



Coping Strategies, well-being and inequalities during the COVID-19 pandemic period

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Abstract

As a response to the outbreak of the COVID-19 pandemic, governments around the globe have carried on strict lockdown measures affecting millions of jobs, public life, and the well-being of people. This study examines people's subjective well-being, such as the perception of the economic situation and mental well-being, who made adjustments to cope with the earning losses. We estimate the well-being cost, which is the money required to compensate people because of the reduction in earnings or employment loss and the coping strategy followed to bring their well-being to the levels of those who have not adopted any coping strategy. We examine two outcomes; the perception of the economic situation and a mental well-being index. We employ data from the ERF COVID-19 MENA Monitor Surveys for Egypt, Jordan, Morocco and Tunisia. The results show that coping strategies with earning losses impact well-being and are associated with high costs. In most cases, the coping strategies of borrowing from banks and selling assets present the highest well-being costs. Furthermore, the estimates highlight significant discrepancies across gender and types of workers, such as those employed in the informal sector and temporary contracts.

Keywords Coping Strategies · COVID-19 · Inequalities · MENA Region · Subjective Well-Being

Introduction

COVID-19 is a global health pandemic that has forced governments around the globe to introduce unprecedented steps and measures to contain the spread of the virus. These steps have included facilitating social distancing measures, national or local lockdowns and other restrictions by shutting down schools/universities, shopping malls, bars-restaurants, and businesses. The consequences have been an unprecedented shutdown of public life, prolonged material deprivation, and deterioration in the mental well-being of most citizens. People have experienced wage cuts, employment losses and a significant drop in their living standards. The rapid and persistent decrease in earnings, which follows losses of jobs or cuts in wages and working hours, typically

forces people to strenuously adjust their finances, adversely affecting their quality of life, housing and nutrition (Eliason & Storrie, 2006).

Recent studies have found a negative impact of the lockdown measures on mental well-being and poverty (e.g., Adams-Prassl et al., 2020; Banks & Xu, 2020; Cullen et al., 2020; Davillas & Jones, 2021; Laborde et al., 2021; Pieh et al., 2021). The COVID-19 pandemic has caused many implications on the population's health and poverty outcomes worldwide and has drastically affected vulnerable groups of society. People have used different coping strategies to compensate for the income loss caused by the COVID-19 pandemic. Given the magnitude and scale of the adverse effects caused by the pandemic, it is critical to measure and investigate the inequalities in the MENA region.

This study has two main aims. First, it examines people's coping strategies during the pandemic and the relationship with the respondents' subjective well-being (SWB). In particular, we aim to explore the strategies the individuals and households have taken to cope with job and income losses and fall in living standards and how these strategies relate to their SWB. The second aim is to estimate the well-being costs of the coping strategies

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adopted that denote the amount required for an individual to reach the same levels of well-being as those who have not adopted any strategy. To achieve this, we will consider the SWB outcomes described in the methodology section. We will also estimate the inequalities and the well-being costs by gender, job security, and job formality.

Numerous studies have explored the impact of unemployment and income losses on mental health outcomes and psychological well-being (Howe et al., 2012; McKee-Ryan et al., 2005). The negative effect of income losses and joblessness can be even more tenacious during economic recession periods, as is the COVID-19 period explored in this study (Karanikolos et al., 2013; Modrek et al., 2013). Adams-Prassl et al. (2020) investigated the impact of Covid-19 on people's subjective well-being (SWB) in Germany, the United States, and the United Kingdom. Their findings imply that women and those with lower educational attainment are more vulnerable to the coronavirus pandemic and are likelier to lose their jobs or experience reduced working hours and wages. Various other studies have also investigated the impact of COVID-19 on gender inequality and mental health (Alon et al., 2020; Banks & Xu, 2020).

Social scientists have presented evidence about the importance of various social supports on well-being, such as happiness and health (Demo, 1992; Schwarz et al., 2010). Also, many studies show that social support can significantly reduce stress, if not completely alleviated, when forms of support, such as attachment and empathy, are present (Cohen & Wills, 1985; House et al., 1988). Nevertheless, this study aims to explore six coping strategies for income losses resulting from wage cuts and reductions in working hours.

The first strategy is taking money out of savings, while the other two refer to borrowing from friends, family and relatives either in the respondent's country or abroad. The fourth strategy is returning to the village or moving in with the family, and the fifth is selling assets. The last coping strategy explored refers to borrowing from a bank, employer, or private lender, which incorporates the role of debt, which is a source of stress.

Previous research has primarily focused on credit card debt and bank borrowing, intending to examine the relationship between economic stress and financial strain and well-being, including depression, health, self-concept, and anxiety (Caplan & Schooler, 2007; Dreteanu, 2000; Greenberg & Mogilner, 2020; Hodson et al., 2014; Hojman et al., 2016; Loibl et al., 2022; Turunen & Hiilamo, 2014).

However, there is a counter-argument that debt might be a reasonable consumption model. While not all borrowing and repayment are without risk, having the option and opportunity of borrowing without credit or financial limits can improve economic well-being by allowing for smoother consumption processes over time (Bertola et al., 2006). Hence,

debt may not always result in a disastrous outcome, but it can have a good impact if appropriately handled.

Nonetheless, the debt's impact depends on whether the respondents borrow from banks, friends, family, and relatives. Borrowing from friends and family members is essential in evaluating capital accumulation, and it may operate as a sort of insurance against income shocks (Altonji et al., 1997; Ambrus et al., 2014; Kinnan & Townsend, 2012). Furthermore, this form of support fosters social network cohesion and solidarity. In practice, mutual aid in receiving or providing money to relatives and friends in need is seen as an act created to keep one's solidarity with them, in addition to practical concerns and interests.

Borrowing from friends should negatively impact well-being less than borrowing from banks or private lenders. We may also detect a beneficial effect depending on how social networks and solidarity shape the giver-taker relationship. According to the negative-state relief model, people who witness others being distressed feel empathy and want to help avoid negative emotions like guilt or shame (Cialdini et al., 1987). On the other hand, people who borrow from friends may face mental stress if they feel ashamed and have a solid social network and ties. Savings can help relieve financial stress and increase SWB levels (Gokdemir, 2015; Howell et al., 2006). However, during recessions, such as the COVID-19 pandemic studied in this study, taking money out of savings may lead to increased stress and anxiety and degradation of the SWB (Gokdemir, 2015).

It is critical to establish a deeper grasp of mental well-being and financial worries as they can have prolonged detrimental influences on individuals over their life span. For instance, young people from low-income families or those who experienced adversity as children are more likely to be in a vulnerable financial and psychological position as adults (Choi, 2009). Perceived long-term financial strains over the life course can be significantly related to some health-related outcomes in later life, including self-rated health status, depressive symptoms, and functional impairments (Kahn & Pearlin, 2006). The motivation of this study is that by investigating how people respond and adjust to economic shocks, we can better understand the effects of shocks on household welfare (Khan et al., 2015). In low-income countries, households frequently rely on self-insurance and informal networks to help them cope with severe economic shocks. These coping strategies typically provide inadequate protection, and some have even been linked to negative long-term effects on welfare (Dabla-Norris & Gündüz, 2014). Some people who struggle financially may resort to selling assets or borrowing from banks, which can be detrimental to physical and human capital growth, leading to a downward spiral into poverty (Nguyen et al., 2020). Therefore, it can be misleading to draw conclusions about the impact of shocks without also considering shock-coping strategies. For

instance, it would be a wrong assumption that households are adequately protected against a given shock if doing so requires adopting coping means that could eventually compromise their future well-being (Khan et al., 2015).

Data and methodology

Data

We derive the data from the panel ERF COVID-19 MENA Monitor Surveys provided by the ERF NADA micro-data portal (OAMDI, 2021). In particular, the survey includes integrated and harmonised data for Egypt, Jordan, Tunisia, and Morocco. Based on data availability and questions about coping strategies and income, we will consider one wave for Egypt and Jordan and three for Tunisia and Morocco. The first wave for Egypt was conducted in June 2020, and October–November 2020 for Tunisia and Morocco. The second wave collected data in January–February 2021 for Egypt and January–March 2021 for Tunisia and Morocco. The most recent survey also includes the third wave for Morocco and Tunisia, while the first wave for Jordan was conducted in April 2021, and the plan is to conduct short panel surveys every two months. As we have highlighted before, Economic Research Forum (ERF) has conducted the harmonisation process to create comparable data to facilitate cross-country and comparative research analysis (OAMDI, 2021).

The household sample includes individuals between 18 and 64, covering various sections, demographics and household characteristics, employment status and working conditions, education, children, social safety net, and social distancing. Other variables include risks such as the economic situation and mental health perception, the principal outcomes explored in this study, as we describe in the methodology section. The survey also carries the worker module, including occupation and, specifically, the activity, the occupation or professional class, the contract of the employment such as whether the job is permanent or temporary, and the job formality.

The advantage of the survey's panel design is its structure which considers vital demographic and socio-economic characteristics to investigate and realise the consequences of COVID-19 on wealth, inequalities, and the responses to the pandemic. Another significant benefit of the survey is that it collects information about the impact of the pandemic across various vulnerable groups, including youth, women, and irregular workers.

In panel A of Table 1, we report the frequencies for the SWB outcomes, and in panel B we present the coping strategies. We observe that around half of the respondents are very worried about their economic situation, except for Jordan, where 59% are very worried. Almost one quarter

is worried, and 10 per cent is worried in Morocco. 18–19 per cent of the respondents in Egypt and Morocco are not at all worried, while only 9–11 per cent in Jordan and Tunisia are not at all worried about their economic situation. 40–70 per cent of the respondents report a very low level of mental health and well-being. More specifically, they report less than half of the time or some of the time or at no time feeling cheerful, calm, relaxed, active, rested and filled with things of interest. The most significant percentage is noted in Jordan and Tunisia, reaching almost 70 per cent, followed by Egypt, between 50–65 per cent and Morocco at around 58 per cent.

The most common coping strategy adopted by the respondents and their households in the four countries explored is taking money from family, relatives and friends at 69 per cent in Morocco, followed by the remaining countries at 51–57 per cent. On the other hand, the less common coping strategy is taking money from family, relatives and friends abroad, ranging between 11–15 per cent, while it is reaching almost 34 per cent in Morocco. 37–39 per cent of the respondents in Egypt and Morocco had to sell their assets to cope with income losses and reductions, while the respective percentage in Jordan and Tunisia reached 22 and 23 per cent. Almost three out of four respondents in Morocco had to use their savings to cope with reductions in household income, followed by 61.77 per cent in Tunisia. In contrast, less than half of the respondents, in particular, 49.20 in Egypt and 42.19 per cent in Jordan, used their savings. Around 42 per cent of the respondents in Morocco had to borrow from a bank, employed or private lender, followed by Jordan at 39.51 per cent, Egypt at 30.90 per cent and Tunisia at 23.16 per cent. We note significant differences in the proportions of those who had to move back to the village, where almost 39–40 per cent reported this coping strategy in Egypt and Morocco, and only 5 and 8 per cent, respectively, in Tunisia and Jordan have adopted the particular coping strategy.

In panel C, we report the household income in February 2020 and the changes during the pandemic. We observe that almost half per cent of the respondents in Morocco belong to the lowest income quartile. In contrast, one-third of the respondents in Egypt and Jordan and one-quarter of the sample in Tunisia belong in the first income quartile. We observe large differences among the respondents in the four countries explored in this study regarding income changes. In particular, almost half of the respondents in Morocco have experienced a reduction of income of more than 25 per cent, compared to 28–30 per cent in Jordan and Tunisia and 22.55 per cent in Egypt. On the other hand, the proportion of those who experienced an increase in income of more than 25 per cent is similar among the four countries, ranging between 1.5 and 1.9 in Egypt and Morocco and 2.2–2.4 in Jordan and Tunisia.

Table 1 Summary Statistics for SWB Outcomes, Coping Strategies and Household Income

Country	Panel A: SWB Measures											
Egypt	How worried are you about the economic situation?											
	Not at all worried	19.20	All of the time	7.95	7.40	13.80	9.70	25.05				
	A little worried	16.65	Most of the time	12.15	10.20	10.95	10.25	14.25				
	Rather worried	18.25	More than half the time	5.90	7.05	10.95	7.50	10.30				
Jordan	Very worried	45.90	Less than half the time	14.45	17.60	18.30	20.85	16.65				
			Some of the time	35.50	37.00	31.40	33.00	26.50				
			At no time	24.05	20.75	14.60	18.70	7.25				
Morocco	How worried are you about the economic situation?											
	Not at all worried	9.93	All of the time	7.77	6.08	10.32	6.59	15.22				
	A little worried	10.63	Most of the time	15.46	13.85	18.44	18.05	18.48				
	Rather worried	20.48	More than half the time	7.69	7.30	10.24	8.67	9.69				
Tunisia	Very worried	58.96	Less than half the time	10.87	14.52	15.58	15.50	13.10				
			Some of the time	28.05	26.95	23.22	23.92	19.42				
			At no time	30.16	31.30	22.20	27.27	24.09				
Morocco	How worried are you about the economic situation?											
	Not at all worried	17.88	All of the time	13.44	14.26	14.44	14.28	13.72				
	A little worried	22.83	Most of the time	21.64	21.48	21.82	21.67	16.83				
	Rather worried	9.54	More than half the time	6.44	6.66	6.43	6.36	4.17				
Tunisia	Very worried	49.75	Less than half the time	8.78	8.16	8.03	8.06	5.07				
			Some of the time	31.42	32.09	32.02	32.29	25.63				
			At no time	18.28	17.35	17.26	17.34	34.58				
Morocco	How worried are you about the economic situation?											
	Not at all worried	11.31	All of the time	10.19	7.87	12.62	11.59	27.26				
Tunisia	A little worried	12.03	Most of the time	10.16	9.36	10.87	9.99	14.84				

Table 1 (continued)

Rather worried	21.80	More than half the time	8.87	8.13	9.98	8.09	11.82
Very worried	54.86	Less than half the time	12.42	13.44	14.07	14.48	12.67
		Some of the time	30.18	30.34	27.91	28.25	20.75
		At no time	28.18	30.86	24.55	27.60	12.66
Country	Panel B: Coping Strategies						
Egypt	Taking money out of savings	Taking money from family, relatives, or friends	Taking money from family, relatives, or friends abroad	Going back to the village or family	Borrowing from a bank, employer, or private lender	Sell Assets	
Yes	49.20	56.81	14.58	39.71	30.90	37.12	
No	50.80	43.19	85.42	60.29	69.10	62.88	
Jordan	Taking money out of savings	Taking money from family, relatives, or friends	Taking money from family, relatives, or friends abroad	Going back to the village or family	Borrowing from a bank, employer, or private lender	Sell Assets	
Yes	42.19	51.20	11.06	8.13	39.51	22.09	
No	57.81	48.80	88.94	91.87	60.49	77.91	
Morocco	Taking money out of savings	Taking money from family, relatives, or friends	Taking money from family, relatives, or friends abroad	Going back to the village or family	Borrowing from a bank, employer, or private lender	Sell Assets	
Yes	73.08	68.99	33.63	38.17	42.46	39.08	
No	26.92	31.01	66.37	61.83	57.54	60.92	
Tunisia	Taking money out of savings	Taking money from family, relatives, or friends	Taking money from family, relatives, or friends abroad	Going back to the village or family	Borrowing from a bank, employer, or private lender	Sell Assets	
Yes	61.77	51.43	10.63	5.00	23.16	23.03	
No	38.23	48.57	89.37	95.00	76.84	76.97	
Country	Panel C: Household Income						
Egypt	Household Income in February 2020	Change in Income	Jordan	Household Income in February 2020	Change in Income		
Less than 1,750 EGP	34.72	Decreased by more than 25%	22.55	Less than 260 JOD	28.02	Decreased by more than 25%	28.40
1,750- less than 2,500 EGP	29.80	Decreased by 1–25%	20.60	260-less than 420 JOD	35.48	Decreased by 1–25%	23.11
2,500-less than 4,000 EGP	23.80	Stayed the same	46.85	420-less than 660 JOD	19.44	Stayed the same	39.78
4,000 or more	11.68	Increased by 1–25%	8.50	660 or more JOD	17.06	Increased by 1–25%	6.51
		Increased by more than 25%	1.50			Increased by more than 25%	2.20

Table 1 (continued)

Morocco	Household Income in February 2020	Change in Income	Tunisia	Household Income in February 2020	Change in Income	Change in Income
Less than 2500 MAD	49.85	Decreased by more than 25%	Less than 400 TND	21.61	Decreased by more than 25%	30.02
2,500—less than 5,000 MAD	32.47	Decreased by 1–25%	400–less than 550 TND	21.81	Decreased by 1–25%	19.01
5,000—less than 10,000 MAD	12.40	Stayed the same	550–less than 1100 TND	31.40	Stayed the same	43.41
10,000 or more	5.28	Increased by 1–25%	1100 or more	25.18	Increased by 1–25%	5.15
		Increased by more than 25%			Increased by more than 25%	2.41

Sample of analysis

We should highlight that we explore the respondents separately in the four countries, and the justification for that lies in various reasons. First, significant differences and heterogeneities exist in the coping strategies adopted across countries, as shown in Table 1. Second, as we show in the next section, a particular strategy that significantly impacts the respondents’ well-being in one country becomes insignificant in other countries. Third, since we find significant differences in the relationship between coping strategies, well-being and income, the well-being costs will also significantly differ between countries. Therefore, the monetary values are also significantly different, especially if we take them in national currencies and express them in a common currency, such as in US dollars or Euros, given that the exchange rates significantly vary. Fourth, the lockdown measures and government support policies differed in the four countries we explored. The heterogeneity in those characteristics will likely affect the type and frequency of coping strategies adopted and their impact on economic and mental well-being. While the lockdown measures were similar across the four countries, we can still identify differences in duration and curfew hours (Alshoubaki & Harris, 2021; Assaad et al., 2022; Marouani et al., 2022a, 2022b). For instance, all countries applied restrictions and curfews during the pandemic’s first two months. However, the Tunisian government implemented a general lockdown from midnight through 05:00 from April to May 2021 and closed schools until late April (Marouani et al., 2022a).

On the other hand, in Egypt, school closings and workplace restrictions loosened in April 2021 (Assaad et al., 2022), while in Morocco, restrictions on public events loosened, but school closings and restrictions in public transport tightened in April–May 2021 (Marouani et al., 2022b). Another example that highlights the differences in the pandemic measures is the restrictions on gathering imposed in March–May 2020. More specifically, the Egyptian government implemented restrictions in gatherings of more than 1000 people, more than ten people in Morocco, and more than 20 people in Jordan, while the Tunisian government implemented restrictions in any public gathering (Alshoubaki & Harris, 2021; Assaad et al., 2022; Marouani et al., 2022a, 2022b).

Moreover, the government support policies were different. For instance, Morocco’s government allowed firms with fewer than 500 employees that experienced a reduction in revenues of more than 50 per cent to defer social contribution payments due between March 2020 to September 2021 (Marouani et al., 2022b; Paul-Delvaux et al., 2020). Egypt, on the other hand, has provided firms operating in the tourism, agriculture and construction industries access to credit at preferential interest rates (Assaad et al., 2022),

while the Tunisian government has dedicated a fund of 100 million Tunisian Dinars (TND) to health and food expenditures (Krafft et al., 2021). Jordan is the only country in our analysis that implemented four social protection measures, including the increase of payments of existing programmes to vulnerable groups, expanding the number of beneficiaries to those programmes, establishing temporary cash transfer assistance and implementing programmes that explicitly target informal workers (Alshoubaki & Harris, 2021). Thus, the heterogeneity and differences in government policies implemented and the time, frequency and degree of lockdown measures and restrictions across the countries indicate that the empirical analysis should be done separately for each country.

Methodology

This study aims to investigate the relationship between well-being and various coping strategies for income losses due to Covid-19 and the lockdown measures and to evaluate the well-being costs. We propose the following regression:

$$SWB_{ijt} = b_0 + b_1 CS_{ijt} + b_2 inc_{ijt} + b' X_{ijt} + \theta_t + \delta_j + u_{ijt} \quad (1)$$

where SWB denotes the subjective well-being of the individual i in governorate-area j and wave t . Variable CS represents the coping strategies for earning losses that we describe later. In each case, the control group is the same: respondents who have not taken any strategy to cope with the income losses, while the treated groups vary. For instance, CS takes a value of 1 if the individual uses savings as a coping strategy and takes 0 for no coping strategy. Similarly, for the second case, CS takes a value of 1 if the households borrowed from banks and 0 otherwise and so forth. Household income is denoted by inc , set δ_j indicates the governorate fixed effects, and set θ_t expresses the time dummies. Based on the data availability, the control variables in vector X include gender, age, marital status, education level, whether the respondent is employed, household size, and urban versus rural area.

We consider six coping strategies, which are: *Taking money out of savings; Taking money from family, relatives, or friends; Taking money from family, relatives, or friends abroad; Going back to the village or family; Borrowing from a bank, employer, or private lender, and Selling Assets*. The subjective well-being (SWB) outcomes are economic and mental well-being measures. More specifically, the economic situation is a Likert variable answering the question “How worried are you about the economic situation?” and it is measured on a scale from 1 (Not at all worried) to 4 (Very worried), with values 2 (A little worried) and 3 (Rather worried). We use mental health as another measure of SWB, and it includes the following questions: *I have felt cheerful and in good spirits; I have felt calm and relaxed; I have*

felt active and vigorous; I woke up feeling fresh and rested; My daily life has been filled with things that interest me. Similar to the economic situation, these are Likert variables measured on a scale from 1 (All of the Time) to 6 (At no time). Since the economic outcome is a Likert variable, we will apply the ordered discrete choice Probit model, while the marginal effects derived from the Logit model are very similar. Moreover, using the principal component analysis, we create a mental well-being index using the five variables mentioned above. We will employ the random effects model since the time-invariant coping strategy will drop in the fixed effects estimates.

In the next step, we will estimate the marginal costs of well-being. These costs reveal how much money should be allocated to compensate people for experiencing lower levels of SWB, making different adjustments and carrying on other coping strategies due to earning losses resulting from the lockdown measures. To find the income compensation for the coping strategies, we use regression (1), and we have the following relation:

$$WBCR = \beta_1 / \beta_2 \quad (2)$$

where $WBCR$ denotes the well-being costs expressed as a percentage of the household income, which shows the additional costs of coping strategies adopted due to the pandemic compared to households that have not adopted them, in the next step, we get the well-being costs in monetary values, and we will multiply the ratio in (2) with the average household income. In this way, we will measure the inequalities among those households.

The first specification of regression (1) is to take the midpoints of household income. However, the questionnaire has two main issues about how household income is recorded. Household income is categorical and is grouped into four categories. Thus, one major challenge of this variable is that the distribution of households within the brackets is unknown. One remedy for this is to consider the midpoints in each bracket using the steps described in the supplementary material.

The second specification includes the variable indicating the change in household income during the pandemic. In particular, the income change is a categorical variable answering the question about the change in household income during the COVID-19 period as: *Decrease of more than 25%, Decrease between 1–25%, Stay the same, Increase between 1–25% and Increase more than 25%*. Thus, instead of taking the midpoints and estimating the lower limit of the lowest bracket (Decrease more than 25%) and the upper limit of the top bracket (Increase of more than 25%) using the Pareto distribution method discussed earlier, we consider the changes in income. The reference category in our estimates is the households that have experienced a decline in

their income of more than 25%. Hence, based on the ordered values of the outcomes explored in the study, ranging from very good to very bad, we expect a negative estimated coefficient for the other categories. Therefore, for example, those who have experienced a decline in their household income between 1 and 25 per cent should report higher levels of SWB and, thus, a negative β_2 coefficient, compared to the reference category (Decrease of more than 25%).

Empirical results

Main estimates

The first part of this section reports the estimates for the economic perception and the mental well-being index in Tables 2 and 3. In Table 2, we report the full-regression estimates for the coping strategy of *taking money out of savings* and the control variables. We observe a significant and positive sign for the estimated coefficient of the coping strategy indicating a worse perception of the economic situation, as we have described in the methodology section. While the magnitude of the coping strategy coefficient varies across the countries we explore, the important part is the well-being costs ratio (WBCR) which varies between 4 and 7 per cent in Morocco and Jordan, reaching 11 per cent in Egypt and 18.5 per cent in Tunisia. This finding translates into monetary values of 260 Egyptian Pounds (EGP), 28 Jordanian Dinars (JOD), 170 Moroccan Dirhams (MAD) and 178 Tunisian Dinars per month.

Regarding the control variables, we find that women in all countries explored, except for Jordan, are less optimistic about the household's economic situation than men. Age presents a non-linear quadratic relationship with economic perception, while higher polynomial orders are insignificant. The linear term is positive, indicating that increases in age are associated with lower levels of economic perception, up to a turning point between 32–36 years old in Egypt and Morocco to 48 years old in Tunisia. More educated respondents report lower levels of well-being, while we find a negative but insignificant sign for the employed respondents in all countries explored. An exception is Tunisia, where we observe a positive and significant sign indicating that those respondents are less optimistic about their economic situation.

The concluding remarks remain similar when we explore the remaining coping strategies in Table 2 or when the outcome is the mental well-being index in Table 3.¹ Thus, we

¹ Furthermore, reporting the complete estimates implies extensive space and exploring the role of the determinants on economic perception and mental well-being is out of the current study's main topic.

do not report the results for the control variables but only the estimated coefficients of the main interest variables: coping strategies and income. However, we find no differences in the education level in Jordan and Tunisia. In contrast, only those who have completed a higher education degree in Egypt and Morocco report lower levels of mental well-being.

Married people in the four countries explored and the widowed and divorced in Morocco are more likely to report lower levels of the perceived economic situation, which can also be related to household size. We find no difference in the perception between the respondents living in urban or rural areas except for Morocco. The latter can be explained by the fact that refugees may have experienced worse conditions compared to the natives or regular migrants residing in urban and rural areas implying that the latter groups are less optimistic about their economic situation.

In Table 3, we report the estimates considering the mental well-being index. In Egypt, the highest well-being costs are found for those who borrow from banks or private lenders, followed by selling assets and borrowing from friends and relatives. In Jordan, we observe that the higher well-being costs are reported for those who had to sell their assets at 71 JOD, followed by those who had to borrow from family, relatives and friends at 60 JOD per month, those who had to use money from savings and to borrow from banks at 42–43 JOD. At the same time, we find no costs for those who borrowed from family, relatives and friends and had to return to the village or move in with the family. Even though in Table 2 we find that those who had to move to the village in Morocco is not related to the economic perception and thus, the well-being costs are insignificant, we see that those who had to adopt this coping strategy report the highest costs when we consider the mental well-being index at 1,007 MAD, followed by those who had to sell their assets at 737MAD, borrow from friends and relatives at 684 MAD and borrow from banks or a private lender at 494 MAD.

Changes in household income

In this section, we repeat the regressions in Tables 2 and 3 by using changes in household income rather than the mid-points. In this case, the interpretation of the results and well-being costs differ as we compare the costs of the four categories of changes in income with the reference category, which is a reduction in household income of more than 25 per cent. More specifically, in Table 4 and for the first coping strategy- *taking money out of savings*- in Egypt, we observe the coefficient of the household income in the category Decrease 1–25% is -0.2641, which decreases monotonically or increases in absolute values at -0.4618 for the last category which is an increase in income of more than 25 per cent. This finding shows that those who have experienced

Table 2 SWB and Coping Strategies for the Economic Situation Perception using Household Income

Variables	Egypt Estimate	SE	CI 95% LL	UL	P	Jordan Estimate	SE	CI 95% LL	UL	P
Coping Strategy (<i>Savings</i>)	0.2175	0.0579	0.1039	0.3311	0.000	0.1334	0.0577	0.0221	0.2489	0.019
Household Income	-0.2517	0.0466	-0.3431	-0.1603	0.000	-0.3356	0.0422	-0.4183	0.2528	0.000
Gender (Female)	0.2563	0.0676	0.1238	0.3890	0.000	-0.0084	0.0563	-0.1187	0.1019	0.872
Age	0.0524	0.0226	0.0083	0.0966	0.020	0.0342	0.0152	0.0044	0.0639	0.023
Age Squared	-0.0008	0.0003	-0.0013	-0.0002	0.004	-0.0004	0.0002	-0.0008	-0.000008	0.025
Education Level-Basic-Elementary	0.0959	0.1107	-0.1210	0.3128	0.373	0.2946	0.0865	0.1251	0.4641	0.001
Education Level-Secondary	0.1563	0.0856	-0.0114	0.3239	0.071	0.2601	0.0846	0.0943	0.4259	0.004
Education Level-Higher Education	0.1142	0.0855	-0.0533	0.2818	0.365	0.4303	0.0922	0.2496	0.6110	0.000
Marital Status-Married	0.1545	0.0775	0.0026	0.3065	0.046	0.1213	0.0655	-0.0071	0.2497	0.056
Marital Status-Widowed- Divorced	0.1508	0.1647	-0.1721	0.4737	0.360	0.0826	0.1221	-0.1567	0.3219	0.454
Employed (Yes)	-0.0128	0.0362	-0.0837	0.0581	0.343	-0.0081	0.0285	-0.0640	0.0478	0.973
Household Size	0.0145	0.0213	-0.0272	0.0562	0.263	0.0101	0.0117	-0.0128	0.0330	0.406
Rural Area	-0.0773	0.0652	-0.2053	0.0505	0.236	-0.0373	0.0693	-0.1731	0.0985	0.597
Wald Chi-Square Test	199.22	WBCR	11.2%	WBCR Values	260 EGP	Wald $\chi^2=102.12$	WBCR	6.8%	WBCR Values	28 JOD
Variables	Morocco Estimate	SE	CI 95% LL	UL	P	Tunisia Estimate	SE	CI 95% LL	UL	P
Coping Strategy (<i>Savings</i>)	0.0822	0.0271	0.0291	0.1353	0.000	0.0913	0.0339	0.0249	0.1577	0.008
Household Income	-0.2245	0.0225	-0.2686	-0.1804	0.000	-0.0747	0.0179	-0.1098	-0.0396	0.004
Gender (Female)	0.0814	0.0348	0.0132	0.1496	0.019	0.0956	0.0375	0.0221	0.1691	0.010
Age	0.0411	0.0089	0.0237	0.0585	0.000	0.0677	0.0152	0.0379	0.0975	0.000
Age Squared	-0.00057	0.0001	-0.0008	-0.0004	0.000	-0.0007	0.0002	-0.0011	-0.0003	0.000
Education Level-Basic-Elementary	0.1781	0.0433	0.0932	0.2630	0.000	0.0566	0.0543	-0.0498	0.1630	0.349
Education Level-Secondary	0.1211	0.0459	0.0311	0.2111	0.007	0.1616	0.0474	0.0687	0.2545	0.002
Education Level-Higher Education	0.1156	0.0465	0.0245	0.2067	0.036	0.2386	0.0571	0.1267	0.3505	0.000
Marital Status-Married	0.0847	0.0392	0.0079	0.1615	0.042	0.1805	0.0472	0.0880	0.2730	0.000
Marital Status-Widowed- Divorced	0.1749	0.0801	0.0179	0.3319	0.039	0.0364	0.0973	-0.1543	0.2271	0.678
Employed (Yes)	-0.0244	0.0335	-0.0901	0.0413	0.315	0.1721	0.0385	0.0966	0.2476	0.000
Household Size	0.0083	0.0047	-0.0009	0.0175	0.093	0.0136	0.0094	-0.0048	0.0320	0.148
Rural Area	-0.0822	0.0351	-0.1510	-0.0134	0.029	0.0267	0.0405	-0.0527	0.1061	0.455
Wald Chi-Square Test	208.03	WBCR	4.5%	WBCR Values	170 MAD	Wald $\chi^2=194.82$	WBCR	18.5%	WBCR Values	178 TND
Variables	Egypt Estimate	SE	CI 95% LL	UL	P	Jordan Estimate	SE	CI 95% LL	UL	P
Taking money from family or friends	0.1859	0.0553	0.1195	0.2523	0.000	0.2836	0.0527	0.1803	0.3869	0.000
Household Income	-0.2344	0.0471	-0.2695	-0.1993	0.000	-0.2466	0.0383	-0.3217	-0.1715	0.000
Wald χ^2	198.84	WBCR	10.5%	WBCR Values	240 EGP	Wald $\chi^2=122.26$	WBCR	19.3%	WBCR Values	80 JOD

Table 2 (continued)

Variables	Estimate	SE	LL	UL	P	Estimate	SE	LL	UL	P	Estimate	SE	LL	UL	P
<i>Taking money from family, or friends abroad</i>															
Household Income	0.2010	0.0959	0.0130	0.3890	0.014	0.3798	0.1269	0.1311	0.6285	0.002	0.3798	0.1269	0.1311	0.6285	0.002
Wald Chi-Square Test	-0.2511	0.0466	-0.3424	-0.1598	0.001	-0.2757	0.0378	-0.3498	-0.2016	0.000	-0.2757	0.0378	-0.3498	-0.2016	0.000
Variables	164.14	WBCR	10%	WBCR Values	230 EGP	Wald $\chi^2=100.67$	WBCR	19%	WBCR Values	78 JOD	Estimate	SE	LL	UL	P
<i>Going back to the village or family</i>															
Household Income	0.1575	0.0693	0.0217	0.2933	0.000	0.3180	0.1431	0.0375	0.5985	0.021	0.3180	0.1431	0.0375	0.5985	0.021
Wald Chi-Square Test	-0.2493	0.0465	-0.3404	-0.1582	0.000	-0.2784	0.0378	-0.3525	-0.2043	0.000	-0.2784	0.0378	-0.3525	-0.2043	0.000
Variables	173.21	WBCR	8.5%	WBCR Values	200 EGP	Wald $\chi^2=95.66$	WBCR	16.5%	WBCR Values	67 JOD	Estimate	SE	LL	UL	P
<i>Borrowing from a bank, employer</i>															
Household Income	0.3365	0.0796	-0.1805	0.4925	0.000	0.2976	0.0612	0.1776	0.4176	0.000	0.2976	0.0612	0.1776	0.4176	0.000
Wald Chi-Square Test	-0.2519	0.0465	-0.3430	-0.1608	0.000	-0.2798	0.0376	-0.3535	-0.2061	0.000	-0.2798	0.0376	-0.3535	-0.2061	0.000
Variables	197.12	WBCR	16%	WBCR Values	370 EGP	Wald $\chi^2=113.69$	WBCR	16%	WBCR Values	66 JOD	Estimate	SE	LL	UL	P
<i>Self Assets</i>															
Household Income	0.2183	0.0754	0.0705	0.3661	0.000	0.3028	0.0889	0.1286	0.4770	0.001	0.3028	0.0889	0.1286	0.4770	0.001
Wald Chi-Square Test	-0.2356	0.0470	-0.3277	-0.1435	0.001	-0.2756	0.0378	-0.3497	-0.2015	0.000	-0.2756	0.0378	-0.3497	-0.2015	0.000
Variables	182.44	WBCR	11.5%	WBCR Values	265 EGP	Wald $\chi^2=103.11$	WBCR	16.3%	WBCR Values	67 JOD	Estimate	SE	CI 95%		P
<i>Taking money from family or friends</i>															
Household Income	0.2036	0.0327	0.1395	0.2677	0.000	0.0745	0.0339	0.0081	0.1409	0.017	0.0745	0.0339	0.0081	0.1409	0.017
Wald Chi-Square Test	-0.2116	0.0226	-0.2559	-0.1673	0.000	-0.0675	0.0180	-0.1028	-0.0322	0.003	-0.0675	0.0180	-0.1028	-0.0322	0.003
Variables	244.01	WBCR	12.5%	WBCR Values	475 MAD	Wald $\chi^2=192.85$	WBCR	17%	WBCR Values	165 TND	Estimate	SE	LL	UL	P
<i>Taking money from family or friends abroad</i>															
Household Income	0.1509	0.0821	-0.0100	0.3118	0.000	0.0087	0.0557	-0.1005	0.1179	0.885	0.0087	0.0557	-0.1005	0.1179	0.885
Wald Chi-Square Test	-0.2251	0.0225	-0.2692	-0.1810	0.000	-0.0712	0.0187	-0.1079	-0.0345	0.008	-0.0712	0.0187	-0.1079	-0.0345	0.008
Variables	211.10	WBCR	8.5%	WBCR Values	323 MAD	Wald $\chi^2=188.05$	WBCR	n.s	WBCR Values	n.s	Estimate	SE	LL	UL	P
<i>Going back to the village or family</i>															
Household Income	0.2031	0.1295	-0.0507	0.4569	0.106	0.0081	0.0524	-0.0946	0.1108	0.922	0.0081	0.0524	-0.0946	0.1108	0.922
Wald Chi-Square Test	-0.2243	0.0225	-0.2684	-0.1802	0.000	-0.0714	0.0179	-0.1065	-0.0363	0.007	-0.0714	0.0179	-0.1065	-0.0363	0.007
Variables	210.46	WBCR	n.s	WBCR Values	n.s	Wald $\chi^2=187.65$	WBCR	n.s	WBCR Values	n.s	Estimate	SE	LL	UL	P
<i>Borrowing from a bank, employer</i>															
Household Income	0.2203	0.0513	0.1198	0.3208	0.000	0.1648	0.0479	0.0709	0.2587	0.001	0.1648	0.0479	0.0709	0.2587	0.001
Wald Chi-Square Test	-0.2225	0.0224	-0.2664	-0.1786	0.000	-0.0741	0.0179	-0.1092	-0.0390	0.004	-0.0741	0.0179	-0.1092	-0.0390	0.004
Variables	224.96	WBCR	12.3%	WBCR Values	468 MAD	Wald $\chi^2=204.02$	WBCR	31.5%	WBCR Values	300 TND	Estimate	SE	LL	UL	P
<i>Self Assets</i>															
Household Income	0.1638	0.0557	0.0546	0.2730	0.002	0.1503	0.0515	0.0494	0.2512	0.012	0.1503	0.0515	0.0494	0.2512	0.012
Wald Chi-Square Test	-0.2227	0.0226	-0.2670	-0.1784	0.000	-0.0689	0.0178	-0.1038	-0.0340	0.003	-0.0689	0.0178	-0.1038	-0.0340	0.003
Variables	216.75	WBCR	9.4%	WBCR Values	357 MAD	Wald $\chi^2=198.35$	WBCR	31%	WBCR Values	298 TND	Estimate	SE	CI 95%		P

SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; WBCR = Well-being costs ratio; EGP = Egyptian Pound; JOD = Jordanian Dinar; MAD = Moroccan Dirham; TND = Tunisian Dinar; No. observations for Egypt = 1,832; Jordan = 2,427; Morocco = 6,093; Tunisia = 5,016; n.s. = non-significant

a decrease in income between 1 and 25 per cent are more likely to report higher levels of economic perception, given that the negative sign implies higher values of well-being. Moreover, the well-being levels increase with positive changes in income, compared to the reference category that includes the households that have experienced a reduction in income of more than 25 per cent. The same applies in the remaining countries, and in most cases, the coefficients of changes in household income are significant. However, in some regressions, we find an insignificant coefficient for a specific coping strategy, as shown in the previous estimates. In contrast, in other cases, some of the coefficients of the household income become insignificant, implying insignificant well-being costs.

The number of observations in Tables 4 and 5 differs from those in Tables 2 and 3 because the estimates using the mid-points of household income rely on the information recorded in February 2020 before the pandemic. Then we applied relations (3)-(4) in the change of income to find the changes in the mid-points of income during the pandemic. However, there are missing values in the question regarding the categorical income in February 2020, but we have complete answers for the changes in income.

Discussion

Coping strategies and well-being

Overall, the estimates of the coping strategies and well-being costs vary not only between countries but also between the coping strategies adopted by the respondents within each country. Hence, the primary motivation for exploring the respondents separately in the four countries lies in identifying these possible differences and heterogeneities.

The estimate of primary interest is the well-being cost ratio (WBCR) because it reflects the percentage of income required to equalise the well-being levels of households with coping strategies to households that have not adopted any coping strategy. In particular, for the perception of economic well-being, the findings in Egypt, Morocco and Tunisia show that households borrowing from banks require a higher increase in income to equalise their well-being with households without coping strategies, compared to households adopting other coping mechanisms. For instance, households in Tunisia require an increase of 31.5% to equalise their well-being with households without coping strategies. On the other hand, households taking money from family and friends or using savings require an increase of 17–18.5% to bring their well-being to the same levels as households without coping strategies.

According to Tables 2 and 3, the coping strategy of borrowing from banks, employers or private lenders is associated with the highest well-being costs in Egypt at 370 EGP, followed by selling assets at 265 EGP, using money from savings at 260 EGP and the remaining coping strategies ranging between 200–240 EGP. The same applies to Morocco and Tunisia, where borrowing from banks and selling assets are related to higher well-being costs. However, these are followed by borrowing from friends at 475 MAD in Morocco. In Tunisia, those who borrow from friends, relatives and family and those who come back to the village or live with family experience no impact on their perception of the economic situation. We derive similar concluding remarks for Jordan, where households that borrow from friends, family and relatives from Jordan or abroad face higher well-being costs at 78–80 JOD per month.

Thus, we find heterogeneous estimates of inequalities among households adopting different coping mechanisms. As mentioned earlier, we find no differences in inequalities when households return to the village or family in Morocco and Tunisia. However, there are significant differences in Egypt at 8.5% and Jordan at 16.5%. This finding can be explained by the fact that the particular coping strategy can moderate the negative impact of COVID-19 in Morocco and Tunisia and provide alternative employment opportunities in the agricultural sector, while Egypt and Jordan rely more on tourism which was the sector mostly affected in the pandemic period. Moreover, Morocco and Tunisia could be characterized as agrarian countries where households choose or are forced to return to villages with low living costs. The same applies to those returning to their families, where they will have to face fewer costs, such as utility bills and food expenditures.

Regarding the mental well-being estimates in Table 3, we find that those who borrowed from banks and received money from family members and friends experience the largest inequalities. This finding is consistent with the previous literature where borrowing from banks leads to depression and anxiety (Drenea, 2000; Hojman et al., 2016; Loibl et al., 2022; Turunen & Hiilamo, 2014). One possible explanation for the high economic well-being costs of borrowing from family members and friends can be that households asking for financial support from family may be in a weak financial position to be able to borrow from banks, potentially because of poor credit history and obstacles in finance access. Furthermore, we found that households in Tunisia who had to sell assets also faced similar inequality levels to those who had to borrow from banks.

The findings differ when considering mental well-being by type of coping strategy and size of well-being costs. In particular, while we found more significant inequalities in economic well-being for households borrowing from banks, in Table 3, we see that mental well-being worsens

Table 3 SWB and Coping Strategies for Mental Well-Being Index using Household Income

Variables	Egypt	SE	CI 95%	P	Jordan	SE	CI 95%	P
<i>Taking money out of savings</i>	Estimate		LL	UL	Estimate		LL	UL
Household Income	0.1595	0.0410	0.0791	0.2399	0.1199	0.0414	0.0388	0.2010
R-Square	-0.2243	0.0324	-0.2878	-0.1608	-0.1964	0.0268	-0.2489	-0.1439
Variables	0.0620	WBCR	9.5%	WBCR Values	R ² =0.0494	WBCR	10.5%	WBCR Values
<i>Taking money from family, or friends</i>	Estimate		LL	UL	Estimate		LL	UL
Household Income	0.2163	0.0385	0.1408	0.2918	0.1295	0.0366	0.0578	0.2012
R-Square	-0.2046	0.0326	-0.2685	-0.1407	-0.1699	0.0271	-0.2230	-0.1168
Variables	0.0702	WBCR	14%	WBCR Values	R ² =0.0509	WBCR	14.5%	WBCR Values
<i>Taking money from family, or friends abroad</i>	Estimate		LL	UL	Estimate		LL	UL
Household Income	0.1417	0.0767	-0.0086	0.2920	0.0177	0.0813	-0.1416	0.1770
R-Square	-0.2241	0.0324	-0.2876	-0.1606	-0.1854	0.0267	-0.2377	-0.1331
Variables	0.0620	WBCR	8.5%	WBCR Values	R ² =0.0461	WBCR	n.s	WBCR Values
<i>Going back to the village or family</i>	Estimate		LL	UL	Estimate		LL	UL
Household Income	0.0325	0.0693	-0.1033	0.1683	0.1239	0.0980	-0.0682	0.3160
R-Square	-0.2231	0.0325	-0.2868	-0.1594	-0.1855	0.0266	-0.2376	-0.1334
Variables	0.0546	WBCR	n.s	WBCR Values	R ² =0.0467	WBCR	n.s	WBCR Values
<i>Borrowing from a bank, employer</i>	Estimate		LL	UL	Estimate		LL	UL
Household Income	0.2668	0.05122	0.1664	0.3672	0.1079	0.0406	0.0283	0.1875
R-Square	-0.2226	0.0322	-0.2857	-0.1595	-0.1857	0.0266	-0.2378	-0.1336
Variables	0.0668	WBCR	16.2%	WBCR Values	R ² =0.0488	WBCR	10.2%	WBCR Values
<i>Sell Assets</i>	Estimate		LL	UL	Estimate		LL	UL
Household Income	0.178	0.0494	0.0812	0.2748	0.1806	0.0573	0.0683	0.2929
R-Square	-0.2046	0.0326	-0.2685	-0.1407	-0.1835	0.0267	-0.2358	-0.1312
Variables	0.0611	WBCR	11.5%	WBCR Values	R ² =0.0620	WBCR	17.3%	WBCR Values
<i>Taking money out of savings</i>	Morocco	SE	CI 95%	P	Tunisia	SE	CI 95%	P
Household Income	Estimate		LL	UL	Estimate		LL	UL
R-Square	0.0453	0.0250	-0.0037	0.0943	0.0237	0.0639	-0.1015	0.1489
Variables	-0.1176	0.0201	-0.1570	-0.0782	-0.1195	0.0126	-0.1442	-0.0948
<i>Taking money from family or friends</i>	0.0272	WBCR	5.2%	WBCR Values	R ² =0.0462	WBCR	n.s	WBCR Values
Household Income	Estimate		LL	UL	Estimate		LL	UL
R-Square	0.1565	0.0273	0.1030	0.2100	0.1777	0.0234	0.1318	0.2236
Variables	-0.1195	0.0191	-0.1569	-0.0821	-0.1099	0.0126	-0.1346	-0.0852
<i>Taking money from family or friends abroad</i>	0.0337	WBCR	18%	WBCR Values	R ² =0.0568	WBCR	24.5%	WBCR Values
Household Income	Estimate		LL	UL	Estimate		LL	UL
R-Square	0.0415	0.0681	-0.0920	0.1750	0.0662	0.0379	-0.0081	0.1405
Variables	-0.1302	0.0191	-0.1676	-0.0928	-0.1193	0.0125	-0.1438	-0.0948

Table 3 (continued)

R-Square Variables	0.0286 Estimate	WBCR SE	n.s LL	WBCR Values UL	n.s LL	WBCR SE	8.5% LL	WBCR Values UL	82 TND P
<i>Going back to the village or family Household Income</i>	0.2531 -0.1297	0.1011 0.0191	0.0549 -0.1671	0.4513 -0.0923	0.0111 0.000	0.0331 0.0125	0.0809 -0.1415	0.2107 -0.0925	0.000 0.000
R-Square Variables	0.0295 Estimate	WBCR SE	26.5% LL	WBCR Values UL	1,007 MAD P	WBCR SE	19% LL	WBCR Values UL	182 TND P
<i>Borrowing from a bank, employer Household Income</i>	0.1217 -0.1288	0.0428 0.0191	0.0378 -0.1662	0.2056 -0.0914	0.002 0.000	0.0314 0.0126	0.1227 -0.1468	0.2457 -0.0974	0.000 0.000
R-Square Variables	0.0298 Estimate	WBCR SE	13% LL	WBCR Values UL	494 MAD P	WBCR SE	23% LL	WBCR Values UL	220 TND P
<i>Sell Assets Household Income</i>	0.1824 -0.1279	0.0438 0.0191	0.0966 -0.1653	0.2682 -0.0905	0.001 0.000	0.0333 0.0126	0.0565 -0.1413	0.1871 -0.0919	0.000 0.000
R-Square	0.0213	WBCR	9.4%	WBCR Values	357 MAD	WBCR	16%	WBCR Values	154 TND

SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; WBCR = Well-being costs ratio; EGP = Egyptian Pound; JOD = Jordanian Dinar; MAD = Moroccan Dirham; TND = Tunisian Dinar. No. observations for Egypt = 1,832; Jordan = 2,427; Morocco = 6,093; Tunisia = 5,016. n.s. = non-significant

in households that had to sell their assets in Jordan and households returning to village or family for households in Morocco and Tunisia. An exception is Egypt, where households borrowing from banks report higher inequalities for both economic and mental well-being outcomes. These findings show that the perception of the future economic situation and mental well-being state depends on the coping strategy adopted. Thus, while households returning to family or the village in Morocco and Tunisia are not associated with future financial worries, as we mentioned earlier, it may adversely affect mental health. One potential reason could be that the COVID-19 pandemic made it difficult for those households, especially young people living in urban areas, to live normal lives with employment and income losses. Therefore, even if they report the same economic perceptions by going back to the village or their family with households that did not need to adopt any coping strategy, they may still have been influenced in terms of mental well-being.

There are two interpretations of the WBCR in Tables 4 and 5, calculated by taking the ratio of the marginal effect of the first derivative concerning the coping strategy over the marginal effect of each income category. Thus, coming back to the example of the coping strategy of taking money out of savings and the coefficient of the income change category decrease between 1–25 per cent in Egypt in Table 4, we have the marginal effect of 0.1672, which is 0.0611 since we have the ordered Probit model, over the marginal effect of -0.2641 which is 0.1051. In the case of the mental well-being index in Table 5 and for the same coping strategy in Egypt, we get the first derivatives of the linear model estimated with OLS and taking the ratio of 0.2889 over 0.3084.

The first interpretation of the WBCR is that it shows how much the household belonging to a specific change of income requires to compensate for the reduction in well-being due to adopting a particular coping strategy compared to those who have not adopted one. For instance, considering the coping strategy of taking money out of savings in Egypt, we observe a WBCR equal to 58 per cent for the decrease in income between 1 and 25 per cent. This percentage shows that households who have experienced this change in income require 58 per cent additional income to equalise their well-being, which is the perception of the economic situation, with those who have not adopted any strategy. Similarly, the households who had to take money out of savings and show no changes in their income need an additional 42 per cent of their income to reach the well-being levels of those who have not employed any coping strategy. Households that have experienced an increase of income between 1–25 per cent require 38 per cent additional income, and those who have seen a rise of more than 25 per cent need 30 per cent. Similarly, when we consider the mental well-being in Table 5, households with a decrease in income between 1 and 25 per cent required 94 per cent additional

Table 4 SWB and Coping Strategies for the Perception on Economic Situation using Changes in Income

Variables	Egypt	SE	CI 95%	P	WBCR	Jordan	SE	CI 95%	P	WBCR
<i>Taking money out of savings</i>	Estimate		LL	UL		Estimate		LL	UL	
Household Income (Decrease 1–25%)	0.1672	0.0561	0.0572	0.2772	0.002	0.0863	0.0455	-0.0029	0.1755	0.055
Household Income (Stay the Same)	-0.2641	0.0803	-0.4215	-0.1067	0.000	-0.3573	0.0687	-0.4920	-0.2226	0.000
Household Income (Increase 1–25%)	-0.3792	0.1088	-0.5924	-0.1660	0.000	-0.3714	0.1096	-0.5862	-0.1566	0.000
Household Income (Increase > 25%)	-0.3832	0.0686	-0.5177	-0.2487	0.000	-0.5239	0.1653	-0.8479	-0.1999	0.001
Household Income (Increase > 25%)	-0.4618	0.1997	-0.8532	-0.0704	0.004	-0.6203	0.0627	-0.7432	-0.4974	0.000
Wald Chi-Square Test	108.74					Wald $\chi^2 = 141.87$				
Variables	Estimate	SE	LL	UL	P	WBCR	SE	LL	UL	P
<i>Taking money from family or friends</i>	Estimate		LL	UL		Estimate		LL	UL	
Household Income (Decrease 1–25%)	0.1784	0.0528	0.0749	0.2819	0.000	0.2672	0.0549	0.1596	0.3748	0.000
Household Income (Stay the Same)	-0.2592	0.0801	-0.4162	-0.1022	0.000	-0.3320	0.0692	-0.4676	-0.1964	0.000
Household Income (Increase 1–25%)	-0.3860	0.1087	-0.5991	-0.1729	0.000	-0.3478	0.1086	-0.5607	-0.1349	0.001
Household Income (Increase > 25%)	-0.3889	0.0689	-0.5239	-0.2539	0.000	-0.4878	0.1656	-0.8124	-0.1632	0.002
Household Income (Increase > 25%)	-0.4603	0.1953	-0.8431	-0.0775	0.017	-0.5774	0.0634	-0.7017	-0.4531	0.000
Wald Chi-Square Test	114.09					Wald $\chi^2 = 164.10$				
Variables	Estimate	SE	LL	UL	P	WBCR	SE	LL	UL	P
<i>Taking money from family/friends abroad</i>	Estimate		LL	UL		Estimate		LL	UL	
Household Income (Decrease 1–25%)	0.2057	0.1224	-0.0342	0.4456	0.074	0.3154	0.1258	0.0688	0.5620	0.013
Household Income (Stay the Same)	-0.2726	0.0801	-0.4296	-0.1156	0.001	-0.3519	0.0689	-0.4869	-0.2169	0.000
Household Income (Increase 1–25%)	-0.3954	0.1084	-0.6079	-0.1829	0.000	-0.3697	0.1098	-0.5849	-0.1545	0.000
Household Income (Increase > 25%)	-0.4093	0.0681	-0.5428	-0.2758	0.000	-0.5218	0.1669	-0.8489	-0.1947	0.001
Household Income (Increase > 25%)	-0.5264	0.1966	-0.9117	-0.1411	0.004	-0.6129	0.0628	-0.7360	-0.4898	0.000
Wald Chi-Square Test	74.65					Wald $\chi^2 = 146.77$				
Variables	Estimate	SE	LL	UL	P	WBCR	SE	LL	UL	P
<i>Going back to the village or family</i>	Estimate		LL	UL		Estimate		LL	UL	
Household Income (Decrease 1–25%)	0.1718	0.0673	0.0399	0.3037	0.023	0.1548	0.1225	-0.0853	0.3949	0.247
Household Income (Stay the Same)	-0.2704	0.0801	-0.4274	-0.1134	0.000	-0.3578	0.0688	-0.4918	-0.2222	0.000
Household Income (Increase 1–25%)	-0.3880	0.1081	-0.5999	-0.1761	0.000	-0.3704	0.1094	-0.5844	-0.1556	0.000
Household Income (Increase > 25%)	-0.3984	0.0683	-0.5323	-0.2645	0.000	-0.5151	0.1651	-0.8387	-0.1915	0.001
Household Income (Increase > 25%)	-0.5032	0.2002	-0.8956	-0.1108	0.010	-0.6174	0.0628	-0.7405	-0.4943	0.000
Wald Chi-Square Test	90.95					Wald $\chi^2 = 142.20$				
Variables	Estimate	SE	LL	UL	P	WBCR	SE	LL	UL	P
<i>Borrowing from a bank, employer</i>	Estimate		LL	UL		Estimate		LL	UL	
Household Income (Decrease 1–25%)	0.2889	0.0775	0.1370	0.4408	0.000	0.2557	0.0605	0.1371	0.3743	0.000
Household Income (Stay the Same)	-0.3084	0.0801	-0.4654	-0.1514	0.000	-0.3656	0.0687	-0.5003	-0.2309	0.000
Household Income (Increase 1–25%)	-0.3971	0.1083	-0.6094	-0.1848	0.000	-0.3778	0.1092	-0.5918	-0.1638	0.000
Household Income (Increase > 25%)	-0.4003	0.0681	-0.5338	-0.2668	0.000	-0.5293	0.1681	-0.8588	-0.1998	0.001
Household Income (Increase > 25%)	-0.4753	0.1980	-0.8634	-0.0872	0.011	-0.6130	0.0629	-0.7363	-0.4897	0.000
Wald Chi-Square Test	113.57					Wald $\chi^2 = 159.35$				
Variables	Estimate	SE	LL	UL	P	WBCR	SE	LL	UL	P

Table 4 (continued)

<i>Sell Assets</i>												
Household Income (Decrease 1–25%)	0.1929	0.0731	0.0496	0.3362	0.007		0.2063	0.0558	0.0969	0.3157	0.000	
Household Income (Stay the Same)	-0.2621	0.0804	-0.4197	-0.1045	0.000	74%	-0.3573	0.0688	-0.4921	-0.2225	0.000	58%
Household Income (Increase 1–25%)	-0.3746	0.1082	-0.5867	-0.1625	0.000	52%	-0.3714	0.1096	-0.5862	-0.1566	0.000	55%
Household Income (Increase > 25%)	-0.3859	0.0685	-0.5202	-0.2516	0.000	50%	-0.5239	0.1653	-0.8479	-0.1999	0.001	39%
Wald Chi-Square Test	-0.4732	0.1989	-0.8630	-0.0834	0.024	41%	-0.6203	0.0626	-0.7430	-0.4976	0.000	33%
Variables	93.52						Wald $\chi^2 = 141.87$					
<i>Taking money out of savings</i>												
Household Income (Decrease 1–25%)	0.0522	0.0297	-0.0060	0.1104	0.078	15%	0.0583	0.0304	-0.0013	0.1179	0.055	
Household Income (Stay the Same)	-0.3555	0.0421	-0.4380	-0.2730	0.000	14%	-0.1413	0.0446	-0.2287	-0.0539	0.002	41%
Household Income (Increase 1–25%)	-0.3668	0.1108	-0.5840	-0.1496	0.000	11%	-0.2704	0.0371	-0.3431	-0.1977	0.000	21%
Household Income (Increase > 25%)	-0.4893	0.0859	-0.6577	-0.3209	0.000	9%	-0.3063	0.0707	-0.4449	-0.1677	0.000	19%
Wald Chi-Square Test	-0.6037	0.0347	-0.6717	-0.5357	0.000		-0.4008	0.1012	-0.5992	-0.2024	0.000	15%
Variables	426.78						Wald $\chi^2 = 311.29$					
<i>Taking money from family or friends</i>												
Household Income (Decrease 1–25%)	0.1688	0.0330	0.1041	0.2335	0.000	52%	0.0970	0.0304	0.0374	0.1566	0.001	
Household Income (Stay the Same)	-0.3249	0.0420	-0.4072	-0.2426	0.000	46%	-0.135	0.0447	-0.2226	-0.0474	0.002	71%
Household Income (Increase 1–25%)	-0.3683	0.1102	-0.5843	-0.1523	0.000	35%	-0.2662	0.0370	-0.3387	-0.1937	0.000	36%
Household Income (Increase > 25%)	-0.4802	0.0861	-0.6490	-0.3114	0.000	29%	-0.3009	0.0709	-0.4399	-0.1619	0.000	32%
Wald Chi-Square Test	-0.5784	0.0345	-0.6460	-0.5108	0.000		-0.3981	0.1016	-0.5972	-0.1990	0.000	24%
Variables	447.12						Wald $\chi^2 = 316.82$					
<i>Taking money from family/friends abroad</i>												
Household Income (Decrease 1–25%)	0.1107	0.0634	-0.0136	0.2350	0.081	34%	0.0121	0.0503	-0.0865	0.1107	0.580	
Household Income (Stay the Same)	-0.3239	0.0421	-0.4064	-0.2414	0.000	30%	-0.2412	0.0446	-0.3286	-0.1538	0.002	n.s.
Household Income (Increase 1–25%)	-0.3699	0.1109	-0.5873	-0.1525	0.000	23%	-0.2751	0.0369	-0.3474	-0.2028	0.000	n.s.
Household Income (Increase > 25%)	-0.4901	0.0857	-0.6581	-0.3221	0.000	19%	-0.3086	0.0708	-0.4474	-0.1698	0.000	n.s.
Wald Chi-Square Test	-0.5974	0.0345	-0.6650	-0.5298	0.000		-0.4009	0.1013	-0.5994	-0.2024	0.000	n.s.
Variables	426.34						Wald $\chi^2 = 334.52$					
<i>Going back to the village or family</i>												
Household Income (Decrease 1–25%)	0.1207	0.1317	-0.1374	0.3788	0.311	n.s.	0.0221	0.0477	-0.0714	0.1156	0.642	
Household Income (Stay the Same)	-0.3236	0.0420	-0.4059	-0.2413	0.000	n.s.	-0.1404	0.0449	-0.2284	-0.0524	0.002	n.s.
Household Income (Increase 1–25%)	-0.3663	0.1110	-0.5839	-0.1487	0.000	n.s.	-0.2743	0.0369	-0.3466	-0.2020	0.000	n.s.
Household Income (Increase > 25%)	-0.4879	0.0856	-0.6557	-0.3201	0.000	n.s.	-0.3077	0.0708	-0.4465	-0.1689	0.000	n.s.
Wald Chi-Square Test	-0.5973	0.0345	-0.6649	-0.5297	0.000		-0.4007	0.1013	-0.5992	-0.2022	0.000	n.s.
Variables	425.45						Wald $\chi^2 = 307.47$					
<i>Borrowing from a bank, employer</i>												
Estimate	0.1759	0.0515	0.0750	0.2768	0.000		Estimate	SE	LL	UL	P	WBCR
							0.1317	0.0436	0.0462	0.2172	0.002	

Table 4 (continued)

Variables	Estimate	SE	LL	UL	P	WBCR	Estimate	SE	LL	UL	P	WBCR
Household Income (Decrease 1–25%)	-0.3292	0.0421	-0.4117	-0.2467	0.000	53%	-0.1398	0.0447	-0.2274	-0.0522	0.002	94%
Household Income (Stay the Same)	-0.3601	0.1107	-0.5771	-0.1431	0.000	50%	-0.269	0.0371	-0.3417	-0.1963	0.000	49%
Household Income (Increase 1–25%)	-0.4846	0.0857	-0.6526	-0.3166	0.000	36%	-0.307	0.0707	-0.4456	-0.1684	0.000	43%
Household Income (Increase > 25%)	-0.5921	0.0345	-0.6597	-0.5245	0.000	30%	-0.3992	0.1012	-0.5976	-0.2008	0.000	33%
Wald Chi-Square Test	427.45						Wald $\chi^2 = 320.23$					
Variables	Estimate	SE	LL	UL	P <td>WBCR</td> <td>Estimate</td> <td>SE</td> <td>LL</td> <td>UL</td> <td>P</td> <td>WBCR</td>	WBCR	Estimate	SE	LL	UL	P	WBCR
<i>Sell Assets</i>	0.1123	0.0559	0.0027	0.2219	0.039		0.1455	0.0473	0.0528	0.2382	0.000	
Household Income (Decrease 1–25%)	-0.3206	0.0420	-0.4029	-0.2383	0.000	35%	-0.1532	0.0442	-0.2398	-0.0666	0.002	95%
Household Income (Stay the Same)	-0.3617	0.1108	-0.5789	-0.1445	0.000	31%	-0.2549	0.0376	-0.3286	-0.1812	0.000	57%
Household Income (Increase 1–25%)	-0.4868	0.0858	-0.6550	-0.3186	0.000	23%	-0.3010	0.0709	-0.4400	-0.1620	0.000	48%
Household Income (Increase > 25%)	-0.5938	0.0346	-0.6616	-0.5260	0.000	19%	-0.4055	0.1015	-0.6044	-0.2066	0.000	36%
Wald Chi-Square Test	429.95						Wald $\chi^2 = 141.87$					

SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; WBCR = Well-being costs ratio; No. observations for Egypt = 2,000; Jordan = 2,549, Morocco = 6,093; Tunisia = 6,134. n.s. = non-significant

income, indicating a relationship with mental health rather than economic well-being in Table 4.

The second interpretation accounts for the reference category, which is an income reduction of more than 25 per cent. Considering the previous example, the household in the reference category requires an additional 42 per cent (100–58) to reach the same levels of economic well-being or the perceived economic situation because of a reduction in income. Similarly, when we compare the reference category with the households in the third category (income stayed the same), they need an additional 58 per cent to reach the same levels of well-being. Then they require 62 and 70 per cent to achieve the same well-being levels as the households in the fourth (increase in income between 1–25%) and fifth (increase in income of more than 25%) categories, respectively, to equalise their well-being. When considering mental well-being, households in the reference category require less, such as 6, 27, 28 and 40 per cent, respectively, in each income change category, to reach their well-being levels. This finding shows that households with an increase in income have experienced significant adverse effects on health.

Therefore, the results indicate that COVID-19 negatively impacted mental well-being more than economic well-being. One explanation can be extended school and university closures have left young people at risk for social isolation and disconnectedness, which can exacerbate feelings of anxiety, uncertainty, and loneliness and contribute to affective and behavioural problems. Feelings of loneliness, division and disconnection from the society also grew between mid-2020 and the first half of 2021 for other groups, including people working from home. In 2020 and 2021, younger adults experienced some of the steepest decreases in mental health, social connectedness, life satisfaction, job upheaval, and insecurity. Also, a United Nations (UN) report found that 45% of women had experienced direct or indirect violence during the first year of the pandemic, suggesting that domestic violence was a significant source of stress for women and negatively affecting their feelings of safety and mental health (UN Women, 2021).

The findings also highlight that low perceptions of economic well-being are associated with a more than proportional fall in mental well-being (Wilson et al., 2020). During the pandemic, the job market degradation and the unemployment rate have intensified people’s fear of unemployment, raising the severity of mental distress (Timming et al., 2021). Remote work, interruption of work activities due to lockdown measures, or increased workload due to the needs of the pandemic may also become factors affecting mental health. Remote work, disruption of job activities due to lockdown measures, and increased workload due to the pandemic’s demands have also led to mental health problems (Timming et al., 2021; Wilson et al., 2020).

Table 5 SWB and Coping Strategies for the Mental Well-Being Index using Changes in Income

Variables	Egypt	SE	CI 95%	UL	P	WBCR	Jordan	Estimate	SE	CI 95%	UL	P	WBCR
<i>Taking money out of savings</i>	Estimate		LL	UL			Estimate			LL	UL		
Household Income (Decrease 1–25%)	0.1264	0.0401	0.0478	0.2050	0.002	0.002	0.0541	0.0380	0.0380	-0.0204	0.1286	0.176	0.176
Household Income (Stay the Same)	-0.1343	0.0523	-0.2368	-0.0318	0.010	94%	-0.1347	0.1034	0.1034	-0.3374	0.0680	0.193	n.s
Household Income (Increase 1–25%)	-0.2348	0.0812	-0.3940	-0.0756	0.004	54%	-0.1871	0.0451	0.0451	-0.2755	-0.0987	0.000	n.s
Household Income (Increase > 25%)	-0.2796	0.0485	-0.3747	-0.1845	0.000	45%	-0.2599	0.0422	0.0422	-0.3426	-0.1772	0.000	n.s
R-Square	0.3928	0.1868	-0.7589	-0.0267	0.036	32%	-0.4482	0.0748	0.0748	-0.5948	-0.3016	0.000	n.s
R-Square	0.0554						R ² = 0.0501						
<i>Taking money from family or friends</i>	Estimate		LL	UL	P	WBCR	Estimate		SE	LL	UL	P	WBCR
Household Income (Decrease 1–25%)	0.1290	0.0375	0.0555	0.2025	0.000	0.000	0.1436	0.0356	0.0356	0.0738	0.2134	0.000	0.000
Household Income (Stay the Same)	-0.1358	0.0625	-0.2583	-0.0133	0.015	95%	-0.1208	0.1026	0.1026	-0.3219	0.0803	0.280	n.s
Household Income (Increase 1–25%)	-0.2363	0.0816	-0.3962	-0.0764	0.004	55%	-0.1758	0.0453	0.0453	-0.2646	-0.0870	0.000	82%
Household Income (Increase > 25%)	-0.2734	0.0485	-0.3685	-0.1783	0.000	47%	-0.2403	0.0423	0.0423	-0.3232	-0.1574	0.000	60%
R-Square	0.3714	0.1851	-0.7342	-0.0086	0.045	35%	-0.4391	0.0743	0.0743	-0.5847	-0.2935	0.000	33%
R-Square	0.0650						R ² = 0.0551						
<i>Taking money from family/friends abroad</i>	Estimate		LL	UL	P	WBCR	Estimate		SE	LL	UL	P	WBCR
Household Income (Decrease 1–25%)	0.1488	0.0744	0.0030	0.2946	0.046	0.046	0.0261	0.0806	0.0806	-0.1319	0.1841	0.747	0.747
Household Income (Stay the Same)	-0.1610	0.0524	-0.2637	-0.0583	0.007	92%	-0.1287	0.1036	0.1036	-0.3318	0.0744	0.214	n.s
Household Income (Increase 1–25%)	-0.2480	0.0805	-0.4058	-0.0902	0.002	60%	-0.1898	0.0451	0.0451	-0.2782	-0.1014	0.000	n.s
Household Income (Increase > 25%)	-0.3001	0.0484	-0.3950	-0.2052	0.000	49%	-0.2648	0.0422	0.0422	-0.3475	-0.1821	0.000	n.s
R-Square	0.4372	0.1866	-0.8029	-0.0715	0.019	34%	-0.4503	0.0749	0.0749	-0.5971	-0.3035	0.000	n.s
R-Square	0.0525						R ² = 0.0493						
<i>Going back to the village or family</i>	Estimate		LL	UL	P	WBCR	Estimate		SE	LL	UL	P	WBCR
Household Income (Decrease 1–25%)	0.0372	0.0444	-0.0498	0.1242	0.403	0.403	0.1153	0.0952	0.0952	-0.0713	0.3019	0.226	0.226
Household Income (Stay the Same)	-0.1408	0.0524	-0.2435	-0.0381	0.007	n.s	-0.1239	0.1036	0.1036	-0.3270	0.0792	0.231	n.s
Household Income (Increase 1–25%)	-0.2503	0.0808	-0.4087	-0.0919	0.002	n.s	-0.1879	0.0452	0.0452	-0.2765	-0.0993	0.000	n.s
Household Income (Increase > 25%)	-0.2996	0.0483	-0.3943	-0.2049	0.000	n.s	-0.2600	0.0423	0.0423	-0.3429	-0.1771	0.000	n.s
R-Square	0.4269	0.1882	-0.7958	-0.0580	0.023	n.s	-0.4484	0.0747	0.0747	-0.5948	-0.3020	0.000	n.s
R-Square	0.0511						R ² = 0.0498						
<i>Borrowing from a bank, employer</i>	Estimate		LL	UL	P	WBCR	Estimate		SE	LL	UL	P	WBCR
Household Income (Decrease 1–25%)	0.2098	0.0513	0.1093	0.3103	0.000	0.000	0.1010	0.0403	0.0403	0.0220	0.1800	0.012	0.012
Household Income (Stay the Same)	-0.2242	0.0519	-0.3259	-0.1225	0.006	94%	-0.1281	0.1042	0.1042	-0.3323	0.0761	0.219	n.s
Household Income (Increase 1–25%)	-0.2476	0.0809	-0.4062	-0.0890	0.002	85%	-0.1917	0.0451	0.0451	-0.2801	-0.1033	0.000	53%
Household Income (Increase > 25%)	-0.2906	0.0482	-0.3851	-0.1961	0.000	72%	-0.2587	0.0422	0.0422	-0.3414	-0.1760	0.000	39%
R-Square	0.3973	0.1854	-0.7607	-0.0339	0.032	53%	-0.4505	0.0746	0.0746	-0.5967	-0.3043	0.000	22%
R-Square	0.0594						R ² = 0.0515						
<i>Variables</i>	Estimate		LL	UL	P	WBCR	Estimate		SE	LL	UL	P	WBCR

Table 5 (continued)

<i>Sell Assets</i>														
Household Income (Decrease 1–25%)	0.1797	0.0481	0.0854	0.2740	0.000		0.1541	0.0400	0.0757	0.2325	0.001			
Household Income (Stay the Same)	-0.201	0.0923	-0.3819	-0.0201	0.012	89%	-0.1347	0.1034	-0.3374	0.0680	0.263	n.s.		
Household Income (Increase 1–25%)	-0.2375	0.0805	-0.3953	-0.0797	0.000	75%	-0.1870	0.0451	-0.2754	-0.0986	0.000	82%		
Household Income (Increase > 25%)	-0.2767	0.0488	-0.3723	-0.1811	0.003	65%	-0.2599	0.0423	-0.3428	-0.1770	0.000	59%		
R-Square	-0.3951	0.1881	-0.7638	-0.0264	0.036	46%	-0.4482	0.0748	-0.5948	-0.3016	0.000	34%		
Variables	0.0573						R ² = 0.0573							
<i>Taking money out of savings</i>														
Household Income (Decrease 1–25%)	0.0310	0.0250	-0.0180	0.0800	0.303		0.0297	0.0228	-0.0150	0.0744	0.452			
Household Income (Stay the Same)	-0.1141	0.0973	-0.3048	0.0766	0.241	n.s.	-0.2549	0.0295	-0.3127	-0.1971	0.000	n.s.		
Household Income (Increase 1–25%)	-0.128	0.0366	-0.1997	-0.0563	0.000	n.s.	-0.2868	0.0255	-0.3368	-0.2368	0.000	n.s.		
Household Income (Increase > 25%)	-0.1810	0.0752	-0.3284	-0.0336	0.016	n.s.	-0.4159	0.0536	-0.5210	-0.3108	0.000	n.s.		
R-Square	-0.2907	0.0296	-0.3487	-0.2327	0.000	n.s.	-0.4743	0.0803	-0.6317	-0.3169	0.000	n.s.		
Variables	0.0376						R ² = 0.0540							
<i>Taking money from family or friends</i>														
Household Income (Decrease 1–25%)	0.1427	0.0272	0.0894	0.1960	0.000		0.1913	0.0211	0.1499	0.2327	0.000			
Household Income (Stay the Same)	-0.103	0.0969	-0.2929	0.0869	0.285	n.s.	-0.2126	0.0295	-0.2704	-0.1548	0.000	89%		
Household Income (Increase 1–25%)	-0.180	0.0365	-0.2515	-0.1085	0.000	79%	-0.2764	0.0274	-0.3301	-0.2227	0.000	69%		
Household Income (Increase > 25%)	-0.2017	0.0952	-0.3883	-0.0151	0.022	70%	-0.3998	0.0535	-0.5047	-0.2949	0.000	48%		
R-Square	-0.2755	0.0296	-0.3335	-0.2175	0.000	52%	-0.4653	0.0793	-0.6207	-0.3099	0.000	41%		
Variables	0.0418						R ² = 0.0662							
<i>Taking money from family/friends abroad</i>														
Household Income (Decrease 1–25%)	0.0398	0.0657	-0.0890	0.1686	0.573		0.0519	0.0302	-0.0073	0.1111	0.082			
Household Income (Stay the Same)	-0.1147	0.0974	-0.3056	0.0762	0.239	n.s.	-0.1532	0.0296	-0.2112	-0.0952	0.000	34%		
Household Income (Increase 1–25%)	-0.1291	0.0366	-0.2008	-0.0574	0.000	n.s.	-0.2839	0.0255	-0.3339	-0.2339	0.000	18%		
Household Income (Increase > 25%)	-0.1812	0.0752	-0.3286	-0.0338	0.016	n.s.	-0.4140	0.0546	-0.5210	-0.3070	0.000	13%		
R-Square	-0.2930	0.0294	-0.3506	-0.2354	0.000	n.s.	-0.4717	0.0803	-0.6291	-0.3143	0.000	11%		
Variables	0.0376						R ² = 0.0662							
<i>Going back to the village or family</i>														
Household Income (Decrease 1–25%)	0.2121	0.1011	0.0139	0.4103	0.036		0.1333	0.0300	0.0745	0.1921	0.000			
Household Income (Stay the Same)	-0.1128	0.0971	-0.3031	0.0775	0.245	n.s.	-0.160	0.0296	-0.2180	-0.1020	0.000	83%		
Household Income (Increase 1–25%)	-0.2279	0.0367	-0.2998	-0.1560	0.000	93%	-0.2822	0.0255	-0.3322	-0.2322	0.000	47%		
Household Income (Increase > 25%)	-0.2795	0.0750	-0.4265	-0.1325	0.000	76%	-0.4109	0.0534	-0.5156	-0.3062	0.000	32%		
R-Square	-0.2904	0.0294	-0.3480	-0.2328	0.000	73%	-0.4737	0.0801	-0.6307	-0.3167	0.000	28%		
Variables	0.0382						R ² = 0.0566							
<i>Borrowing from a bank, employer</i>														
Household Income (Decrease 1–25%)	0.1009	0.0428	0.0170	0.1848	0.018		0.1714	0.0284	0.1157	0.2271	0.000			
Household Income (Stay the Same)														
Household Income (Increase 1–25%)														
Household Income (Increase > 25%)														
R-Square														
Variables														

Table 5 (continued)

	Estimate	SE	LL	UL	P	WBCR	Estimate	SE	LL	UL	P	WBCR
Household Income (Decrease 1–25%)	-0.1103	0.0974	-0.3012	0.0806	0.258	n.s.	-0.1809	0.0294	-0.2385	-0.1233	0.000	89%
Household Income (Stay the Same)	-0.1261	0.0367	-0.1980	-0.0542	0.001	80%	-0.2784	0.0255	-0.3284	-0.2284	0.000	75%
Household Income (Increase 1–25%)	-0.1786	0.0754	-0.3264	-0.0308	0.018	56%	-0.4141	0.0535	-0.5190	-0.3092	0.000	65%
Household Income (Increase > 25%)	-0.2891	0.0295	-0.3469	-0.2313	0.000	35%	-0.4723	0.0801	-0.6293	-0.3153	0.000	46%
R-Square	0.0383						R ² = 0.0590					
Variables							Estimate		LL	UL	P	WBCR
<i>Sell Assets</i>	0.1582	0.0438	0.0724	0.2440	0.000		0.1482	0.0301	0.0892	0.2072	0.000	
Household Income (Decrease 1–25%)	-0.1072	0.0969	-0.2971	0.0827	0.269	n.s.	-0.1701	0.0295	-0.2279	-0.1123	0.000	87%
Household Income (Stay the Same)	-0.183	0.0367	-0.2549	-0.1111	0.000	86%	-0.2769	0.0255	-0.3269	-0.2269	0.000	54%
Household Income (Increase 1–25%)	-0.218	0.1051	-0.4240	-0.0120	0.018	73%	-0.4083	0.0536	-0.5134	-0.3032	0.000	36%
Household Income (Increase > 25%)	-0.2857	0.0295	-0.3435	-0.2279	0.000	55%	-0.4770	0.0802	-0.6342	-0.3198	0.000	31%
R-Square	0.0395						R ² = 0.0570					

SE = standard error; CI = confidence interval; LL = lower limit; UL = upper limit; WBCR = Well-being costs ratio; No. observations for Egypt = 2,000; Jordan = 2,549; Morocco = 6,093; Tunisia = 6,134. n.s. = non-significant

The findings are consistent with previous studies, which suggest that debt and loans are positively associated with psychological distress, increasing distress, depression and anxiety levels (Hiilamo, 2020; Ryu & Fan, 2023). One possible explanation for these associations is the negative perceptions of such financial liabilities. Emotional reactions to such liabilities among these debtors, such as the fear of debt or the shame and anxiety from actually or potentially defaulting on it, could also produce such an association (Starrin et al., 2009).

Determinants of well-being

As mentioned in the previous section, women report lower levels of economic perception than men. This finding can be explained by the fact that in the MENA region, women’s participation in the labour market was already low before COVID-19. Women in MENA are on the front lines of the response to the spread of COVID-19, and they share their experiences with women worldwide. The challenges women in the MENA area experience are compounded by the region’s restrictive social norms and legislative systems. COVID-19 has further discouraged women from entering the workforce. Regardless of their income, women are over-represented in vulnerable and low-security employment, such as informal and domestic work. Because of this, they are typically excluded from social protection mechanisms, such as assistance targeted at workers during times of crisis (De Paz et al., 2020). Thus, COVID-19 further exacerbated the inequalities between women and men, leading to lower feelings of job security for women.

The second finding is a non-linear quadratic relationship between economic perception and age. The results are consistent with previous studies that found well-being declines from youth to middle age and then bounces back in old age (Blanchflower, 2021; Chen et al., 2022; Toshkov, 2022). This finding is expected, as younger age groups have lower skills and less working experience, putting them in a lower income distribution. Therefore, COVID-19 has potentially increased the feeling of job insecurity leading to pessimism about the future economic well-being. Moreover, as one reaches 30–40 s, has acquired more experience and achieved career advancement, leading to job security and positive perceptions about well-being. The results show a turning point between 32–36 in Egypt and Morocco to 48 years old in Tunisia.

An interesting finding is that education is positively related to lower levels of economic perception. Previous research finds a positive relationship between education and subjective well-being measures (Belo et al., 2020; Tran et al., 2021; Zajacova & Lawrence, 2018). However, our findings differ because most educated respondents are employed in the services sector, primarily hit by the

pandemic. More specifically, 55 per cent of those employed in retailing, transportation, accommodation and food services have completed secondary school and higher education. In comparison, almost 70 per cent of the respondents who have completed a higher education degree are occupied in health services, education, financial activities, real estate and information and communication services, followed by 18 per cent who have completed secondary school.

Regarding the employed respondents, we find a negative but significant sign in all countries explored, except for Tunisia, where we observe a positive and significant sign indicating that those respondents are less optimistic about their economic situation. While we could have expected the opposite since employed people may face lower levels of material deprivation, we may also find a negative relationship between those employed and more worried about their job security, translating into the economic perception outcome compared to the non-employed. We should note that the non-employed respondents are not necessarily unemployed, but a large proportion includes housekeepers, retired, students and other categories not belonging to the labour force.

Limitations

The findings of this study should be interpreted with caution in the presence of several limitations. The first drawback is that we cannot estimate the regressions using fixed effects to control for omitted-variable bias and unobserved heterogeneity. This is because we have cross-section data for Jordan. In contrast, the coping strategies for the remaining countries, even though we have panel data of 3 waves, are time-invariant, implying that the fixed effects estimates drop them. One potential solution for future studies is to derive longer time dimensions and additional survey rounds that could record a change in the coping strategy adopted. We have estimated the regressions using random effects for the mental well-being index, as it is a continuous variable and the random effects Probit model for the ordered variable “economic perception”. The results remain similar, particularly the well-being costs ratio and the cost expressed in monetary values.

The second major limitation is that we do not have information on the economic perception, mental well-being and coping strategy in the pre-COVID-19 period. Thus, the results should be treated with caution as we do not establish any causality, and the estimates are mere correlations. However, the primary variable of interest, the coping strategy, precedes the food insecurity outcomes in time. In particular, the survey recorded whether the household had to adopt a coping strategy before asking about food security. Nevertheless, the main issue remains regarding the weekly household expenditures.

The third drawback is the use of mid-points of household income. This limitation becomes more problematic by applying relations (3)-(4) to find the average income in the top bracket. This problem can be alleviated using wages, but the analysis is limited only to the employed. Furthermore, changes in income presented in Tables 4 and 5 and the wide ranges across the categories can likely lead to imprecise estimates. More specifically, the second category refers to a reduction of household income between 1 and 25 per cent, which is rather large since a reduction of 1 per cent can imply significantly different well-being costs compared to a reduction in income of 24 per cent.

Fourth, we have performed only a part of potential robustness checks, such as investigating the well-being costs across gender, formal employment and job security in the supplementary material. We could have performed the estimates across education and age groups, professional classes, such as managers, technicians, clerks and unskilled workers or by industry, such as those employed in agriculture, manufacturing, construction, mining and various services sectors, including health, education, finance, real estate, food and accommodation. However, this implies extensive space and regressions since we explore six coping strategies across four countries.

The fifth drawback is the “control” group, which comprises respondents who have not adopted any coping strategy. In particular, the surveys used in the empirical analysis do not record information related to whether the respondent was not actually in need of coping with the pandemic or whether they had no access to any of the coping strategies explored. However, in all estimates, we find a lower level of well-being for those who adopted one or more than one coping strategies.

Also, there is an additional open question about whether the respondents have adopted a coping strategy other than the mentioned ones. However, those who have answered this question are very few, ranging around 0.08 and 0.35 per cent, and the surveys do not record the type of strategy adopted. Moreover, the surveys cover a wide range of potential strategies that can be followed to cope with employment losses and reductions in income. In the supplementary material, we discuss an alternative procedure of taking the predicted household income values. Furthermore, we report the robustness checks across gender and wages.

Conclusions

In this study, we have attempted to explore the role of various coping strategies followed during the COVID-19 pandemic in Egypt, Jordan, Morocco, and Tunisia. Furthermore, we have estimated the well-being costs that show how much the respondents who have adopted a coping strategy require

to equalise their well-being levels with those who have not adopted any coping strategy. In most cases, we found the most considerable inequalities in the perception of the future economic well-being in the coping strategy of borrowing from banks and employers, except for households in Jordan, where households borrowing money from family and relatives face higher inequalities. On the other hand, we found the most significant inequalities in mental health for households that had to return to family or villages in Morocco and Tunisia and those households that had to sell their assets in Jordan.

The results may provide insights into future studies exploring the inequalities between individuals in different households and the intra-household or within-household inequalities. Furthermore, the results may show the required support governments should have provided to those affected by the COVID-19 pandemic and the relationship between support, government budget deficit and public debt accumulated. In particular, the study may offer insights into the design of policies and safety nets, including unemployment benefits, health insurance, furlough, and job retention schemes to support people during the pandemic and economic recessions.

The findings also reveal a need for further studies and intervention for the population, especially those with a higher stress risk, such as women, informal and temporary workers and those implementing specific coping strategies. Moreover, we have shown a method that can be used to measure inequalities in subjective well-being, which can be extended and applied in future studies using panel data across various demographic and socio-economic groups. However, the surveys should record the amount of household income to allow for more precise estimates of inequalities. Another interesting point for future studies is the well-being estimation using objective measures, such as material deprivation, exploring inter-household and intra-household inequalities.

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Data availability The empirical analysis relies on data from the ERF COVID-19 MENA Monitor Surveys provided by the ERD NADA micro-data portal. The survey includes integrated and harmonized

data for Egypt, Jordan, Tunisia and Morocco. In particular, ERF has provided us with access to the Licensed Dataset—Morocco, Egypt, Tunisia, Jordan, Sudan—Combined COVID-19 MENA Monitor Household Survey, CCMMHH- Nov-2020, Feb-2021, Apr-2021. The authors would like to thank the ERF for providing the data.

Declarations

Compliance of ethical standard statement This article does not contain any studies with human participants or animals performed by the author.

Informed consent Informed consent was not sought and not required for the present study, because the analysis is based on secondary data, as described above.

Conflict of interest The authors declare that have no conflict of interest.

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