.79

Note: All numbers are percentages. Author's own compilation based on data from the CCMMENT.

Table 11. Reasons given for not participating in government assistance programs. Only firms that did not participate in any government assistance programs.

Size	All	Jordan	Wave 1 Morocco	Tunisia	Egypt	All	Jordan	Wave 2 Morocco	Tunisia	Egypt
Not aware of any such programs	22.8	14.09	18.94	1.74	50.7	21.33	16.85	25.45	15.02	25.42
It requires internet/smart phone	0.17	0	0	0.81	0	0.28	0	0	0	1.01
Even if I apply, I don't think I will get it	9.89	15.59	5.99	10.4	8.34	11.95	14.7	8.69	21.91	6.36
I will need to pay a bribe to apply	0.82	1.49	0	1.36	0.66	1.02	1.97	0.31	1.6	0.43
Bureaucracy/avoidance of interaction	6.96	5.77	0.43	18.83	5.79	8.31	7.94	1.47	12.44	13.01
Not eligible	9.04	18.03	3.26	10.83	5.49	8.48	10.43	2.92	10.11	11.2
Other	6.08	8.38	4.01	4.98	6.97	14.13	19.6	0.83	14.19	22.29
No such programs	44.23	36.65	67.37	51.05	22.06	34.51	28.49	60.32	24.73	20.28

Note: All numbers are percentages. Author's own compilation based on data from the CCMMENT.

Did the firms that applied and received government assistance fare any better than the ones that did not? To answer this question, we estimate a difference-in-difference equation similar to 2 with the replacement of the indicator 'remote' with one that measures whether the firm received government assistance or not. The results are presented in Table 12. We find that participating in a government assistance program reduces the likelihood of closures in wave 2 by 2.5% relative to the firms that do not receive any government assistance. On the other hand, these firms expect lower sales and investments in wave 2 relative to their non-participating counterparts. Naturally, the choice of participating in a government assistance program may be endogenous in that it is the firms with the worst outcomes that may be applying for such programs. It is also possible that the outcomes of such firms could have been worse had it not been for government assistance, something that is difficult to discern. The economics literature has dealt with endogeneity in several ways. One technique that best suits the data we have at hand is propensity score matching that was first proposed by Rosenbaum and Rubin 1983. The idea is to match firms on similar characteristics except for the endogenous variable (government assistance). Propensity score matching can be implemented using the psmatch2 command in STATA (Leuven and Sianesi 2018). The covariates we use to produce the match the firms are firm size, industry, export status, import status, and foreign ownership status. We then estimate the same regressions as above while comparing matched firms that receive government assistance with those that did not. The results suggest that outcomes of firms that received government assistance do not differ statistically in any way from outcomes of firms that did not receive government assistance. The results from the matching exercise can be obtained from the authors upon request. This finding is very similar to that in Guerrero-Amezaga et al. 2022 who find that small firms in Latin America did not benefit from government assistance programs. This may suggest that, while government assistance did not improve firm outcomes, it may have stopped them from being much worse.

Table 12. Covid-19 and government intervention. The differential effects of firms that received government assistance on firm outcomes. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	Total workers	**Wages reduced**	**Hrs reduced**	**Layoffs**	**Closure**	**Adapt**	**Sales**	**Inv**
wave 1	-0.024	0.079***	0.159***	0.098***	0.088***	0.665***	-31.031***	-26.216***
	(0.022)	(0.008)	(0.011)	(0.008)	(0.009)	(0.015)	(1.236)	(1.243)
wave 2	0.011	0.016***	0.046***	0.100***	0.082***	0.764***	-14.577***	-13.422***
	(0.018)	(0.004)	(0.006)	(0.008)	(0.009)	(0.014)	(1.230)	(1.243)
gov*wave1	-0.026	0.003	-0.027	0.003	0.026	-0.082***	0.560	3.106
	(0.034)	(0.015)	(0.019)	(0.019)	(0.017)	(0.031)	(2.582)	(2.770)
gov*wave2	0.017	0.007	0.020*	0.046***	-0.025**	0.042**	-6.302***	-5.192***
	(0.024)	(0.008)	(0.011)	(0.014)	(0.012)	(0.020)	(1.955)	(1.960)
Number obs.	7,057	7,057	7,057	6,730	7,266	7,266	7,036	7,030
N firms	3,219	3,219	3,219	3,219	3,288	3,288	3,288	3,288
R^2	0.00	0.08	0.15	0.16	0.07	0.69	0.31	0.23

4.3. The Role of International Trade

International trade may expose firms to international demand and supply shocks. On the other hand, international trade may mitigate the effects on the firm of negative local demand and supply shocks through diversification of the customer and supplier bases. For example, if local demand and supply are relatively more affected by the pandemic in a given MENA country, firms that participate in international trade may be more resilient because they are less exposed to the local market than their local counterparts are. To explore this further, we compare firms that participate in international trade to those that don't (similar to what we did in equation 2). In the estimations, we replace the 'remote' variable with indicator variables that take the value of one if the firm is an exporter or importer in Feb 2020. Recall that the variables that capture whether the firm participates in international trade are non-contemporaneous and capture the firm export/import status pre- and post-pandemic. Therefore, the 'exporter' and 'importer' indicators will drop from the regressions because they are perfectly collinear with the firm dummies that are included in the estimations. We conduct this analysis for exporters and importers separately. The results are presented in Tables 13 and 14. We observe that international trade (exports and imports), clearly mitigates the effects of the pandemic on the firms that partake in international trade. For instance, exporting firms reduce wages and hours of work of significantly lower percentages of their workforce in both waves 1 and 2 compared to their non-trading counterparts. In addition, both exporting and importing firms are much less likely to face closures and face lower drops in sales and investments in one or both waves. Importing firms are also more likely to adapt their business models but this does not apply to exporting firms in the first wave. We know that in international trade, it is the larger and more productive firms that are more likely to be exporters and/or importers (Ghironi and Melits 2005). We also know that some firms are less likely to be exporters or importers due to the nature of their activities (think about the education or health sectors). However, recall, that in our estimations, we control for firm size and sector with firm fixed effects, which means that the results presented here apply while taking into account factors related to firm size and sector. Hence, participation in international trade clearly improves the resilience and adaptability of the firms in the face of extreme global shocks such as the Covid-19 pandemic. This is a new finding because the literature has often cited that international trade exposes the firm to global risks to a higher degree than firms that do not participate in international trade (Vannoorenberghe 2012, Kurz and Senses 2016). We argue that while initially, exporting and importing firms may be more exposed, these firms tend to do better once the external shock is internalized and leads to problems in local supply and demand. The rationale behind this is that importing and exporting firms have a more diverse set of suppliers and clients and can manage the crisis better as a result. This is also what Espitia et al. 2021 argue in their recent work on the effects Covid-19 on trade.

Table 13. Do exporters do better than non-exporters in the wake of the Covid-19. Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	Total workers	Wages reduced	Hrs reduced	Layoffs	Closure	Adapt	Sales	Inv
wave 1	-0.029*	0.090***	0.168***	0.125***	0.095***	0.662***	-34.505***	-28.028***
	(0.017)	(0.007)	(0.009)	(0.007)	(0.008)	(0.013)	(1.001)	(1.056)
wave 2	0.021	0.022***	0.059***	0.115***	0.076***	0.777***	-16.811***	-15.384***
	(0.013)	(0.004)	(0.006)	(0.007)	(0.007)	(0.011)	(1.077)	(1.062)
exporter*wave 1	0.010	-0.053***	-0.091***	-0.054***	-0.056***	-0.094***	9.812***	8.047***
	(0.042)	(0.013)	(0.018)	(0.017)	(0.015)	(0.036)	(2.822)	(2.912)
exporter*wave 2	-0.022	-0.021***	-0.032***	0.026	-0.025*	0.024	-2.248	-0.709
	(0.054)	(0.005)	(0.010)	(0.021)	(0.015)	(0.026)	(2.237)	(2.495)
Number obs.	7,057	7,057	7,057	6,730	7,266	7,266	7,036	7,030
N firms	3,219	3,219	3,219	3,219	3,288	3,288	3,288	3,288
R^2	0.00	0.09	0.15	0.15	0.07	0.69	0.30	0.23

Table 14. Do importers do better than non-importers in the wake of the Covid-19 Significance levels:* p < 0.1; ** p < 0.05; *** p < 0.01.

	Total workers	Wages reduced	Hrs reduced	Layoffs	Closure	Adapt	Sales	Inv
wave 1	-0.011	0.081***	0.156***	0.114***	0.101***	0.620***	-34.701***	-28.490***
	(0.013)	(0.007)	(0.009)	(0.008)	(0.009)	(0.014)	(1.104)	(1.150)
wave 2	0.024	0.024***	0.059***	0.119***	0.090***	0.765***	-18.099***	-16.837***
	(0.014)	(0.004)	(0.006)	(0.008)	(0.008)	(0.012)	(1.192)	(1.188)
importer*wave 1	-0.067	0.010	-0.001	0.013	-0.054***	0.120***	5.870***	6.047***
	(0.051)	(0.015)	(0.019)	(0.015)	(0.013)	(0.025)	(2.062)	(2.213)
importer*wave 2	-0.022	-0.020***	-0.018*	-0.002	-0.066***	0.062***	3.533*	5.025***
	(0.035)	(0.006)	(0.010)	(0.015)	(0.011)	(0.021)	(1.905)	(1.941)
Number obs.	7,057	7,057	7,057	6,730	7,266	7,266	7,036	7,030
N firms	3,219	3,219	3,219	3,219	3,288	3,288	3,288	3,288
R^2	0.00	0.08	0.15	0.15	0.08	0.69	0.30	0.23

5. Conclusion

Using a recent enterprises data from the MENA region, we find that SMEs were affected negatively by the Covid-19 pandemic. SMEs in four non-oil exporting MENA countries (Jordan, Morocco, Tunisia, and Egypt) are found to resort to wage and work hour reductions instead of layoffs in the wake of the pandemic. Many of them had to close (temporarily) following restrictions dictated by the health authorities. The majority of SMEs were able to adapt their business models to circumvent the restrictions, such as by using the internet and social media to reach customers and suppliers. These firms, however, expect significantly lower revenues and investments in 2021 compared to 2019 (pre-pandemic) levels. However, there is clear recovery in Q2 versus Q1 2021. Furthermore, within SMEs, larger firms are more resilient and more adaptable than smaller ones. The capacity to switch to a remote mode of work shields firms somewhat from closures due to lock-downs and restrictions while exposure to international trade makes the firms more resilient and adaptable to the shock.

The results highlighted in this paper have important policy implications that we summarize as follows. SMEs require active government assistance and guidance, especially the smallest of them. The government assistance program that may be of help to the firms is direct contribution to salaries (such as the furlough programs in many countries) given that a significant share of the workforce experienced wage and work hour reductions in the wake of the pandemic. Further research will be needed to advise governments on the best line of action. Most SMEs, however, seem to be unaware of any government assistance programs despite their existence. This suggests that governments need to communicate their programs more effectively, particularly with the most vulnerable firms. Since the smallest firms are clearly more affected by the pandemic, this can be extrapolated to suggest that SMEs may require separate policies and assistance programs to help them through extreme events. The fact that most firms adapted their business models by pivoting them towards digital platforms and social media suggests that there may be a role for the government in this arena. Policymakers may enhance this adaptation by providing better (and perhaps) cheaper internet to firm and employees. This is also motivated by our finding that moving to a remote mode of work shielded the firms from (temporary) closures and allowed them to adapt more often. Moreover, firms that were able to switch to remote mode (regardless of whether they chose to) indicated that the biggest difficulties they face are the difficulty to monitor workers and the poor quality of the internet. Hence, there is a clear role for policymakers in this regard. Policymakers could work with firms to devise methods of monitoring worker performance remotely, and as we mentioned earlier, improve the internet infrastructure and its availability. Finally, since international trade clearly increases resilience in the face of extreme events such as the Covid-19 pandemic, promoting international trade as in export promotion programs would be appropriate.

Bibliographie

Albuquerque, Rui, Yrjo Koskinen, Shuai Yang and Chendi Zhang (2020), *'Resiliency of Environmental and Social Stocks: An Analysis of the Exogenous COVID-19 Market Crash'. The Review of Corporate Finance Studies 9.3, pp. 593–621. doi: 10.1093/RCFS/CFAA011.*

Alstadsæter, Annette, Julie Brun Bjørkheim, Wojciech Kopczuk and Andreas Økland (2021), *'Norwegian And U.S. Policies Alleviate Business Vulnerability Due To The Covid-19 Shock Equally Well'. National Tax Journal 73.3, pp. 805–828. doi: 10.17310/NTJ.2020.3.08.*

Baum, Tom and Nguyen Thi Thanh Hai (2020), *'Hospitality, tourism, human rights and the impact of COVID-19'. International Journal of Contemporary Hospitality Management 32.7, pp. 2397–2407. doi: 10.1108/IJCHM-03-2020-0242.*

Borino, Floriana, Eric Carlson, Valentina Rollo and Olga Solleder (2021), *'International firms and COVID-19: Evidence from a global survey'. Covid Economics, p. 30.*

Branicki, Layla Jayne, Bridgette Sullivan-Taylor and Sarah Rachael Livschitz (2017), **'***How entrepreneurial resilience generates resilient SMEs'. International Journal of Entrepreneurial Behavior & Research 24.7, pp. 1244–1263. doi: 10.1108/IJEBR-11-2016-0396.*

Cowling, Marc, Weixi Liu and Ning Zhang (2017), *'Did firm age, experience, and access to finance count? SME performance after the global financial crisis'. Journal of Evolutionary Economics 28.1, pp. 77–100. doi: 10.1007/S00191-017-0502-Z.*

De Vries, HERB and MICHELLE Shields (2006), **'***Towards a theory of entrepreneurial resilience: A case study analysis of New Zealand SME owner operators*'**.** *New Zealand Journal of Applied Business Research 5.1, pp. 33–43.*

Didier, Tatiana, Federico Huneeus, Mauricio Larrain and Sergio L. Schmukler (2021), **'***Financing firms in hibernation during the COVID-19 pandemic'. Journal of Financial Stability 53, p. 100837. doi: 10.1016/J.JFS.2020.100837.*

Ding, Wenzhi, Ross Levine, Chen Lin and Wensi Xie (2021), *'Corporate immunity to the COVID-19 pandemic'. Journal of Financial Economics 141.2, pp. 802–830. doi: 10.1016/J.JFINECO.2021.03.005.*

Duarte Alonso, Abel, Seng Kiat Kok, Alessandro Bressan, Michelle O'Shea, Nikolaos Sakellarios, Alex Koresis, Maria Alejandra Buitrago Solis and Leonardo J. Santoni (2020), *'COVID- 19, aftermath, impacts, and hospitality firms: An international perspective'. International Journal of Hospitality Management 91, p.102654. doi: 10.1016/J.IJHM.2020.102654.*

Dube, Kaitano, Godwell Nhamo and David Chikodzi (2020), **'***COVID-19 cripples global restaurant and hospitality industry'. Current Issues in Tourism 24.11, pp. 1–4. doi: 10.1080/13683500.2020.1773416.*

Eggers, Fabian (2020), **'***Masters of disasters? Challenges and opportunities for SMEs in times of crisis'. Journal of Business Research 116, pp. 199–208. doi: 10.1016/J.JBUSRES.2020.05.025.*

Espitia, Alvaro, Aaditya Mattoo, Nadia Rocha, Michele Ruta and Deborah Winkler (2021), *'Pandemic trade: COVID-19, remote work and global value chains'. The World Economy. doi: 10.1111/TWEC.13117.*

Ghironi, Fabio and Marc J. Melits (2005), *'International Trade and Macroeconomic Dynamics with Heterogeneous Firms'. The Quarterly Journal of Economics 120.3, pp. 865–915. doi: 10.1093/QJE/120.3.865.*

Gössling, Stefan, Daniel Scott and C. Michael Hall (2020), *'Pandemics, tourism and global change: a rapid assessment of COVID-19'. Journal of Sustainable Tourism 29, pp. 1–20. doi: 10.1080/09669582.2020.1758708.*

Gu, Xin, Shan Ying, Weiqiang Zhang and Yewei Tao (2020), *'How Do Firms Respond to COVID-19? First Evidence from Suzhou, China'. Emerging Markets Finance and Trade 56, pp. 2181–2197. doi: 10.1080/1540496X.2020.1789455.*

Guerrero-Amezaga, Maria Elena, John Eric Humphries, Christopher A. Neilson, Naomi Shimberg and Gabriel Ulyssea (2022), *'Small firms and the pandemic: Evidence from Latin America'. Journal of Development Economics 155, p. 102775. doi: 10.1016/J.JDEVECO. 2021.102775.*

Huang, Arthur and Melissa Farboudi Jahromi (2021), *'Resilience building in service firms during and post COVID-19'. The Service Industries Journal 41.1-2, pp. 138–167. doi: 10.1080/02642069.2020.1862092.*

Kurz, Christopher and Mine Z. Senses (Jan. 2016), *'Importing, exporting, and firm-level employment volatility'. Journal of International Economics 98, pp. 160–175. doi: 10.1016/J. JINTECO.2015.08.003.*

Leuven, Edwin and Barbara Sianesi (Feb. 2018), *'PSMATCH2: Stata module to perform full Mahalanobis and propensity score matching, common support graphing, and covariate imbalance testing'. Statistical Software Components.*

Moser, Christian and Pierre Yared (2021), *'Pandemic lockdown: The role of government commitment'. Review of Economic Dynamics. doi: 10.1016/J.RED.2021.08.001.*

Narayan, Paresh Kumar, Neluka Devpura and Hua Wang (2020), '*Japanese currency and stock market - What happened during the COVID-19 pandemic?*' *Economic Analysis and Policy 68, pp. 191–198. doi: 10.1016/J.EAP.2020.09.014.*

Ramelli, Stefano and Alexander F. Wagner (2020), '*Feverish Stock Price Reactions to COVID-19*'. *The Review of Corporate Finance Studies 9.3, pp. 622–655. doi: 10.1093/RCFS/CFAA012.*

Rosenbaum, P. and D. Rubin (1983), '*The central role of the propensity score in observational studies for causal effects*'. *Biometrika 70.1, pp. 41–55.*

Shen, Huayu, Mengyao Fu, Hongyu Pan, Zhongfu Yu and Yongquan Chen (2020), '*The Impact of the COVID-19 Pandemic on Firm Performance*'. *Emerging Markets Finance and Trade 56.10, pp. 2213–2230. doi: 10.1080/1540496X.2020.1785863.*

Simmie, James and Ron Martin (Mar. 2010), **'***The economic resilience of regions: Towards an evolutionary approach*'. *Cambridge Journal of Regions, Economy and Society 3.1, pp. 27–43. doi: 10.1093/cjres/rsp029.*

Song, Hyoung Ju, Jihwan Yeon and Seoki Lee (2021), '*Impact of the COVID-19 pandemic: Evidence from the U.S. restaurant industry*'. *International Journal of Hospitality Management 92, p. 102702. doi: 10.1016/J.IJHM.2020.102702.*

Supardi and Syamsul Hadi (2020), '*New Perspective on the Resilience of SMEs Proactive, Adaptive, Reactive from Business Turbulence: A Systematic Review*'. *Journal of Xi'an University of Architecture & Technology XII.V, pp. 1265–1275. doi: 10.37896/jxat12.05/1524.*

Torres, Ariana P., Maria I. Marshall and Sandra Sydnor (2019), '*Does social capital pay off? The case of small business resilience after Hurricane Katrina*'. Journal of Contingencies and Crisis Management, 27.2, pp. 168–181. doi: https://doi.org/10.1111/1468-5973.12248.

Vannoorenberghe, G (2012), 'Firm-level volatility and exports'. Journal of International Economics 86.1, pp. 57–67. doi: 10.1016/j.jinteco.2011.08.013.

Liste des sigles et abréviations

SME	Small and medium-sized enterprises
MENA	Middle East and North Africa
CCMMENT	COVID-19 MENA Monitor Enterprise Survey

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