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Social Safety Nets and Food Insecurity in the Time of COVID-19: Selected MENA Countries

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Social Safety Nets and Food Insecurity in the Time of COVID-19: Selected MENA Countries

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Abstract

COVID-19 is testing food and social protection systems in the Middle East and North Africa (MENA) region at an unprecedented scale. Countries responded by expanding ocial safety nets (SSNs) and/or distributing new cash transfers. We estimate if and to what extent SSNs have mitigated food insecurity in MENA during COVID-19, using a unique panel survey of four MENA countries for November 2020–June 2021. Our difference-in-differences (DD) fixed-effects estimates show that those who received non-usual government support in Tunisia were 15 percentage points (ppts) less likely to be unable to buy their typical amount of food due to price increases than those who did not receive support. No significant effects are observed in Egypt, Jordan, and Morocco. Non-usual social support from non-governmental institutions had greater effect. Individuals who received non-usual support from non-governmental institutions in Morocco and Jordan were, respectively, 22 ppts and 15 ppts less likely to report being unable to buy their typical amount of food due to decreased income. Our estimates also show that government SSNs have mitigated the negative effect of food insecurity on resorting to adverse coping strategies during COVID-19, especially selling assets.

Keywords

Food insecurity, social safety nets, difference-in-différences, COVID-19, MENA

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Résumé
La COVID-19 a testé les systèmes de sécurité alimentaire et de protection sociale dans la région du Moyen-Orient et de l'Afrique du Nord (MENA) à une échelle sans précédents. Les pays ont y réagi en élargissant les filets sociaux de sécurité (SSN) et/ou en distribuant de nouveaux transferts monétaires. Nous estimons si et dans quelle mesure les filets sociaux ont atténué l'insécurité alimentaire dans la région MENA pendant la COVID-19, à l'aide d'une enquête par panel unique de quatre pays de la région MENA pour la période novembre 2020-juin 2021. Nos estimations d'un modèle à effets fixes de double différences (DD) montrent que ceux qui ont reçu une aide gouvernementale non habituelle en Tunisie étaient 15 points de pourcentage (ppt) moins susceptibles de ne pas être en mesure d'acheter leur quantité habituelle de nourriture en raison de la hausse des prix que ceux qui n'ont pas reçu d'aide. Aucun effet significatif n'est observé en Égypte, en Jordanie et au Maroc. Le soutien social non habituel des institutions non gouvernementales a eu un effet plus important. Les personnes qui ont reçu un soutien non habituel d'institutions non gouvernementales au Maroc et en Jordanie étaient, respectivement, 22 ppts et 15 ppts moins susceptibles de déclarer ne pas être en mesure d'acheter leur quantité habituelle de nourriture en raison d'une baisse des revenus. Nos estimations montrent également que les filets sociaux gouvernementaux ont atténué l'effet négatif de l'insécurité alimentaire sur le recours à des stratégies d'adaptation défavorables pendant le COVID-19, en particulier par rapport à la vente d'actifs.

Mots-clés
Insécurité alimentaire, filets sociaux, méthode de double différences, COVID-19

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1. Introduction and Background

The COVID-19 pandemic has doubled the number of individuals facing acute food insecurity worldwide in 2020, which stood at about 135 million individuals pre COVID-19 (WFP, 2020). A total of 52 million individuals in the Middle East and North Africa (MENA) were chronically undernourished in 2019 (WHO, 2020). A total of eight million more individuals are expected to fall into the poverty trap and be food insecure in the Arab region by the end of 2021 owing to COVID-19 (UN-ESCWA, 2020).

As many governments in MENA are able to secure the adequate supply of food, it appears that this food insecurity situation is demand rather than supply driven, at least in the short-term (Erokhin & Gao, 2020). COVID-19 has made people vulnerable to food insecurity as they lost their jobs and income (Egger et al., 2021). As indicated by the COVID-19 MENA Monitor Household (CMMHH) surveys, about 49% of Moroccans and 36% of Tunisians reported that their household's monthly income decreased by more than 25% in November 2020 compared to February 2020. About 20% of Egyptians and 28% of Jordanians as well reported that their household's monthly income decreased by more than 25% in February 2021 compared to a year earlier. Households that encounter income loss typically resort to adverse coping strategies that can hinder their development and wipe out efforts made to alleviate poverty. About 9% of Moroccans, 15% of Tunisians, 18% of Egyptians, and 9% of Jordanians reported in 2020 that they needed to resort to selling assets in the past month as a coping strategy, according to the CMMHH surveys. In this context, formal and informal social safety nets (SSNs) can play a key role in protecting against falling into poverty and food insecurity while trying to cope with the effect of different shocks (Parker & Todd, 2017).

In this study, we estimate if and to what extent SSNs affect the incidence of food insecurity in MENA in the time of COVID-19. We endeavor to answer four research questions. First, what are the effects of SSN benefits on the food insecurity incidence during COVID-19 in MENA? Second, what are the differential effects of support received from the government and that from other non-governmental sources on the food insecurity incidence during COVID-19 in MENA? Third, have SSNs mitigated the vulnerability of some subpopulations to food insecurity as the COVID-19 situation continues? Fourth, have SSNs mitigated the effect of food insecurity on COVID-19 coping strategies in MENA through preventing individuals from adopting adverse coping strategies and depleting their assets?

Food security is fulfilled when "all people, at all times, have physical and economic access to sufficient, safe, and nutritious food that meets their dietary needs and food preferences for an active and healthy life" (World Food Summit, 1996). This definition is at the essence of Sen's entitlement approach, which emphasizes that food security is not just a supply-side issue, but rather a question of distribution of resources and wealth (Sen, 2007). Eliminating food insecurity thus depends on fulfilling four main pillars: availability, accessibility, utilization, and

stability. The availability and the stability conditions are met when enough and sustainable food supply is available within a geographical area (FAO, 2016). Food accessibility is achieved when people are able to buy enough food to meet their need of caloric intakes. Food utilization materializes when people recognize which nutritious food they should consume to meet their micro- and macronutrients requirements (Hwalla et al., 2017).

In MENA, the observed deterioration of food security during COVID-19 has not been mainly driven by supply-side shortages. Physical supply (availability) has not been the issue. COVID-19 has mostly affected the demand on food by worsening people's affordability conditions and weakening their purchasing power (Assaad et al., 2021a).

When a shock hits vulnerable households, they can either smooth their consumption or income. Consumption-smoothing involves coping strategies such as selling assets, taking children out of school, or reducing consumption (Wainwright & Newman, 2011). Income-smoothing takes two forms: precautionary saving and/or SSN dependency. As poor households usually struggle with savings accumulation (Premand & Stoeffler, 2020), they are more likely to rely on formal and informal SSNs. Family members and friends represent the informal SSNs. Contributory (e.g., pension plans) and non-contributory (governmental support) funds represent the formal SSNs (Hall & Woolard, 2015).

In this study, we focus on informal SSNs and non-contributory funds. Non-contributory SSN programs take various forms. They include in-kind and cash transfers that can be conditional or unconditional, depending on their design (Gertler, 2004). These programs are designed for long-term developmental purposes or specifically to mitigate the effect of a particular shock. Long-term developmental programs can still have an indirect role in mitigating shock effects (De Janvry et al., 2006). One common mechanism through which both types of programs work is based on the hypothesis that a regular and predictable cash transfer to the poor will allow them to build resilience over time. Being certain about a regular source of income coming up, which may cover the losses of an unforeseen negative event, can prevent the household from resorting to destructive coping strategies (Fiszbein & Schady, 2009). This hypothesis stresses the important role that formal and informal SSNs can play in MENA to improve food security during COVID-19, particularly when it comes to non-contributory funds.

MENA governments have responded to COVID-19 by expanding existing non-contributory funds and/or distributing new in-kind or cash transfers. For example, in Egypt, the government added more than 300,000 additional beneficiaries to the Takaful (Social Solidarity) and Karama (Dignity) program. An unconditional one-off EGP500 cash transfer was as well provided by the World Food Program (WFP) to 50,000 families with children under three years of age and pregnant women in five governorates (UN, 2020). In addition, Egypt's Ministry of Social Solidarity (MoSS) offered cash transfers to 3.6 million households, representing almost 14.8 million individuals. MoSS also distributed a one-off monetary compensation of EGP500 for three months to informal workers, reaching almost 1.9 million individuals (JPAL, 2020). Likewise, Jordan allocated a temporary cash transfer of about JOD81 million to provide income support,

especially for seasonal workers (Raouf et al., 2020). In Morocco, an employee who is affiliated to the social security system benefited from about USD202. Besides, informal workers received a cash compensation, but only when applied to the allowance (King, 2020). In Tunisia, TND150 million has been allocated for the vertical expansion of social assistance programs. Transfers were disbursed to more than 800,000 households working in the informal sector, with an elderly person, fostering children without parental support, or hosting a person with a disability. Moreover, the Tunisian government distributed a one-off cash transfer during the holy month of Ramadan (April 2020) to low-income households (UN, 2020).

The importance of our study is twofold. First, we use a unique micro-level dataset to estimate how SSNs mitigate the effect of *macro* large-scale disasters rather than *idiosyncratic* shocks on food insecurity.[1] Second, this study is the first to empirically identify the impact of SSNs on food insecurity in MENA and to differentiate between the impact of benefits received from governments and non-governmental institutions. Our findings will enable MENA governments to efficiently adjust their social protection strategies while smoothing out the negative effects of sweeping disasters like COVID-19. These negative effects can be exacerbated by the rising frequency of health disasters worldwide and their associated indirect development impact in low- and middle-income countries' context (El-Shal et al., 2022).

Related Literature

The effectiveness of SSNs in protecting against food insecurity has been examined in different contexts (Adato & Bassett, 2009). A rigorous meta-analysis of the impact of social protection programs on food security, spanning 24 years (1994–2016) and representing 48 programs from all developing regions[2], concludes that these programs improved both the quantity and the quality of food consumed by beneficiaries, where the value of food consumption increased by 13% and caloric acquisition by 8% (Hidrobo et al., 2018). Cross-country analyses also indicates that relatively generous, regular, and predictable cash transfers improve the quantity and quality of food (Tiwari et al., 2016). More importantly, there is strong evidence that cash transfers have a significant impact on household means to achieve food security, specifically the accumulation of productive assets, and on direct measures of access to food (Burchi et al., 2018).

However, country studies often provide inconclusive evidence as to whether a social protection program is effective or not. One example is Ethiopia's flagship program, the productive safety net program (PSNP), where several studies show that it improved household food security and child nutrition (e.g., Berhane et al., 2014) while other studies show that it did not (e.g., Bahru et al., 2020). Evidence from Sub-Saharan Africa (SSA) generally confirms a significant impact of cash transfers on food security and food diversity

[1] Idiosyncratic shocks differ from large-scale ones like the COVID-19 shock we are studying here. Idiosyncratic shock is a term used to refer to shocks that are not common to the whole community, but rather shocks that hit only some individuals.

[2] Latin America and Caribbean, Sub-Saharan Africa, MENA, South Asia, and East Asia and Pacific.

because these transfers have been mostly spent on food (see, for example, Haushofer & Shapiro (2016) for Kenya; Miller et al. (2011) for Malawi). Consistent evidence on the quantity and quality of food consumed is reported for Latin American countries, such as Ecuador (Hidrobo et al., 2014; Paxson & Schady, 2010), Mexico (Fernald et al., 2009), and Brazil (Morris et al., 2004), and South and Sotheast Asian countries, such as India (e.g., Raghunathan et al., 2017) and Indonesia (e.g., Skoufias et al., 2013).

The impact of other social protection tools, such as labor-intensive public works' programs, on food security has been less significant than that of cash transfers (e.g., Beegle at al., 2017).

Very few studies discuss if SSNs have (or have not) protected vulnerable households in low- and middle-income countries against food insecurity in the context of COVID-19. Participation in Ethiopia's PSNP offset almost most of the COVID-19 induced increase in household food insecurity; and the effect was greater for poorer households and those living in remote areas (Abay et al., 2020). But neither cash nor food safety nets were found effective in reducing the probability of food insecurity in another nine SSA countries[3] during the early stages of COVID-19, with cash transfers being relatively more effective than food transfers, particularly in Djibouti and Nigeria (Dasgupta & Robinson, 2021).

Likewise, in MENA, the literature tackling the relationship between SSNs and food security during COVID-19 is scant, if not inexistent. This gap in the literature is critical as, for example, in a populous country like Egypt, almost a quarter of households were already experiencing food insecurity in 2018, either solely or together with idiosyncratic shocks, mostly economic and health ones (Helmy & Roushdy, 2019). Some studies estimated the impact of formal and informal social protection schemes on food insecurity, but not necessarily in the time of a large-scale disaster. An increase in social protection spending in eight MENA countries[4] along with the existence of universal subsidies increased food access, measured by the prevalence of undernourishment, and food utilization, measured by the prevalence of anemia among children under 5 years of age (Ramadan, 2019).

Single-country analysis in the MENA region points out in the same direction. Egypt's flagship Takaful and Karama conditional and unconditional cash transfer program strengthened developmental outcomes, especially food security (Breisinger et al., 2018). The program produced a greater increase in food than non-food spending. Besides, households spent more on fruits, meat, and poultry, entailing that the program diversified household diet away from carbohydrates, which are subsidized by ration cards, reducing the burden of malnutrition in Egypt. A strand of studies on MENA focus on the effect of cash assistance on food insecurity among Syrian refugees. A multi-purpose cash assistance program provided by WFP was found effective in reducing food insecurity among Syrian refugees in Lebanon, but only in the long-term (Chaaban et al., 2020). A UNHCR-UNICEF cash assistance program was found effective in enhancing the quality of food consumed by Syrian refugees in Jordan, protecting them

[3] Chad, Djibouti, Ethiopia, Kenya, Malawi, Mali, Nigeria, South Africa, and Uganda.

[4] Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Tunisia, and Yemen.

from resorting to risky coping strategies, and reducing their anxiety and stress (Abu Hamad et al., 2017).

In light of the scarcity of studies combining food security on the one hand and SSNs on the other hand, and the compounded effect of disasters like COVID-19 in MENA, this study comes to value. Up to our best knowledge, no study to date has estimated the impact of any social protection strategy on food insecurity in MENA in the context of COVID-19.

1. Data

2.1. Variables Construction

We make use of the unique panel dataset of the CMMHH survey, recently released by the Economic Research Forum (ERF), to estimate the effect of SSNs on food insecurity in MENA during COVID-19. The survey encompasses more than 16,000 observations of individuals who were interviewed from Egypt, Jordan, Morocco, and Tunisia over four waves. The first wave was collected in November 2020, the second in January 2021, the third in March 2021, and the fourth in June 2021. Panel observations of responses on the food security module are available for all four waves in Morocco and Tunisia and for two waves in Egypt and Jordan (see Table A.1 in the Appendix). Not all individuals were re-interviewed in Morocco and Tunisia. In that sense, our working sample consists of 6,459 individuals who were interviewed at least in two waves in the four countries[5].

Dependent Variables. We use three binary variables, from the CMMHH survey, reflecting food insecurity as the main dependent variables[6]. The first and the second variables associate the reported food insecurity to an increase in food prices or to a decrease in income. The third variable is a more comprehensive one that reflects whether there has been any general change in terms of the food consumed in the household. This means that, within the food security framework, we focus on the issue of food accessibility, mainly in terms of purchasing power. We disregard the survey questions that associate food insecurity to supply-side issues caused by COVID-19. These include questions of whether an individual is food insecure because of mobility restrictions imposed by government/closures or shortages of food in markets. During a shock, self-reported food insecurity may be the least costly and the most convenient measure to use. When compared to anthropometric measures, self-reported food insecurity can capture, faster, a switch in the food insecurity status long before materializing in the form of anemia, wasting, or stunting (Sisha, 2020; Maxwell et al., 2014). Hunger does not need to be chronic to be captured by self-reported food insecurity (Ballard et al., 2013).

For model extensions, we define three dichotomous dependent variables to measure the coping strategies used by the households, in the past month before the survey was collected, to mitigate the effect of COVID-19. The first variable takes the value of one if an individual relied on her/his own savings. As previously discussed, relying on savings is indicative of income-smoothing. This strategy is usually preferred over consumption-smoothing, which we measure using our second variable. The second variable takes the value of one if an individual sold any of her/his assets and zero otherwise. The third variable takes the value of one if an individual had to rely on any type of coping strategies all together.

[5] The working sample is 1,905 for Morocco and 2,118 for Tunisia.

[6] Usually with self-reported questions on food insecurity, experience-based food insecurity scale measures can be constructed. The Latin American and the Caribbean Food Security and the FANTA household food insecurity scales are examples of these measures. They are usually estimated using principal component analysis (PCA). We could not use the same method here because our variables are binary, and PCA assumes that the variables are continuous or at least ordinal. In addition, we only have four questions that do not reflect the different components that are usually captured by these scales, such as anxiety over food loss, and changes in nutrients consumed within the household.

These strategies include: using savings, self or of any friend or family member (in the country or abroad); borrowing from a bank, an employer, or a private lender; going back to village; and/or selling any assets.

For the coping strategies estimations, we could not include Egypt and Jordan. Information on coping strategies for those two countries were collected only for the first and fourth waves of the survey. For the first wave, respondents were asked if they needed to resort to one of the coping strategies since the end of February 2020. In the subsequent waves, they were asked about the coping strategy they resorted to in the past month. To keep a consistent time frame, we decided not to use information on coping strategies for the first wave for Egypt and Jordan. Therefore, for the coping strategies module, a fixed effect model cannot be estimated for Jordan and Egypt since, for the two countries, we end up with only one wave that is consistent with our definition.

Explanatory Variables. Our main explanatory variables reflect the receipt of *non-usual* benefits from SSNs. Two treatment variables are constructed to capture two types of interventions. The first is the receipt of (non-usual) government support, mainly in the form of food and/or cash. The second is the receipt of (non-usual) social support from any of the following three types of non-governmental institutions: religious institutions (mosques and churches), political institutions (members of parliament or other politicians), and non-governmental institutions (NGOs) and/or civil society organizations (CSOs). If an individual reported receiving benefits from any of these sources, s/he is assigned to the respective treatment group. In addition to government SSNs, the aim of including other forms of informal and non-governmental social support is to explore the substitution effect that governmental support can play over non-governmental SSNs and coping strategies.

Additionally, we make use of the detailed information availed by the survey that are relevant to the food insecurity incidence. First, we control for household's income through an income-loss categorical variable. Income loss is identified as a key determinant of the accessibility component of household food insecurity. Individuals are asked how their household's monthly income changed compared to February 2020, before the start of the pandemic. A respondent chooses among the following five categories: income decreased by more than 25%, decreased by 1-25%, stayed the same, increased by 1-25%, and increased by more than 25%. Second, we control for labor market status by including a dummy variable for being unemployed (versus being employed or out of the labor force). Employment status is identified as a key determinant of the accessibility component of household food insecurity. Third, we include a continuous variable of the number of children in school within the household. Food insecurity is highly correlated with the number of children at school and to the coping strategy that the household head may rely on. Poor individuals with a higher number of children at school are more likely to be food insecure when a shock hits and are less likely to rely on income smoothening. These three variables are all the relevant time-varying ones that are availed by the survey.

In our model extensions estimating the effects of SSNs on the food insecurity of vulnerable subpopulations, we include additional demographic and socio-economic characteristics that typically make individuals more susceptible to food insecurity. These are four dummy variables for gender (a determinant of the utilization component of household food insecurity), being widowed or

divorced, residing in a rural location (a determinant of the accessibility component of household food insecurity), and being unemployed (a determinant of the accessibility component of household food insecurity). The third variable is not a key determinant but is a relevant socio-economic factor likely affecting food insecurity, with the lack of joint attempts to provide for the food household requirements increasing the chances of being food insecure.

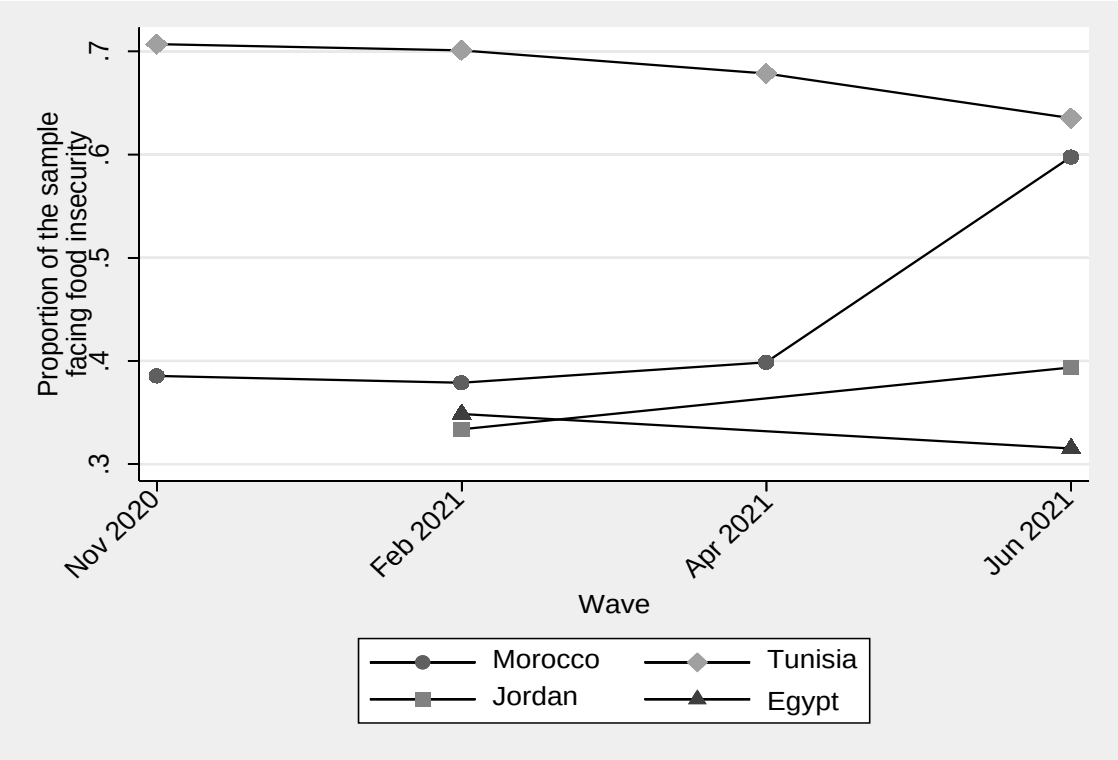
2.2. Summary Statistics

We outline the summary statistics of the data used in Table A.2 (see the Appendix). The table shows that at least 40% of the respondents from Egypt, Jordan, and Morocco reported being food insecure in the second wave due to food price increase and/or household income decrease. Tunisia had the highest percentage of respondents reporting being food insecure, hitting at least 74% of its sample. In all four countries, more than 68% of respondents reported experiencing changes in food consumption in general during COVID-19 due to any reason.

Figure 1 depicts the level of food insecurity due to purchasing power was persistent over time for those who participated in the four survey waves of Morocco and Tunisia and for those who participated in the two waves of Egypt and Jordan.7 The situation slightly improved over time in Egypt and Tunisia, while it worsened or remained the same in Morocco and Jordan. The improvement that occurred in Tunisia was not enough, however, to bring food insecurity down to the level of the other three countries. Prior to COVID-19, the food insecurity situation in Tunisia was not very far from, and sometimes even better than, Egypt, Jordan, and Morocco. According to FAO, the prevalence of moderate or severe food insecurity was around 25% of the population during 2018–2020, compared to 27% in Egypt, for example. The sudden rise in food insecurity in Tunisia may not be associated solely with the drop in household's income compared to post-COVID-19. As it can be seen in Table A.2, 45% of the sample of Tunisia reported a decrease in their income as opposed to 61% in Morocco and 50% in Jordan. One potential explanation for this is that the agriculture market in Tunisia was heavily disrupted relative to the other countries in terms of quantities and prices.

[7] Note here that there are no observations in the third wave for Jordan and Egypt. This explains the fact that we have a straight line between the second and third waves for both countries.

Illustration 1. Changes in food insecurity in MENA (November 2020 – June 2021)



Note: Each marker represents a weighted average of the indicator for the specified country within the wave. Weights of the first wave available for each individual are used. Food insecurity here takes the value of one if a person reported being food insecure because of price increases or income decrease.

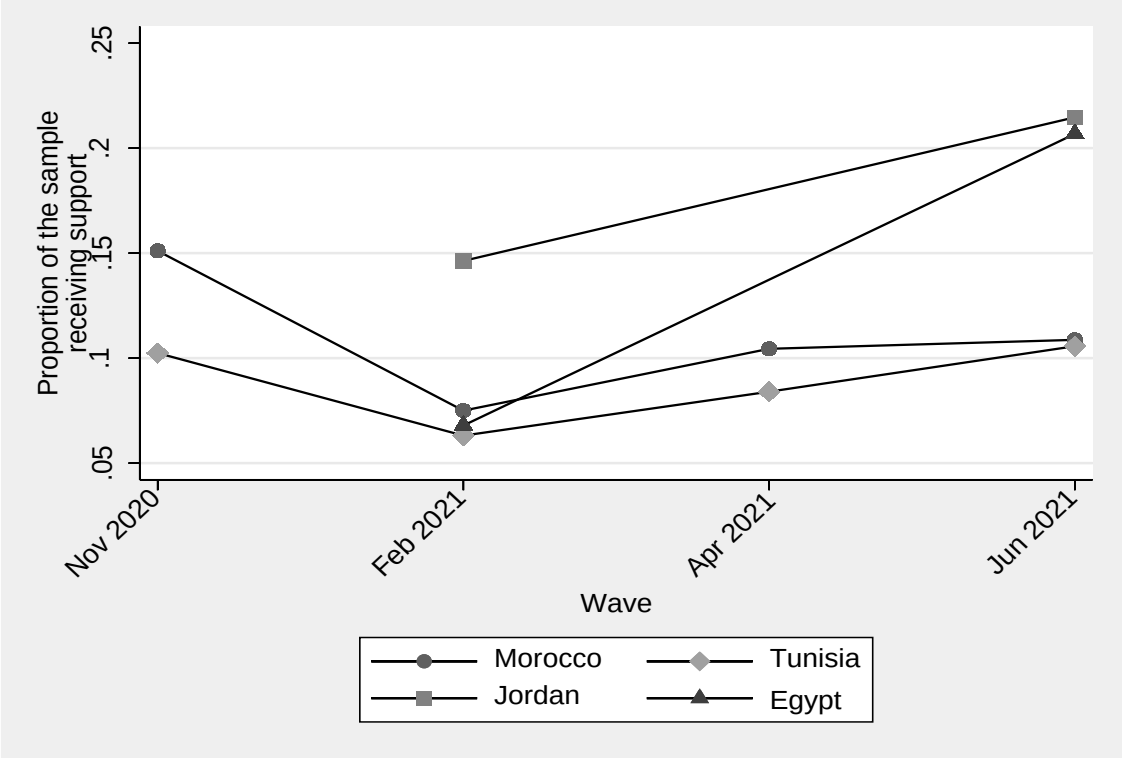
Source: Authors' graph

Figure 2 illustrates that the receipt of some sort of non-usual support increased in Egypt and Jordan between their two waves. Around 14% of the sample were receiving some form of non-usual support in Jordan in the second wave, compared to only 7% in Egypt. By the fourth wave, the percentage of respondents receiving non-usual support increased more steeply in Egypt than Jordan, reaching 20% and 22%, respectively. In Morocco and Tunisia, the highest level of support was provided in the early stages of COVID-19. In November 2020, 15% of the sample reported that they received non-usual social support in Morocco, compared to 10% in Tunisia. However, very few of those who were entitled to receive the support in the first wave were still receiving benefits by January 2021, in the second round of data collection. This decrease in the number of people receiving, formally or informally, cash and food transfers could be attributed to the fact that the second wave of COVID-19 started around December 2020. It seems that governments and charitable institutions were just being responsive then to the pandemic crisis situation, because this type of support is temporary and shock responsive. This explains why by the third wave, social support picked up again in both countries.

Income loss and changes in employment status are key determinants of how the food insecurity situation has developed over the course of COVID-19. We plot the changes in income and employability

in MENA in Figures A.1 and A.2, respectively, in the Appendix. In all countries, more than 40% of respondents reported that their household income decreased by at least 1% compared to the pre-pandemic period. In response to this economic shock, almost 73% of the respondents in Morocco and Tunisia reported that they resorted to some sort of social assistance as a coping strategy.8 Specifically, 49% of the sample of both countries relied on an income smoothing strategy, by taking money out of savings; and only 6% of the sample of Morocco reported that they sold an asset, compared to 11.7% in Tunisia.

Illustration 2. Receipt of non-usual support from SSNs in MENA (November 2020 – June 2021)



Note: Each marker represents a weighted average of the indicator for the specified country within the wave. Weights of the first wave available for each individual are used.

Source: Authors' graph

In parallel, the level of employability varied by countries. In Jordan, only 37% of our sample is employed, compared to 48% in Morocco, 55% in Egypt, and 61% in Tunisia. Figure A.2 in the Appendix demonstrates, however, that there has been a general improvement in the level of unemployment over the waves of the survey. This finding is in line with the fact that at the beginning of the pandemic, there was a general tendency from employers to lay off workers. Informal and self-employed workers were also heavily affected by strict lockdown measures. As the COVID-19 situation relatively stabilized, some individuals

[8] Panel information on the coping strategies used in the past month before the survey is available for Morocco and Tunisia for all waves. In Egypt and Jordan, this information is only available as per our definition in the fourth wave.

were able to return to their jobs and firms started hiring again. But more and more respondents are reporting that they suffered from a decrease in their household's income over time (see Figure A.1). This trend is not surprising because the pandemic has changed the labor market conditions. Wages offered in the market fell due to the high supply of labor relative to the demand in the market.

2. Empirical Strategy

We provide robust evidence on four research questions for the MENA region. First, what are the estimated effects of SSN benefits on food insecurity during COVID-19? Second, what are the differential effects of support received from the government and that received from non-governmental sources on food insecurity? Third, have SSNs mitigated the vulnerability of some subpopulations to food insecurity as the COVID-19 crisis developed? Fourth, have SSNs mitigated the food insecurity effect on COVID-19 coping strategies by preventing individuals from adopting adverse coping strategies and depleting their assets?

To estimate the effect of SSN benefits on food insecurity, we use a battery of DD fixed-effects models. Since participation in a respective SSN is staggered, a generalized DD fixed-effects framework is properly suited to estimate the effect of SSNs by comparing the food insecurity incidence among beneficiaries of non-usual support (treatment group) to non-beneficiaries (control group) pre and post the receipt of support (treatment) throughout the four survey waves between November 2020 and June 2021 (see Wooldridge, 2016).

To estimate the differential effects of social support received from different sources on food insecurity, we use the DD setup discussed in Bertrand et al. (2004) and Hansen (2007), which allows for multiple groups and time periods.

For an individual i at time (survey wave) t, we estimate the following conditional fixed-effects logistic regression model:

$$Pr(FS_{it} = 1 \mid X_{it}) = F(\beta_g \, SSN\_G_{it} + \beta_{ng} \, SSN\_NG_{it} + \gamma \, Z_{it} + \alpha_i + \tau_t) \qquad (1)$$

$F(\cdot)$ is the logit link function. FS_{it} is a binary variable denoting that food insecurity incidence was reported by individual i at survey wave t. X_{it} is a set of all the observed explanatory variables included in the right-hand side of the equation. SSN_G_{it} switches on (=1) if individual i receives benefits from any government SSN at survey wave t. SSN_NG_{it} switches on (=1) if individual i receives benefits from any non-government SSN at survey wave t. β_g and β_{ng} are the coefficients of interest. We are interested in comparing the estimated βs for the different sources to identify the most effective SSNs. Z_{it} is a vector of three time-varying characteristics that we explicitly control for, namely the change in the household's total monthly income (categorical), the employment status (binary), and the number of children enrolled in school (continuous). δ_i and λ_t are sets of individual and month fixed effects, respectively.

To answer research question (3), we use various interaction terms in the estimations of model specification (2) below to identify which unfavorable characteristics have their effects on food insecurity been mitigated if associated with the receipt of SSN benefits as the COVID-19 crisis continues.

$$Pr(FS_{it} = 1 \mid X_{it}) = F(\beta_g\ SSN\_G_{it} + \delta\ Vul_{it} + \zeta\ (Vul_{it}\ *\ SSN\_G_{it}) + \beta_{ng}\ SSN\_NG_{it} + \gamma\ Z_{it} + \alpha_i + \tau_t) \qquad (2)$$

Vul_{it} is a vector of demographic and socio-economic characteristics that typically make individuals more susceptible to food insecurity. ζ is the coefficient of interest. Moreover, we conduct descriptive analysis to identify the most vulnerable subpopulations on an ordinal scale based on receipt—or non-receipt—of SSN benefits and other demographic and socio-economic characteristics. We re-estimate equation (2) using SSN_NG_{it} instead of SSN_G_{it} while controlling for SSN_G_{it}.

Finally, to estimate if SSNs have mitigated the negative effect of food insecurity on the adoption of adverse coping strategies and asset depletion during COVID-19, we estimate the model specification (3) below. In this specification, the dependent variable is a binary one that denotes the adoption of a negative strategy to cope with food insecurity during COVID-19.

$$Pr(COP_{it} = 1 \mid X_{it}) = F(\beta_g\ SSN\_G_{it} + \delta\ FS_{it} + \zeta(FS_{it} * SSN\_G_{it}) + \beta_{ng}\ SSN\_NG_{it} + \gamma\ Z_{it} + \alpha_i + \tau_t) \qquad (3)$$

We identify the dependent variable, COP_{it}, as a dichotomous one that switches on (=1) if the respondent indicated that s/he resorted to taking money out of savings as a coping strategy. We re-run the model two more times, once with COP_{it} defined as resorting to selling assets as a coping strategy and once with COP_{it} defined as resorting to any coping strategy at all. We also re-estimate the equation for each of our three measures of food insecurity. ζ is the coefficient of interest. The definitions of all other variables remain the same.

Standard errors are estimated using the bootstrap technique and are clustered at the individual level.

The proposed DD fixed-effects framework is properly suited to estimate the effect of SSNs on the incidence of food insecurity. By including individual fixed effects, we control for all time-invariant heterogeneity across individuals. We also include survey wave dummies to control for common trends. Importantly, we include three time-varying variables as well that are pertinent to food insecurity. These are all the relevant time-varying variables that we can identify based on the information provided by the CMMHH survey. We believe that the effect of other time-varying unobservable attributes is minimal, if any.

The key identifying assumption of our empirical strategy is that conditional on the inclusion of time-varying control variables, there are no time-varying unobservable characteristics that can affect selection into treatment, that is the receipt of SSN benefits. Two endogeneity concerns are relevant here. The first is related to reverse causality. Put simply, those experiencing food insecurity may approach SSNs to receive support and this self-selection into treatment can affect the outcomes of interest. This is mostly not the case when governments provide extra aid within the framework of their already existing programs. In this case, governments depend on databases they had already built a

priori the COVID-19 crisis to target beneficiaries. Individuals or households identified in these databases are targeted mainly through proxy means tests (PMT) or community-targeting. Thus, self-selection is not a concern when an already existing program is topped up because governments typically reach out to (targeted) individuals rather than the other way round. The concern of self-selection persists, nevertheless, when funds are dedicated to informal workers, because governments cannot easily reach them, and instead require them to self-register. In our case, self-selection bias is not a concern because the effect of government SSNs is already insignificant in both Egypt and Jordan. These are the two countries for which the survey includes questions on exceptional allowance for irregular workers. The only country for which we report a significant effect of government SSNs is Tunisia, for which no data is provided on exceptional allowance for irregular workers.

Receiving non-government SSN benefits, especially from religious institutions, is arguably less exogenous. To attenuate this concern, we group all non-government SSNs into one group, where treatment is defined as receiving social support from any of these sources rather than from particular sources whom seeking help from are more likely to be endogenous. The second endogeneity concern in the context of our analysis is related to omitted variable bias. To ease this concern, we include all relevant time-varying characteristics that are available in our dataset.

3. Results

4.1. Descriptive Results

Figures 1 and 2, depicting the changes in the food insecurity incidence and the receipt of non-usual support, do not reveal a clear trend of an association between the two. On the one hand, we can observe that food insecurity in Egypt fell more rapidly than the other countries by the fourth wave. This could be due to the fact that Egypt has been relatively more responsive to providing individuals some sort of social support between the second and the fourth rounds of data collection, as reflected by the steep curve in Figure 2. On the other hand, Jordan that was the most generous in terms of providing social support, saw a slight increase in food insecurity.

We use the two-sample t-test to examine whether the means of the characteristics of those who received SSN benefits (treatment) and those who did not (control) differ significantly. Table 1 shows that, on average, individuals receiving support are those who significantly suffer worse food insecurity than those who receive no benefits in all countries except Egypt. Table 1 also shows that women in Egypt, those residing in urban settings in Egypt and Jordan, the married and the unemployed in Jordan, households who experienced income loss in Egypt and Morocco are, on average, more likely to receive SSN benefits.

In Table 2, we report the results of the two-sample t-test that examines how the means of the characteristics of the food insecure and food secure populations differ significantly. We find that the food insecure are, on average, more likely to be receiving SSN benefits in all countries except Egypt. We

also find that women, households with more children enrolled in school, and the unemployed in Egypt, Jordan, and Morocco; those residing in rural settings in Morocco and Tunisia; the married and households who experienced income loss in all four countries are more likely to be food insecure.

4.2. Marginal Effects of SSNs on Food Insecurity

Table 3 presents the main results of the marginal effects of the receipt of SSN benefits in the aftermath of the outbreak of COVID-19 between November 2020 and June 2021 on the incidence of food insecurity in Egypt, Jordan, Morocco, and Tunisia. We separately present the estimated effects of receiving support from two different sources, the government and non-governmental institutions, on three measures of food insecurity.

Overall, government SSNs have no effect on food security in the MENA region except for Tunisia. Specifically, the probability of Tunisians who received government SSN benefits being unable to buy the amount of food they usually buy due to food price increase is 15 ppts lower than those who did not receive any benefits.

Our estimates show that non-usual support from non-governmental institutions significantly reduced the likelihood of the food insecurity incidence in MENA. This result holds for both Jordan and Morocco and is highly significant for the latter. Individuals who received non-usual support from non-governmental institutions in Morocco were 22 ppts less likely to report being unable to buy their typical amount of food due to decreased household income. In Jordan, individuals who received non-usual support from non-governmental institutions were 15 ppts less likely to report being unable to buy their typical amount of food due to food price increase.

We find no effect at all of non-usual social support received from the government or from non-governmental institutions on the incidence of food insecurity in Egypt, which warrants further investigation.

4.3 Vulnerability to Food Insecurity

Table 4 presents the interacted effects of a group of hypothetically unfavorable characteristics and the receipt of SSN benefits on food insecurity among the vulnerable subpopulations. Our estimates for the pooled sample show that non-usual government SSNs mitigated the possibly negative effects of being unemployed on food security, but only for one of the three measures of food security.

Table 1. Two-sample t-tests by receipt of SSN benefits (treatment)

	Egypt			Jordan			Morocco			Tunisia		
	Treat	**Control**	**Diff.**	**Treat**	**Control**	**Diff.**	**Treat**	**Control**	**Diff.**	**Treat**	**Control**	**Diff.**
Male	0.508	0.643	-0.135**	0.489	0.517	0.028	0.664	0.619	0.045	0.589	0.616	-0.028
			(0.065)			(0.036)			(0.047)			(0.046)
Children school enrollment	1.373	1.322	0.051	1.335	1.491	-0.156	1.066	1.166	-0.100	1.048	0.889	0.159
			(0.179)			(0.111)			(0.124)			(0.110)
Urban	0.61	0.495	0.115*	0.950	0.844	0.106***	0.590	0.619	-0.029	0.621	0.687	-0.066
			(0.067)			(0.035)			(0.048)			(0.044)
Married	0.797	0.722	0.075	0.778	0.721	0.057*	0.648	0.633	0.015	0.629	0.657	-0.028
			(0.060)			(0.032)			(0.047)			(0.045)
Employed	0.458	0.553	-0.096	0.308	0.383	-0.075**	0.459	0.406	0.053	0.548	0.615	-0.066
			(0.067)			(0.035)			(0.048)			(0.046)
Food insecurity	**0.390**	**0.342**	**0.048**	**0.398**	**0.324**	**0.075****	**0.484**	**0.375**	**0.108****	**0.726**	**0.647**	**0.079***
			(0.064)			**(0.034)**			**(0.048)**			**(0.045)**
Income loss	**0.593**	**0.430**	**0.164*****	0.579	0.529	0.051	0.746	0.619	0.127***	0.605	0.562	0.042
			(0.067)			(0.036)			(0.047)			(0.047)
Coping strategy =Savings							0.377	0.491	0.114***	0.468	0.546	-0.078*
									(0.049)			(0.047)
Coping strategy =Sell assets							0.115	0.094	0.020	0.234	0.121	0.113***
									(0.029)			(0.032)
Coping strategy =Any							0.672	0.727	-0.055	0.815	0.808	0.007
									(0.044)			(0.037)
N	59	824		221	1,332		122	741		124	1,170	

Standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Food insecurity takes the value of one if an individual reported being food insecure due to household income decrease or due to food price increase. Income loss is a binary variable taking the value of one if the household's income decreased by at least 1%.

No mitigating effects are observed for the widowed/divorced or rural residents in the MENA region. It is puzzling, however, that non-usual support from government SSNs seems to have increased the probability of women being food insecure due to income loss. In this particular estimation, receiving non-usual benefits from government SSNs had a significant mitigating effect in general but an adverse interacted effect for women. This result may be explained in view of intercorrelated factors. It can be that when women of MENA receive non-work related financial aid, they become reluctant to actively look for jobs, which can increase their economic vulnerability and render them more dependent and food insecure than men. Such vulnerability and food insecurity of women are exacerbated by gender inequality that is deeply embedded in middle eastern social norms, and particularly in rural communities (Peterman et al., 2019). Previous findings show that women's labor force participation in MENA is associated with low marriageability and gender stigma (Selwaness & Krafft, 2021). In this context, it is important to acknowledge the unequal distribution of nutrition inside of the household. Women in poorer households may originally suffer greater food insecurity than men as women tend to sacrifice their share of food to other family members.

In contrast, receiving non-usual support from non-governmental institutions had a significant mitigating effect for women in MENA (but no effect on other supposedly vulnerable subpopulations in the region). This positive effect on women can be attributed to the relatively more efficient targeting mechanisms of non-governmental institutions which are typically more able than the government to reach women in need.

4.4 SSN Mitigation Effects

In Table 5, we report the SSN mitigation effects on the likelihood of adopting adverse coping strategies due to the exacerbation of food insecurity in light of COVID-19 for the pooled sample. Interestingly, our estimates indicate that the receipt of non-usual government support significantly mitigated the negative effect of food insecurity in the MENA region on resorting to adverse coping strategies, namely selling assets or any. Non-governmental institutions had no effect. The results also confirm the importance of food insecurity as a key determinant of the likelihood of resorting to any coping strategy during COVID-19, be it adverse or not. The coefficients on food insecurity—now as an explanatory variable—are highly significant for the pooled sample and regardless of the reported coping strategy.

Table 2

Two-sample t-tests by food insecurity incidence

	Egypt			Jordan			Morocco			Tunisia		
	Insecure	**Secure**	**Diff.**	**Insecure**	**Secure**	**Diff.**	**Insecure**	**Secure**	**Diff.**	**Insecure**	**Secure**	**Diff.**
Male	0.590	0.657	-0.067**	0.474	0.532	-0.058**	0.585	0.652	-0.068**	0.601	0.638	-0.037
			(0.034)			(0.027)			(0.034)			(0.028)
Children school enrollment	1.472	1.247	0.225***	1.684	1.361	0.323***	1.258	1.084	0.175**	0.932	0.852	0.079
			(0.094)			(0.082)			(0.088)			(0.068)
Urban	0.495	0.507	-0.012	0.855	0.861	-0.005	0.576	0.641	-0.065**	0.658	0.725	-0.067***
			(0.035)			(0.026)			(0.034)			(0.027)
Married	0.751	0.715	0.036***	0.775	0.707	0.068***	0.656	0.622	0.034**	0.679	0.609	0.070***
			(0.032)			(0.024)			(0.034)			(0.028)
Employed	0.492	0.576	-0.084***	0.333	0.392	-0.058**	0.365	0.445	-0.080**	0.595	0.633	-0.038
			(0.035)			(0.026)			(0.034)			(0.029)
SSN benefits receipt	**0.075**	**0.062**	**0.013**	**0.170**	**0.129**	**0.041****	**0.175**	**0.12**	**0.055****	**0.106**	**0.076**	**0.030***
			(0.018)			**(0.019)**			**(0.024)**			**(0.017)**
Income loss	0.613	0.349	0.264***	0.647	0.480	0.168***	0.747	0.566	0.181***	0.685	0.342	0.342***
			(0.034)			(0.027)			(0.033)			(0.027)
Coping strategy=Savings							0.540	0.433	0.107***	0.523	0.568	-0.045
									(0.035)			(0.029)
Coping strategy=Sell assets							0.131	0.076	0.055***	0.165	0.067	0.098***
									(0.021)			(0.020)
Coping strategy=Any							0.819	0.656	0.163***	0.829	0.770	0.059***
									(0.031)			(0.023)
N	305	578		519	1,034		337	526		847	447	

Standard errors are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Food insecurity takes the value of one if an individual reported being food insecure due to household income decrease or due to food price increase. Income loss is a binary variable taking the value of one if the household's income decreased by at least 1%.

Table 3

Marginal effects of SSNs on food insecurity (November 2020 – June 2021)
Dependent variables: Three food insecurity measures

	Unable to buy usual amount due to price increases	Unable to buy usual amount due to decreased income	Food changes
	(1)	(2)	(3)
Egypt			
Treatment (SSN=1)			
Gov. SSN benefits	0.021	0.039	0.118
	(0.071)	(0.072)	(0.082)
Non-gov. SSN benefits	0.207	0.211	0.360
	(0.698)	(0.179)	(1.610)
Wave effects	Yes	Yes	Yes
N	618	608	494
Jordan			
Treatment (SSN=1)			
Gov. SSN benefits	-0.044	0.042	-0.082
	(0.068)	(0.071)	(0.092)
Non-gov. SSN benefits	-0.145*	-0.104	-0.095
	(0.081)	(0.110)	(0.509)
Wave effects	Yes	Yes	Yes
N	1,080	856	634
Morocco			
Treatment (SSN=1)			
Gov. SSN benefits	0.013	-0.008	0.086
	(0.057)	(0.053)	(0.058)
Non-gov. SSN benefits	0.037	-0.222**	-0.120
	(0.081)	(0.088)	(0.148)
Wave effects	Yes	Yes	Yes
N	2,725	2,295	1,858
Tunisia			
Treatment (SSN=1)			
Gov. SSN benefits	-0.147**	0.080	-0.055
	(0.075)	(0.079)	(0.107)
Non-gov. SSN benefits	-0.028	0.050	-0.137
	(0.166)	(0.151)	(0.247)
Wave effects	Yes	Yes	Yes
N	2,295	2,462	1,600

Each column represents a separate regression. Bootstrapped standard errors, clustered at the individual level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Children school enrollment, income change, and unemployment are included in all estimations.

Table 4

Estimated effects of SSNs on food insecurity of vulnerable subpopulations (November 2020 – June 2021)
Dependent variables: Three food insecurity measures

	Unable to buy usual amount due to price increases	**Unable to buy usual amount due to decreased income**	**Food changes**
	(1)	(2)	(3)
Gender (Ref: Male)			
Female # Gov. SSN	-0.180	0.945***	0.139
	(0.317)	(0.321)	(0.378)
Gov. SSN=1	-0.009	-0.262*	0.032
	(0.159)	(0.154)	(0.183)
Female # Non-gov. SSN	-1.114**	0.579	-1.233*
	(0.440)	(0.479)	(0.753)
Non-gov. SSN=1	0.453	-0.576	0.343
	(0.313)	(0.363)	(0.582)
Marital status (Ref: Never/currently married)			
Widowed/divorced # Gov. SSN	0.198	0.944	-0.802
	(0.761)	(2.106)	(3.372)
Gov. SSN=1	-0.086	0.017	0.115
	(0.150)	(0.101)	(0.164)
Widowed/divorced # Non-gov. SSN	-0.520	0.042	-1.692
	(0.611)	(0.604)	(6.662)
Non-gov. SSN=1	0.035	-0.318	-0.104
	(0.237)	(0.275)	(0.386)
Regional (Ref: Urban)			
Rural # Gov. SSN	-0.100	0.182	0.308
	(0.192)	(0.297)	(0.327)
Gov. SSN=1	-0.040	0.002	-0.048
	(0.154)	(0.160)	(0.160)
Rural # Non-gov. SSN	0.390	-0.255	0.206
	(0.497)	(0.537)	(0.665)
Non-gov. SSN=1	-0.182	-0.201	-0.389
	(0.287)	(0.367)	(0.416)
Employment (Ref: Employed)			
Unemployed # Gov. SSN	-0.461*	-0.240	-0.160
	(0.301)	(0.416)	(0.593)
Gov. SSN=1	0.036	0.127	0.098
	(0.138)	(0.128)	(0.158)
Unemployed # Non-gov. SSN	-0.111	-0.369	-0.108
	(0.477)	(0.498)	(2.084)
Non-gov. SSN=1	-0.013	-0.203	-0.274
	(0.247)	(0.260)	(0.396)
N	6,718	6,221	4,586

Each column/panel represents a separate regression. Bootstrapped standard errors, clustered at the individual level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Children school enrollment, income change, unemployment, and wave effects are included in all estimations.

Table 5

SSN mitigation effects on COVID-19 coping strategies (November 2020 – June 2021)
Dependent variables: Three COVID-19 coping strategy measures

	Coping strategy: Spent savings (1)	**Coping strategy: Selling assets** (2)	**Coping strategy: Any** (3)
Food insecurity (price increase) # Gov. SSN	-0.246	-1.407**	-0.357
	(0.430)	(0.588)	(0.359)
Food insecurity=1	0.179**	0.620***	0.473***
	(0.078)	(0.157)	(0.104)
Gov. SSN=1	-0.322	0.391	-0.233
	(0.344)	(0.467)	(0.304)
Food insecurity (income decrease) # Gov. SSN	-0.245	-0.129	-1.043***
	(0.341)	(2.019)	(0.360)
Food insecurity=1	0.216***	0.391***	0.534***
	(0.084)	(0.135)	(0.101)
Gov. SSN=1	-0.315	-0.427	0.194
	(0.290)	(2.016)	(0.315)
Food insecurity (price increase) # Non-gov. SSN	-0.334	1.149	0.814
	(0.908)	(6.686)	(0.958)
Food insecurity=1	0.174**	0.555***	0.450***
	(0.076)	(0.154)	(0.102)
Non-gov. SSN=1	0.899	-0.841	-0.231
	(0.782)	(6.656)	(0.668)
Food insecurity (income decrease) # Non-gov. SSN	1.215	-0.100	-0.594
	(2.164)	(5.409)	(0.953)
Food insecurity=1	0.200**	0.388***	0.495***
	(0.081)	(0.132)	(0.099)
Non-gov. SSN=1	-0.206	0.191	0.571
	(2.120)	(5.339)	(0.852)
N	4,821	1,984	3,815

Each column/panel represents a separate regression. Bootstrapped standard errors, clustered at the individual level, are reported in parentheses. *, **, and *** denote statistical significance at the 10%, 5%, and 1% levels, respectively. Children school enrollment, income change, unemployment, and wave effects are included in all estimations.

4. Discussion

Our results suggest that non-usual support from government SSNs was effective in mitigating the food insecurity situation in Tunisia but not in Egypt, Jordan, or Morocco. In the latter two, non-usual support from non-governmental institutions was the one associated with lower food insecurity. No effect is observed for Egypt for any type of SSNs. All in all, the results reported for the limited effectiveness of SSNs in the MENA region are triggering. We discuss these results below in light of alternative but non-exhaustive explanations.

First, the food insecurity situation was far worse in Tunisia than in Egypt, Jordan, and Morocco both at the early phases of COVID-19 and up to the latest data point available by the CMMHH surveys (June 2021) (see Figure 1). In this context, it is imperative to differentiate between the regular support provided by the MENA governments versus the shock-responsive, non-usual one. Before the COVID-19 pandemic, the governments of Egypt, Jordan, and Morocco was already providing social assistance to their populations in the multiple forms of cash transfers, in-kind transfers, and other mechanisms that support household incomes. The government of Tunisia was providing social assistance only in the form of cash transfers (UN, 2020). We argue that the already in-place SSNs in Egypt, Jordan, and Morocco helped mitigate the effects on food insecurity in the context of COVID-19 in the three countries. We could not formalize this hypothesis using our DD fixed-effects estimations since the regular government support variable is fixed throughout the CMMHH survey waves, but estimates obtained from random-effects models indicate a clear association between the receipt of regular government support and the food insecurity incidence.

Second, the effectiveness of government support in Tunisia only could be partly attributed to the variation between the MENA countries in terms of social protection targeting mechanisms, the way beneficiaries received transfers, and the timing and the sufficiency of benefits received to mitigate the COVID-19 effect. The CMMHH surveys do not provide sufficient information to empirically assess the pitfalls of SSNs that we found ineffective in reducing food insecurity. In the next lines, we discuss the communality between the social protection strategies adopted by the four countries and what Tunisia, in particular, has done differently.

In times of disasters, governments can scale up existing programs and provide top-ups (vertical expansion) (cash, in-kind transfers, etc.) and/or expand coverage (horizontal expansion) to individuals impacted by the disaster but not yet reached by existing schemes. In response to COVID-19, the MENA governments followed slightly different targeting strategies to identify the beneficiaries of non-usual transfers. All the four countries implemented horizontal expansions but only Tunisia implemented a vertical expansion. Horizontal expansion through emergency cash transfers, especially to informal and daily wage workers, was a common strategy adopted by all four countries. Vulnerable groups in the

four countries have been self-selecting into the respective programs, conditional on an eligibility criterion. The four governments have set up an online platform for people to register.

However, supporting the horizontal expansion of already-existing cash and in-kind programs has been largely observed in Egypt, Jordan, and Morocco, but not Tunisia. For example, in Egypt, the government has massively expanded the number of beneficiaries of the Takaful and Karama program, which even surpassed its 2020 target number, in the absence of COVID-19. To achieve this, the government used the waiting list of potential beneficiaries that was prepared before COVID-19 (Tebaldi, 2019). Similarly, in Morocco, the government embarked on distributing transfers to informal workers registered in the RAMED registry[9].

Tunisia was the only country to spare its effort of horizontal expansion of existing programs to direct it mainly towards the vertical expansion of new programs that did not exist before the COVID-19 situation. The government distributed a one-off cash transfer of USD17 over the monthly transfer of USD61 to households participating in the programme national d'aide aux familles necessiteuse (PNAFN)[10]. Mobilizing resources towards this top-up type of assistance could have been more effective in alleviating food insecurity.

Finally, the effectiveness of informal SSNs, specifically non-governmental institutions, on food insecurity in Jordan and Morocco is justifiable. Although this is not the case in many developed or western-developing countries (Hanna, 2013; Parker & Todd, 2017), informal social support from religious and charitable institutions in MENA is culturally rooted. Zakat and Sadaka, for example, are an obligatory payment that Muslims pay as a religious ritual. Particularly in the time of disasters, individuals tend to be more generous and religious institutions may initiate additional charity funds or expand existing ones. Likewise, political institutions may increase their efforts during hard times, because they risk losing their popularity if they do not do so.

The effectiveness of informal SSNs can also be justified by their efficient targeting mechanisms as they are typically more able than the government to reach households in need. Many of these institutions already have strong knowledge of and connection to those in need. Caution needs to be taken, however, regarding the sustainability of funding and, accordingly, social support from informal SSNs.

[9] RAMED is Morocco's subsidized health insurance regime for the poor and vulnerable population.

[10] Tunisia's largest social assistance programme is the Programme national d'aide aux familles nécéssiteuses (PNAFN), a national programme of assistance to families in need. A household is eligible to this program if they meet two conditions. First, the death of the head of the household, or his inability to perform a professional activity/trade due to physical handicap, chronic illness, or old age. The second criterion is that the household does not receive any assistance from any other family member, and is living in unacceptable conditions.

5. Conclusion and Policy Implications

This study provides timely evidence on the association between SSNs and food insecurity in the MENA region in the COVID-19 context. We find that receiving non-usual governmental support is effective in reducing the probability of reporting food insecurity in Tunisia. Non-usual social support from non-governmental institutions significantly reduced the incidence of food insecurity in Morocco and Jordan. Government SSNs seem to be particularly beneficial to the unemployed and non-governmental SSNs to women. Our results further show that government SSNs in MENA mitigated the negative effect of food insecurity on resorting to adverse coping strategies during COVID-19, namely selling assets.

The findings of our research provide crucial knowledge that should guide future interventions regarding shock-responsive SSNs and food security.

First, as non-usual government support has been generally ineffective in strengthening food security in MENA during COVID-19, it is just the right time for policy makers in the region to reconsider the targeting and delivery mechanisms of the shock-responsive benefits.

Second, in parallel, policy makers should explore complementary strategies to support the resilience of food-insecure people in relation to shocks that affect their livelihoods and food systems. This also warrants further investigation into the effectiveness of shock-responsive benefits in settings where regular government support is already in place. Could regular government support provided in Egypt, Jordan, and Morocco, for instance, explain the limited effectiveness of non-usual benefits provided in these countries during COVID-19?

Third, shock-responsive benefits from non-governmental institutions are more effective than government SSNs in protecting against food insecurity in MENA during COVID-19. This finding suggests that joining forces with non-governmental institutions is crucial in the time of shocks. Distributing governmental emergency funds through non-governmental channels can yield highly effective results, not only because those in greatest need will be efficiently targeted, but also reached. Non-governmental institutions are typically more decentralized and operate in closer proximity to the most vulnerable.

Finally, government SSNs have been effective in preventing MENA households from using destructive coping strategies during COVID-19. In this sense, scaling up shock-responsive benefits can promote livelihood resilience by increasing household ability to withstand shocks, thus avoiding permanent, negative shock impacts.

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Liste des sigles et abréviations

AFD	Agence française de développement
CMMHH	COVID-19 MENA Monitor Household Survey
CSOs	Civil society organizations
DD	Diference-in-differences
ELMPS	Egyptian labor market panel survey
ERF	Economic Research Forum
FAO	Food and Agriculture Organization
MENA	Middle East and North Africa
MoSS	Ministry of Social Solidarity
NGOs	Non-governmental organizations
PNAFN	Programme national d'aide aux families necessiteuse
ppts	Percentage points
SSNs	Social safety nets
UNHCR	United Nations High Commissioner for Refugees
UNICEF	United Nations Children's Fund
WFP	World Food Program

Appendix

Table A.1

Respondents per wave

	Egypt	Jordan	Morocco	Tunisia	Total
Wave 1	0	0	863	1,294	2,157
Wave 2	833	1,553	1,414	1,821	5,601
Wave 3	0	0	1,523	1,910	3,433
Wave 4	833	1,533	1,086	1,741	5,193
Total	1,666	3,086	4,886	6,766	16,404

Note: This table shows the number of respondents per wave who were observed at least twice (participated in two waves of the survey) and responded to the food security module questions.

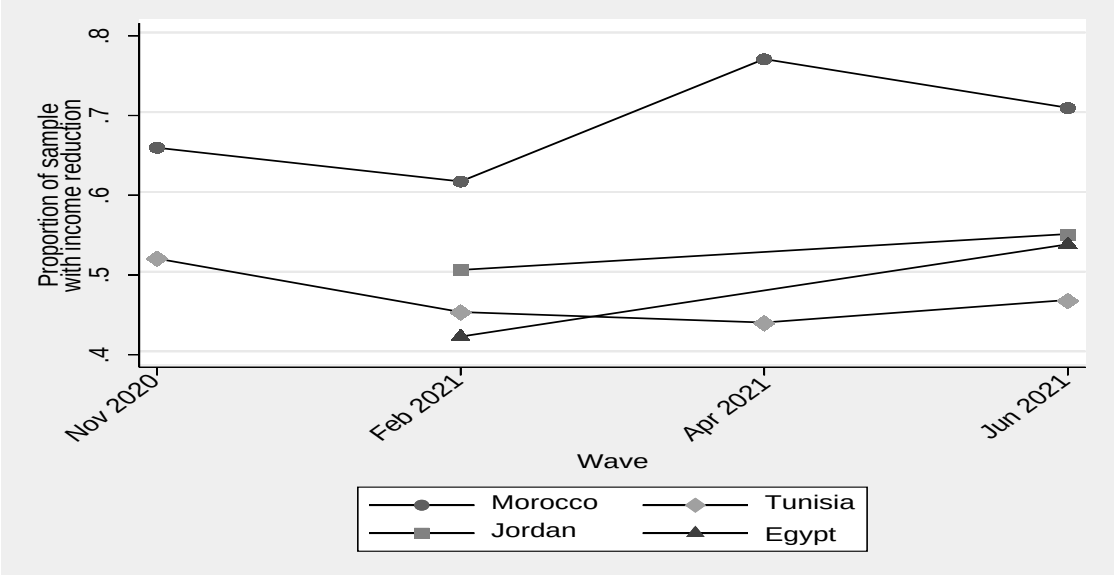
Table A.2

Summary statistics

	Egypt		Jordan		Morocco		Tunisia	
	Mean	Count	Mean	Count	Mean	Count	Mean	Count
Sex	0.556	883	0.508	1,553	0.642	1,414	0.572	1,821
	(0.497)		(0.500)		(0.480)		(0.495)	
Number of children in school	1.310	883	1.493	1,553	1.452	1,414	1.202	1,821
	(1.239)		(1.486)		(1.334)		(1.326)	
Urban	0.488	883	0.909	1,553	0.639	1,414	0.697	1,821
	(0.500)		(0.419)		(0.480)		(0.460)	
Married	0.760	883	0.732	1,553	0.632	1,414	0.648	1,821
	(0.428)		(0.443)		(0.483)		(0.478)	
Employment	0.489	883	0.335	1,553	0.495	1,414	0.555	1,821
	(0.500)		(0.472)		(0.500)		(0.497)	
Food insecurity due to prices	0.456	833	0.408	1,553	0.447	1,414	0.782	1,821
	(0.498)		(0.491)		(0.497)		(0.413)	
Food insecurity due to income	0.495	833	0.561	1,553	0.597	1,414	0.744	1,821
	(0.500)		(0.496)		(0.491)		(0.436)	
Change in food consumption	0.691	833	0.679	1,553	0.724	1,414	0.864	1,821
	(0.462)		(0.467)		(0.447)		(0.342)	
Receipt of SSN benefits	0.068	883	0.146	1,553	0.075	1,414	0.063	1,821
	(0.252)		(0.353)		(0.263)		(0.243)	
Income change	0.422	883	0.504	1,553	0.613	1,414	0.450	1,821
	(0.494)		(0.500)		(0.487)		(0.498)	
Coping strategy=Savings	.	0	.	0	0.402	863	0.375	1,294
					(0.490)		(0.484)	
Coping strategy=Sell assets	.	0	.	0	0.071	863	0.131	1,294
					(0.258)		(0.337)	
Coping strategy=Any	.	0	.	0	0.710	863	0.730	1,294
					(0.454)		(0.444)	

The summary statistics reported here is from the second wave and is weighted using the weights of the first wave available for each individual. Standard deviations are reported in parentheses.

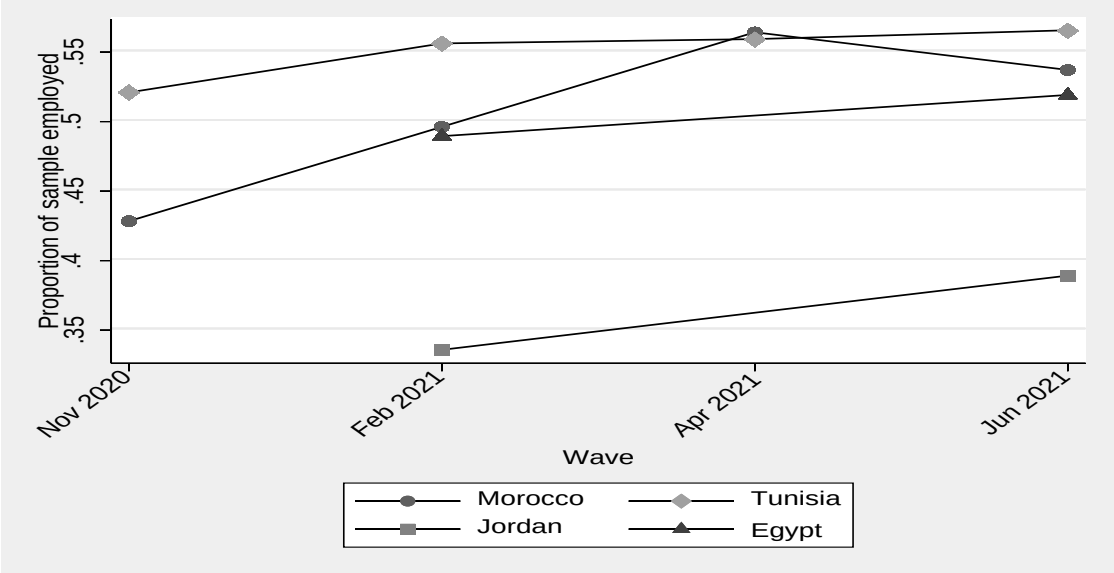
Figure A.1. Changes in income in MENA relative to February 2020 (November 2020 - June 2021)



Note: Each marker represents a weighted average of the sample in the country within the wave. Weights of the first wave available for each individual are used.

Source: Authors' graph

Figure A.2. Changes in employability in MENA (November 2020 – June 2021)



Note: Each marker represents a weighted average of the indicator for the specified country within the wave. Weights of the first wave available for each individual are used.

Source: Authors' graph

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