ERF Working Papers Series

Economic Burdens, Social Protection, and Well-Being Amidst the Covid-19 Crisis in the MENA Region: Insights from the Fuzzy Set-Theoretic Approach

Khaled Nasri and Mohamed Anis Ben Abdallah

ECONOMIC RESEARCH FORUM
منتدى البحوث الاقتصادية

Working Paper No. 1739
October 2024

ECONOMIC BURDENS, SOCIAL PROTECTION, AND WELL-BEING AMIDST THE COVID-19 CRISIS IN THE MENA REGION: INSIGHTS FROM THE FUZZY SET-THEORETIC APPROACH

Khaled Nasri[1] and Mohamed Anis Ben Abdallah[2]

Working Paper No. 1739

October 2024

This paper was originally presented during the ERF 30th Annual Conference on "Tragedies of Regional Conflicts and Promises of Peacebuilding: Responding to Disruptors and Enablers of MENA Development Pathway", April 21-23, 2024.

Send correspondence to:
Khaled Nasri
University of Tunis El Manar
kholina86@yahoo.fr

[1] Researcher at the LAREQUAD, FSEGT, and Research Associate at the ERF.
[2] Assistant Professor and Dean of the Faculty of Economics and Management of Nabeul, Tunisia. FSEGN, University of Carthage, Tunisia.

First published in 2024 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Abstract

This paper investigates the pathways and possible combinations between social protection and economic hardships to explain individuals' psychological well-being (PWB) during the COVID-19 pandemic in the Middle East and North Africa (MENA) region. We employ the fuzzy set-theoretic approach to implement a detailed analysis of how causal conditions contribute to an outcome. This approach is particularly suited to a causal process analysis due to its configurational understanding of how causes (conditions) combine to produce outcomes. Our empirical findings confirm the presence of several paths (configurations) leading to either good or bad PWB scores during the COVID-19 crisis. We observe that the absence of economic burdens is a necessary but not sufficient condition for achieving good well-being scores; it is present in all combinations linked with the outcome but cannot produce this outcome alone. However, the results indicate that the absence of social protection combined with an age below 35 years is a sufficient but not necessary combination for producing bad well-being scores. There is clear evidence that governments and policymakers have implemented policies primarily focusing on physical well-being, with a relatively weaker emphasis on PWB.

Keywords: COVID-19, Economic burdens, Social protection, Psychological well-being, Fuzzy set-theoretic approach, MENA region.
JEL Classifications: J1

ملخص

تبحث هذه الورقة في المسارات والتركيبات المحتملة بين الحماية الاجتماعية والصعوبات الاقتصادية لشرح "الرفاهية النفسية للأفراد" خلال جائحة كورونا في منطقة الشرق الأوسط وشمال إفريقيا. نحن نستخدم نهج نظرية المجموعة الغامض لتنفيذ تحليل مفصل لكيفية مساهمة الظروف السببية في النتيجة. هذا النهج مناسب بشكل خاص لتحليل العملية السببية بسبب فهمه التكويني لكيفية تجميع الأسباب (الظروف) لتحقيق النتائج. تؤكد النتائج التجريبية التي توصلنا إليها وجود العديد من المسارات (التكوينات) التي تؤدي إلى درجات جيدة أو سيئة في برنامج العمل والميزانية خلال أزمة كورونا. ونلاحظ أن انعدام الأعباء الاقتصادية شرط ضروري ولكنه غير كاف لتحقيق درجات جيدة من الرفاه ؛ وهو موجود في جميع المجموعات المرتبطة بالنتيجة ولكنه لا يستطيع تحقيق هذه النتيجة بمفرده. غير أن النتائج تشير إلى أن انعدام الحماية الاجتماعية مقترنا بعمر يقل عن 35 سنة هو مزيج كاف ولكنه غير ضروري لتحقيق درجات رفاهية سيئة. وهناك أدلة واضحة على أن الحكومات وصانعي السياسات نفذوا سياسات تركز في المقام الأول على الرفاه المادي، مع تركيز أضعف نسبيا على برنامج العمل والميزانية.

1. Introduction

The COVID-19 pandemic has had a substantial impact on the global economy, resulting in heightened unemployment, diminished income, and increased poverty. Consequently, numerous individuals and families have grappled with economic hardships, adversely affecting their overall quality of life. In response to these challenges, governments worldwide have implemented social protection measures, encompassing initiatives such as unemployment benefits, cash transfers, and food assistance to alleviate the pandemic's repercussions on vulnerable populations.

Gentilini et al. (2020c) reveal that approximately 195 countries globally implemented social protection measures to address the challenges posed by the COVID-19 pandemic. By 31 March 2021, 20 countries in the Middle East and North Africa (MENA) region had collectively instituted 158 social protection responses to COVID-19 (Bilo, Dytz, and Sato, 2022; Krafft, Assaad, and Marouani, 2021). These measures are designed to mitigate economic hardships, with the anticipated positive outcomes extending to an improvement in the quality of life of affected families and the psychological well-being (PWB) of individuals benefiting from social protection measures.

Nevertheless, the efficacy of social protection measures in mitigating the impact of the pandemic on economic hardships and overall quality of life varies across countries and populations.

In this research, we aim to comprehend the effectiveness of social protection responses in mitigating the impact of the COVID-19 pandemic and economic hardships on quality of life and well-being in MENA countries. To achieve this, we explore the causal relationships between economic burdens, social protection measures, and the PWB of individuals during the COVID-19 crisis in five MENA countries: Tunisia, Egypt, Morocco, Jordan, and Sudan. This investigation employs a fuzzy-set qualitative comparative analysis (fsQCA), utilizing data obtained from the Economic Research Forum's (ERF) COVID-19 MENA Monitor Household Survey (OAMDI, 2021).

Although numerous studies in the literature have delved into the impact of job loss during the COVID-19 crisis on depression or anxiety (see Mojtahedi et al., 2020; Rajkumar, 2020; Ikeda et al., 2022; Al Dhaheri et al., 2021; Nasri et al., 2023; Shek, Leung, and Tan 2023), to our knowledge, few have specifically examined the association links between social protection responses, economic hardships, and the PWB of individuals during the COVID-19 pandemic in the MENA region. This paper aims to contribute to filling this research gap.

Our results indicate the existence of several paths (configurations) leading to either good or bad PWB scores during the COVID-19 crisis in the five MENA countries. The absence of economic burdens is deemed a necessary but not sufficient condition for achieving good well-being scores; it is encompassed in all combinations linked with the outcome, yet it is incapable of producing this outcome in isolation. Furthermore, social protection emerges as

neither a necessary nor sufficient condition for attaining good well-being outcomes. It can only yield a result when combined with other conditions, and there might even be paths to an outcome that negates the impact of social protection. However, the findings reveal that a low level of education is a sufficient but not necessary condition for generating bad well-being scores as it can produce the result on its own, yet other combinations linked to this outcome exist. Moreover, the causal combination involving the absence of social protection combined with an age under 35 years is sufficient but not necessary for generating negative well-being scores. These conditions, recognized as necessary and/or sufficient, are individually tested for each country.

The rest of this paper is organized as follows. Section 2 presents a theoretical framework for elucidating the association between economic burdens, social protection, and the well-being of individuals during the COVID-19 crisis. Section 3 outlines our data and provides a detailed description of our empirical strategy. Section 4 discusses the main results, and section 5 concludes.

2. Literature review

The COVID-19 pandemic has dramatically altered the lives of millions globally, especially in regions where movements and social contacts have been severely restricted (Al Dhaher et al., 2021). In the literature, numerous studies show that aside from economic costs, the health impacts of COVID-19 extend beyond physical health, encompassing effects on the quality of life and PWB of individuals (Knolle et al., 2021; Petersen et al., 2021).

Additional research highlights that individuals' characteristics, behaviors, and other structural variables, such as support services, may mediate and moderate risks. For instance, Płomecka et al. (2020) explore risk and resilience factors related to the impact of COVID-19 on mental health in 12 countries and five World Health Organization (WHO) regions. The study identifies being a female, having pre-existing psychiatric problems, and prior exposure to trauma as notable risk factors, while factors like optimism, the ability to share concerns with family and friends, positive COVID-19 predictions, and daily exercise predicted fewer psychological symptoms (Rajkumar, 2020). Furthermore, Das et al. (2021) highlight key factors associated with poor mental health during COVID-19 in Bangladesh, including being a female, being unemployed, being a student, being obese, and living without family. Another study from Iran emphasizes the contribution of social isolation, unpredictability, uncertainty, and misinformation to stress during the COVID-19 period (Zandifar and Badrfam, 2020).

A substantial body of literature has explored the impact of employment loss during the COVID-19 crisis on depression or anxiety, with studies comparing the mental health of employed and unemployed individuals. For instance, Nasri et al. (2023) demonstrate that the instability of household income resulting from job loss significantly contributes to the deterioration of individuals' mental health in Tunisia. These findings align with prior

research identifying a connection between job loss and depressive symptoms (Burgard et al., 2007; Mojtahedi et al., 2020).

Nasri et al. (2023) also reveal that individuals' age and household size can influence mental health, and a higher level of education can enhance individuals' resilience against mental effects during the COVID-19 crisis. However, they do not consistently observe differences in mental health indicators based on the sex or marital status of individuals. This result is also echoed by Sieverding et al. (2023) using data from five MENA countries. In this study, the authors suggest that limitations in access to food are strongly negatively associated with well-being. This finding is consistent with a study from South Africa that finds stronger associations between food insecurity and depressive symptoms among men than women during the pandemic (Shepherd, 2022).

On the contrary, several articles emphasize the pivotal role of financial protection during the pandemic in containing the rapid deterioration in quality of life. Ikeda et al. (2022) demonstrate the association between job loss during the COVID-19 pandemic and health-related quality of life in the Japanese working population. They find that universal financial support during the COVID-19 era has a protective influence on an individual's quality of life. Additionally, Al Dhaheri et al. (2021) suggest that governments and policymakers should provide both moral and financial support for low-income families and those who lost their jobs. In a similar vein, Shek, Leung, and Tan (2023) highlight several missing links in the social policies supporting families during the pandemic. They note that the existing policies predominantly focus on physical well-being with a relatively weaker emphasis on PWB. Moreover, social policies primarily aim to stabilize public "financial capital," while human capital (especially personal resilience) and social capital (especially family resilience) are relatively neglected.

The main contribution of our research is to address all the possible combinations between the two variables (i.e., social protection and economic burdens), providing an explanation for the quality of life of individuals. This differs from previous studies where the association between COVID-19 and/or social protection and quality of life was examined using traditional quantitative analysis methods often based on variance, such as regressions. In a regression analysis, the goal is to identify the effect a variable has on some outcome. However, in this study, the focus is on understanding the conditions that lead to a given outcome.

3. Data and method

3.1.Data, Variables, and Descriptive Statistics

In this study, we investigate the causal relationships and connections between economic hardship, social protection, and well-being amid the COVID-19 crisis in five MENA countries. We leverage combined data from the ERF COVID-19 MENA Monitor Household Survey (OAMDI, 2021), comprising a sample of 10,956 individuals from Tunisia (18.25

percent), Egypt (18.25 percent), Morocco (18.32 percent), Jordan (23.27 percent), and Sudan (21.91 percent). The target demographic of the survey includes mobile phone users aged 18-64, with samples stratified based on country-specific market shares of mobile operators.

The comprehensive survey covers an array of dimensions, including demographic and household characteristics, education and children, labor market status, food security, income, social safety nets, employment and unemployment, attitudes toward risks, mental health, and social distancing. Additionally, it incorporates specialized modules such as a worker module focusing on occupation, job formality, the impact of COVID-19 on employment, and working from home. A farmer module delves into aspects like crops, inputs, harvest, prices, markets, and more, examining the impact of COVID-19 on businesses and related policies.

From the survey data, we define three dummy variables to identify the types of economic burdens experienced by households due to the COVID-19 pandemic. These variables include:

Decrease in Monthly Income **(DHI)**: A dummy variable indicating whether the household faced a reduction in monthly income because of the COVID-19 pandemic.
Job Loss **(JOL)**: A dummy variable representing whether at least one member of the household experienced job loss during the COVID-19 crisis.
Difficulties in Food Markets **(DFM)**: A dummy variable identifying households that encountered challenges with food markets due to mobility restrictions, closures, or issues such as food shortages or price increases.
Based on these dummy variables, we construct an ordinal variable denoted as (ECO_Burd), representing the number of economic burdens experienced by each individual in the sample. The ordinal variable comprises four modalities.

- **ECO_Burd = 0** indicates that the individual did not experience any economic hardship during the COVID-19 crisis.
- **ECO_Burd = 1** represents individuals who encountered exactly one economic hardship.
- **ECO_Burd = 2** corresponds to individuals facing two economic hardships.
- **ECO_Burd = 3** indicates individuals experiencing all three identified economic difficulties.

In addition to economic burdens, we identify two dummy variables associated with the support received by households during the pandemic: regular support and occasional support. These two variables are combined into a single variable, denoted as (Social_Prot), which signifies the number of social supports received by each individual in the sample. The Social_Prot variable comprises three categories:

- **Social_Prot = 0** indicates that the individual did not receive any social support, either regular or occasional.

- **Social_Prot = 1** represents individuals who benefited from one type of social support, either regular or occasional.
- **Social_Prot = 2** indicates individuals who, in addition to receiving regular social support, also received occasional social support.

The PWB of individuals is assessed using the WHO-5 Well-being Index incorporated into the survey. The WHO-5 Well-being Index is a brief questionnaire with five items that gauge the subjective well-being of the respondents. Derived from the General Health Questionnaire and the Psychological General Well-Being Scale, the WHO-5 Well-being Index includes the following statements: (1) "I have felt cheerful and in good spirits," (2) "I have felt calm and relaxed," (3) "I have felt active and vigorous," (4) "I woke up feeling fresh and rested," and (5) "My daily life has been filled with things that interest me." Respondents rate how well each statement applies to them over the last 14 days, with scores ranging from 5 (*all of the time*) to 0 (*none of the time*). The PWB score spans from 0 to 25, where 0 indicates the lowest possible PWB and 25 denotes the highest possible PWB. Scores are typically compared to the population mean. Individuals are then categorized into two sub-populations: those with PWB scores lower than the mean, indicating a lower quality of life, and those with scores above the mean, indicating a higher quality of life.

As depicted in Figure 1, 39 percent of individuals in the MENA region (pooled data) reported a lower quality of life during the COVID-19 crisis, while nearly 61 percent reported good quality of life scores during the same period. These rates exhibit variations across the countries in the sample. Our findings indicate that the highest proportions of individuals with lower PWB scores were observed in Jordan (39.23 percent) and Tunisia (37.75 percent). Conversely, the lowest proportion was observed in Sudan (33.33 percent), followed by Egypt (35.85 percent), and Morocco (35.97 percent).

Figure 2 reveals that 47.75 percent of individuals with lower PWB scores experienced a single economic hardship during the pandemic period, while approximately 35 percent experienced at least two types of economic burdens. Surprisingly, 17.5 percent of this group reported not experiencing any of the three economic burdens considered in this research.

Similarly, we find that 26.23 percent of individuals with higher PWB scores did not experience economic burdens during the COVID-19 crisis period. However, 73.77 percent of the same group reported experiencing at least one economic hardship. Therefore, the PWB of individuals during the COVID-19 crisis in the MENA region appears to be influenced by other factors and conditions beyond economic burdens, such as social protection and individual characteristics (household size, educational level, and age).

In Figure 3, we present the proportions of individuals based on their PWB scores and the number of social supports received during the COVID-19 crisis period. About 17.5 percent of individuals with low PWB scores did not benefit from any type of social support. Furthermore, over 82 percent of individuals with lower PWB scores did not receive any

social support despite experiencing at least one economic hardship. Similarly, our findings show that 74 percent of individuals with higher PWB scores who did not receive any social support reported experiencing at least one type of economic hardship.

Figure 4 provides a separate analysis of PWB and economic burdens experienced by individuals in each country, highlighting the proportions of individuals who did not receive any social support. The absence of social assistance during the crisis period appears to contribute to lower PWB scores, irrespective of whether individuals experienced economic burdens. However, our estimates reveal a category of individuals with higher PWB scores despite experiencing economic burdens and not receiving any social support. This proportion was calculated at 64.13 percent, 80 percent, 79.2 percent, 75.64 percent, and 58.68 percent in Egypt, Tunisia, Sudan, Morocco, and Jordan, respectively.

In Figure 5, we illustrate the proportions of individuals benefiting from at least one social support during the COVID-19 crisis based on their quality of life scores and the number of economic hardships. Surprisingly, we identify a category of individuals who had lower PWB scores despite receiving social support and not experiencing economic burdens. This proportion is estimated at 20.57 percent in Jordan, 22.8 percent in Egypt, 13.52 percent in Morocco, 11.28 percent in Sudan, and 2.7 percent in Tunisia.

3.2. Methodology

In this research, we employ a set-theoretic approach, specifically a fuzzy-set qualitative comparative analysis (fsQCA) developed by Ragin (1987). The fsQCA facilitates a detailed analysis of how causal conditions contribute to an outcome, making it particularly well-suited for a causal process analysis. This approach is rooted in a configurational understanding of how causes (conditions) combine to produce outcomes. It provides significant levels of causal complexity and enables researchers to identify conditions relevant to the outcome while allowing for equifinality—different conditions leading to the same outcome.

In our study, the outcome variable is the PWB scores, while the causal conditions include economic burdens (ECO_Burd), social protection (Social_Prot), and individual characteristics (age, household size, and level of education). All variables, both outcome and conditions, are transformed into sets calibrated regarding three thresholds (full membership, full non-membership, and the crossover point)[3] in assessing whether a case is more in or out of a set (Ragin, 2008). By examining the members of the "outcome" set, we identify combinations of conditions associated with the outcome of interest using Boolean algebra and algorithms (Quine-McCluskey). This allows for the logical reduction of numerous complex causal conditions into a reduced set of configurations that lead to the outcome.

To empirically identify these causal processes, the fsQCA progresses in three steps. The first step involves establishing a data matrix known as a truth table with 2^k rows, where k is the

[3] The point of maximum ambiguity or fuzziness.

number of causal conditions (C_j). Each row of this table corresponds to a specific combination of conditions denoted as F_i, listing all possible combinations.

$F_i = A_1^i \wedge A_2^i \wedge A_3^i \wedge \ldots \wedge A_k^i$.

Where $\wedge$ represents the logical AND operator, implemented using minimum operation, and $A_j^i = C_j \; or \sim C_j$(Complement of C_j); where $j = 1 \ldots \ldots k$ and $i = 1 \ldots \ldots . 2^k$.

In the second step, the number of rows in the truth table is reduced based on two conditions: (1) the minimum number of cases required for a solution to be considered, denoted as the "frequency threshold (f)" whose the available cases, and (2) the minimum consistency level of a solution. Ragin (2008) suggests that this consistency level should typically be above 0.8 but not less than 0.7. The outcome of the second step is a smaller subset of "actual" causal combinations.

From this subset of actual causal combinations, the fsQCA provides three types of configurations. The complex output presents all possible configurations, the parsimonious outputs calculate only the essential configurations, and the intermediate output stands between these two.

To enhance our understanding of the causal conditions contributing to individuals' PWB, we separately test the conditions identified as necessary and/or sufficient for each country included in our analysis. The definitions of these conditions are as follows:

- *Necessary and sufficient condition for the outcome*: When a condition can produce the outcome by itself.
- *Necessary but not sufficient condition:* When a condition is present in all combinations linked with the outcome but it cannot produce this outcome alone.
- *Sufficient but not necessary condition*: When a condition is capable of producing the outcome on its own but there are also other combinations linked to the outcome.
- *Neither necessary nor sufficient condition*: When a condition cannot produce the outcome alone and must be combined with other conditions. Additionally, there might be paths to the outcome that contain the negation of the condition.

By separately testing these conditions for each country, we aim to gain insights into the specific combinations of factors that significantly contribute to the PWB of individuals in each context.

4. Results and discussion

In our analysis, we adopt the notation for solution tables introduced by Ragin and Fiss (2008), whereby black circles (“●”) indicate the presence of a condition, circles with a cross (“x”) indicate the absence of a condition, and blank spaces represent an "indifferent" situation where the causal condition may be either present or absent.

The solution table exclusively includes configurations that consistently led to the outcome of interest, which, in this case, pertains to good or bad PWB outcomes. Configurations that do not result in the desired PWB outcomes, do not meet the frequency threshold, or lack a consistent pattern (thus failing the consistency threshold) are not included in the solution table. The use of this notation allows for a clear representation of the identified configurations associated with the outcome variable.

4.1.Paths for Achieving Good PWB

The solution table reveals four solutions derived from the fuzzy-set analysis, all exhibiting acceptable consistency levels (> 0.80). Additionally, it indicates the presence of several overall solutions, suggesting a situation of first-order, or across-type, equifinality of solutions. Moreover, the neutral permutations within solutions S1 (S1a and S1b) and S2 (S2a and S2b) further point to the existence of second-order, or within-type, equifinality.

Table 2. Configurations for achieving good PWB scores in the MENA region during the COVID-19 crisis

Assumptions:
Frequency Cutoff: 12
Consistency Cutoff >0.8

Paths (Configurations)		ECO_ Burd	Social_Prot	Edu_ ind	Age_ ind	Size_ hh	Row Coverage	Consistency
~ECO_Burd*~Social_Prot*~Edu_ind* Size_HH	P1a	⊗	⊗	⊗		•	0.260	0.886
~ECO_Burd*~Social_Prot*Age_ind* Size_HH	P1b	⊗	⊗		•	•	0.316	0.887
~ECO_Burd*Social_Prot*Edu_ind*Age_ind*~Size_HH	P2a	⊗	•	•	•	⊗	0.179	0.913
~ECO_Burd*Social_Prot*Edu_ind*~Age_ind*Size_HH	P2b	⊗	•	•	⊗	•	0.189	0.904

Solution Coverage: 0.421983. Solution Consistency: 0.865078

Source: Authors' calculations using fsQCA software.

The two identified paths, P1a and P1b, suggest that achieving a good PWB score during the COVID-19 crisis in the MENA region is possible under specific conditions:

Path P1a: The absence of economic burdens, combined with the absence of social protection and living with a large family, is sufficient for achieving a good PWB score. Additionally, in this path, there is a trade-off between the individual's age and their level of education. Specifically, when there is no economic burden, the individual's age becomes less relevant if their educational level is not high, as indicated by the blank space for the education level signifying an "indifferent" situation.

Path P1b: Similar to P1a, the absence of economic burdens, combined with the absence of social protection and living with a large family, is also sufficient for achieving a good PWB

score. In this path, there is a trade-off between age and education level but with a different pattern. Here, being over 35 allows for good PWB scores regardless of the individual's educational level, as indicated by the blank space for the education level, suggesting an "indifferent" situation.

Comparing P1a and P1b reveals that being older than 35 and having a low level of education can be treated as substitutes in achieving well-being scores. This suggests that, in certain conditions, either being older with a lower level of education or being younger with a higher level of education can lead to positive outcomes for PWB. Notably, these findings underscore the explanatory power of the QCA in elucidating relationships internal to configurations—including substitution and complementarity effects, which are often opaque in more standard statistical approaches.

Configurations P2a and P2b represent a second important path toward achieving good PWB scores. Both paths involve the absence of economic hardship, a high level of education, and the presence of social protection. However, the P2b differs from the P2a in that it combines being over 35 years old with living in a family composed of fewer than five members as conditions for having good PWB.

Table 2 includes coverage scores, providing insight into the percentage of cases following each identified path. The combined models, in terms of overall coverage, account for approximately 42 percent of membership in the outcome. This assessment allows for the evaluation of the relative importance of different causal paths in explaining variations in PWB.

Furthermore, the models in Table 2 suggest the existence of one possible necessary condition shared across all paths: the absence of economic burdens. However, given that the configurations do not cover all potential paths to achieving good PWB scores, and considering the presence of other configurations that may lead to positive outcomes but do not meet the consistency and frequency thresholds, the results indicate the presence of several sufficient solutions but likely no necessary condition for achieving good PWB scores in this context.

Analyzing each country separately (Table A1 in the Appendix), the results highlight the contribution of the absence of economic burdens in achieving good PWB scores. In Tunisia, the absence of economic burdens is a necessary and sufficient causal condition for good well-being scores during the COVID-19 period. Additionally, the absence of economic burdens combined with the absence of social protection constitutes a necessary but not sufficient causal configuration for good individual well-being scores in three countries: Tunisia, Egypt, and Morocco. In Sudan, a high educational level is a necessary and sufficient causal condition for good well-being scores, a condition also observed in Tunisia. The absence of economic burdens and having social protection are identified as two sufficient but not

necessary conditions for good PWB scores in Jordan. These country-specific findings further illustrate the context-dependent nature of the factors influencing PWB.

4.2.Paths for achieving bad PWB

The fsQCA analysis of bad PWB scores reveals no consistently identifiable intermediate solution. When combined with the results of good well-being, this outcome suggests a clear picture of asymmetric causality in the fsQCA. To elucidate the causal conditions contributing to individuals' bad well-being scores, Table 3 presents two solutions derived from the MQ algorithm: complex and parsimonious. The results indicate the existence of three distinct configurational groupings, pointing to the presence of first-order equifinality in both types of solutions.

Table 3. Configurations for achieving bad PWB scores in the MENA region during the COVID-19 crisis

CONFIGURATIONS (Paths) Frequency Cutoff: 12 Consistency Cutoff >=0.75	**Complex Solution**						**Parsimonious Solution**			
	P1	**P2**		**P3**			**P1**	**P2**		**P3**
		a	**b**	**a**	**b**	**c**		**a**	**b**	
ECO_Burd				●	●	●				●
Social_Prot	⊗	●	●	⊗		●		●	●	
Age	⊗	●	⊗	●	●	●		●		●
Edu_ ind		●	●		⊗		⊗			
Size_Hh		⊗	●	●	⊗	⊗			●	●
Consistency	0.614	0.741	0.745	0.730	0.746	0.751	0.573	0.703	0.700	0.725
Raw Coverage	0.485	0.252	0.262	0.388	0.344	0.270	0.521	0.304	0.325	0.400
Overall Solution Consistency				0.591801					0.562176	
Overall Solution Coverage				0.66666					0.689549	

Source: Authors' calculations using fsQCA software.

From the complex solution, Configuration P1 suggests that the absence of social protection for a young individual (under 35 years old) can explain the bad PWB scores during the COVID-19 period in the MENA region. Configurations P2a and P2b indicate the presence of second-order equifinality, combining the presence of social protection and a high educational level with age and household size to explain the poor PWB of individuals, regardless of whether they have experienced economic burdens or not. Specifically, path P2b suggests that being young and living in a large family leads to poor PWB scores. In contrast, path P2a presents the opposite pattern and reveals that being old and living in a small family can explain the poor quality of life during COVID-19.

Contrary to P1 and P2 (P2a and P2b), Configuration P3 indicates that the presence of economic burdens and being over 35 years old contribute to the poor PWB of individuals in the MENA region during the COVID-19 crisis. In addition to these two causal conditions,

and unlike P3c, path P3a suggests that the absence of social protection and living in a large family lead to poor PWB scores. However, P3b differs from these two paths (P3a and P3c) and suggests that having a low educational level, being old, and having experienced economic hardship during the crisis period are causal conditions of poor PWB, whether the individual is a beneficiary of social protection or not.

The parsimonious solution reveals three possible paths leading to poor PWB scores during the COVID-19 crisis in the MENA region, suggesting the presence of first-order equifinality. Configuration P1 emphasizes only the individual's educational level, indicating that having a low educational level can lead to poor PWB regardless of whether or not economic hardship and social protection are present.

Paths P2a and P2b indicate the existence of second-order equifinality, showing clear trade-offs; age and household size substitute each other and allow for neutral permutations around the core condition (the presence of social protection). In contrast, configuration P3 combines the presence of economic burdens with age and household size to explain the poor PWB scores of individuals regardless of benefitting from social protection or otherwise.

From the parsimonious solution, a low education level is a sufficient but not necessary condition as it is capable of producing poor PWB scores on its own, but there are other combinations linked to this outcome. Similarly, the causal combination (absence of social protection combined with age below 35) is sufficient but not necessary for achieving poor PWB scores (from the complex solution).

On the other hand, the absence of social protection combined with a high educational level, being over 35 years old, and living in a large family constitutes a necessary and sufficient causal combination for having poor well-being scores in Morocco (see Table A2 in the Appendix). In the same vein, two necessary but not sufficient conditions are identified in Tunisia and Egypt. These two countries share a low educational level as a necessary condition for having poor well-being scores. Furthermore, the presence of economic burdens is a necessary condition for achieving poor scores in Tunisia, while in Egypt, the absence of social protection constitutes a necessary condition for achieving the same outcome.

Our results also show that social protection is neither a necessary nor sufficient condition for the outcome of poor PWB scores in Tunisia. In Sudan, all causal conditions are neither necessary nor sufficient for poor well-being scores. However, the absence of protection combined with a low educational level constitutes a sufficient but not necessarily causal combination in Jordan for having poor PWB scores; this combination can produce the outcome on its own, but at the same time, there are other combinations also linked to poor well-being scores.

5. Conclusion

In this study, we examine the causal relationships between social protection and economic burdens, seeking to elucidate the PWB of individuals during the COVID-19 pandemic in the MENA region. To accomplish this, we employ the fuzzy set-theoretic approach, grounded in a configurational understanding of how various causes (conditions) interact to produce specific outcomes.

A key and noteworthy finding highlighted in this study is the observed association between economic burdens during the COVID-19 pandemic and the well-being of certain individuals within our sample. Furthermore, we note that the financial support received during the COVID-19 era had a protective influence on the well-being of individuals facing economic challenges. Despite this protective factor, however, the quality of life for specific individuals declined, even though they did not encounter economic hardships during the COVID-19 crisis and were beneficiaries of social security coverage.

The second noteworthy finding pertains to the identification of various paths (configurations) leading to favorable PWB scores. The absence of economic burdens is a necessary condition for attaining a good PWB score during the COVID-19 crisis in the MENA region (aggregated data). This finding holds true for three specific countries: Tunisia, Egypt, and Morocco. Additionally, we discern that a high level of education serves as a necessary and sufficient causal condition for achieving positive well-being scores in Sudan. In the case of Jordan, we identify two conditions that are sufficient but not necessary for obtaining good PWB scores: the absence of economic burdens and the presence of social protection.

The third key finding concerns the paths leading to unfavorable PWB. Our results indicate that the absence of social protection, being young and living in a large family, being old and having experienced economic hardship, and possessing a low level of education can collectively explain the negative PWB scores during the COVID-19 period in the MENA region.

The fourth result highlights that causal conditions and combinations identified as necessary and sufficient for unfavorable well-being outcomes vary across countries. In Tunisia, both a low educational level and the presence of economic burdens are two necessary conditions that explain poor well-being scores. Conversely, in Morocco, the necessary and sufficient causal combination for unfavorable well-being scores consists of the absence of social protection coupled with a high level of education, being over 35 years old, and living in a large family. In Jordan, we find that the absence of protection combined with a low educational level constitutes a sufficient but not necessarily causal combination for experiencing negative PWB scores. In Egypt, the results indicate that the absence of social protection is a necessary condition for achieving the same outcome.

In this research, there is clear evidence that governments and policymakers in the MENA region have implemented policies primarily concentrating on physical well-being, with a relatively limited emphasis on PWB. Additionally, social responses have predominantly targeted the stabilization of public "financial capital," while human capital (especially personal resilience) and social capital (particularly family resilience) are comparatively overlooked. This observation underscores the importance of considering psychological aspects in policy formulation, especially during future emergency situations. This research provides valuable insights for policymakers aiming to establish effective strategies in response to future crises.

References

Al Dhaheri, A., Bataineh, M., Mohamad, M., Ajab, A., Al Marzouqi, A., and Jarrar A. et al. (2021). Impact of COVID-19 on Mental Health and Quality of Life: Is There Any Effect? A Cross-Sectional Study of the MENA Region. PLOS ONE 16(3): e0249107. https://doi.org/10.1371/journal.pone.0249107

Bilo, C., Dytz, J., and Sato, L. (2022). Social Protection Responses to COVID-19 in MENA: Design, Implementation and Child-Sensitiveness.

Burgard, S., Brand, J., and House, J. (2007). Toward a Better Estimation of the Effect of Job Loss on Health, Journal of Health and Social Behavior, Vol. 48 No. 4, p. 369, doi: 10.1177/002214650704800403.

Das, R., Hasan, M., Daria, S., and Islam, M. (2021). Impact of COVID-19 Pandemic on Mental Health Among General Bangladeshi Population: A Cross-Sectional Study, BMJ Open, Vol. 11 No. 4, p. e045727, doi: 10.1136/bmjopen-2020-045727. PMID: 33837107; PMCID: PMC8042595

Gentilini, U., Almenfi, M., Orton, I., and Dale, P. (2020). Social Protection and Jobs Responses to COVID-19: A Real-Time Review of Country Measures. https://openknowledge.worldbank.org/handle/10986/33635.

Ikeda, T., Igarashi, A., Odani, S., Murakami, M., and Tabuchi, T. (2022). Health-Related Quality of Life During COVID-19 Pandemic: Assessing Impacts of Job Loss and Financial Support Programs in Japan. Applied Research in Quality of Life, 17(2), 541-557. https://doi.org/10.1007/s11482-021-09918-6.

Knolle, F., Ronan, L., and Murray, G. (2021). The Impact of the COVID-19 Pandemic on Mental Health in the General Population: A Comparison between Germany and the UK, BMC Psychology, Vol. 9 No. 1, p. 60, doi: 10.1186/s40359-021-00565-y.

Krafft, C., Assaad, R., and Marouani, M. (2021). The Impact of COVID-19 on Middle Eastern and North African Labor Markets: Vulnerable Workers, Small Entrepreneurs, and Farmers Bear the Brunt of the Pandemic in Morocco and Tunisia, ERF Policy Brief No. 55.

Li, F., Luo, S., Mu, W., Li, Y., Ye, L., Zheng, X., Xu, B., Ding, Y., Ling, P., Zhou, M., and Chen, X. (2021a). Effects of Sources of Social Support and Resilience on the Mental Health of Different Age Groups During the COVID-19 Pandemic. BMC Psychiatry, 21(1), 16. https://doi.org/10.1186/s12888-020-03012-1.

Mojtahedi, D., Dagnall, N., Denovan, A., Clough, P., Hull, S., Canning, D., Lilley, C. and Papageorgiou, K. (2020). The Relationship between Mental Toughness, Job Loss, and Mental Health Issues During the COVID-19 Pandemic, Frontiers in Psychiatry, Vol. 11, p. 607246, doi: 10.3389/fpsyt.2020.607246. PMID: 33613333; PMCID: PMC7886783.

Nasri, K., Ben Abdallah, M., and Amri, F. (2023). The Impact of Job Loss on Mental Health During the COVID-19 Crisis in Tunisia: Analysis Based on Counterfactual Decomposition Approach, Mental Health and Social Inclusion, Vol. ahead-of-print No. ahead-of-print. https://doi.org/10.1108/MHSI-07-2023-0079.

OAMDI (2021). COVID-19 MENA Monitor Household Survey (CMMHH), Version 3.0 of the licensed data files, Nov T-C. Egypt: Economic Research. Forum (ERF), available at: www.erfdataportal.com/index.php/ catalog.

Petersen, M., Dantoft, T., Jensen, J., Pedersen, H., Frostholm, L., Benros, M., Carstensen, T., Ørnbøl, E. and Fink, P. (2021). The Impact of the COVID-19 Pandemic on Mental and Physical Health in Denmark - A Longitudinal Population-Based Study Before and During the First Wave, BMC Public Health, Vol. 21 No. 1, p. 1418, doi: 10.1186/s12889-021-11472-7. PMID: 34275461; PMCID: PMC8286431.

Ragin, C. (2008). Redesigning Social Inquiry: Fuzzy Sets and Beyond. Chicago: University of Chicago Press.

Ragin, C. and Fiss, P. (2008). Net Effects Analysis Versus Configurational Analysis: An Empirical Demonstration. In C. C. Ragin (Ed.), Redesigning Social Inquiry: Fuzzy Sets and Beyond: 190-212. Chicago: University of Chicago Press.

Rajkumar, R. (2020). COVID-19 and Mental Health: A Review of the Existing Literature, Asian Journal of Psychiatry, Vol. 52, p. 102066, doi: 10.1016/j.ajp.2020.102066

Shek, D., Leung, J., and Tan, L. (2023). Social Policies and Theories on Quality of Life Under COVID-19: In Search of the Missing Links. Appl Res Qual Life. 2023 Feb 24:1-17. doi: 10.1007/s11482-023-10147-2. Epub ahead of print. PMID: 36855587; PMCID: PMC9950016.

Shepherd, D. (2022). Food Insecurity, Depressive Symptoms, and the Salience of Gendered Family Roles During the COVID-19 Pandemic in South Africa. Social Science and Medicine. 2022;301: 114830. pmid:35367907

Sieverding, M., Krafft, C., Selwaness, I., and Nassif, A. (2023). Impacts of the COVID-19 Pandemic on Subjective Wellbeing in the Middle East and North Africa: A Gender Analysis. PLOS ONE 18(5): e0286405. https://doi.org/10.1371/journal.pone.0286405

Torales, J., O'Higgins, M., Castaldelli-Maia, J., and Ventriglio, A. (2020). The Outbreak of COVID-19 Coronavirus and its Impact on Global Mental Health. International Journal of Social Psychiatry. 2020;66(4):317-320. doi:10.1177/0020764020915212

Wang, C., Pan, R., Wan, X., Tan, Y., Xu, L., Ho, C. and Ho, R. (2020). Immediate Psychological Responses and Associated Factors During the Initial Stage of the 2019 Coronavirus Disease (COVID-19) Epidemic Among the General Population in China, International Journal of Environmental Research and Public Health, Vol. 17 No. 5, p. E1729

Zandifar, A. and Badrfam, R. (2020). Iranian Mental Health During the COVID-19 Epidemic, Asian Journal of Psychiatry, Vol. 51, p. 101990.

Figures

Figure 1. Comparison of PWB scores between five MENA Countries

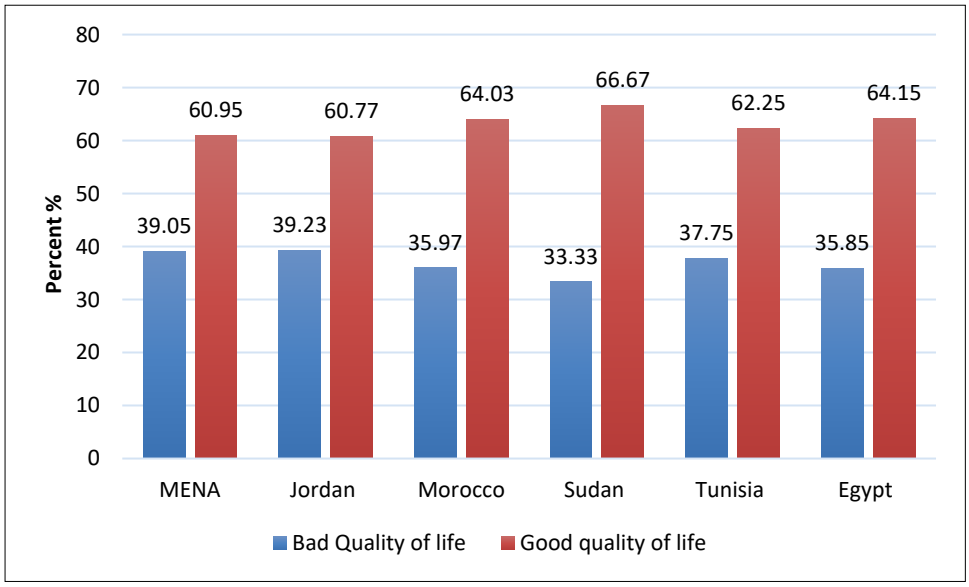


Figure 2. Quality of life according to economic burdens scores in the MENA region during the COVID-19 crisis

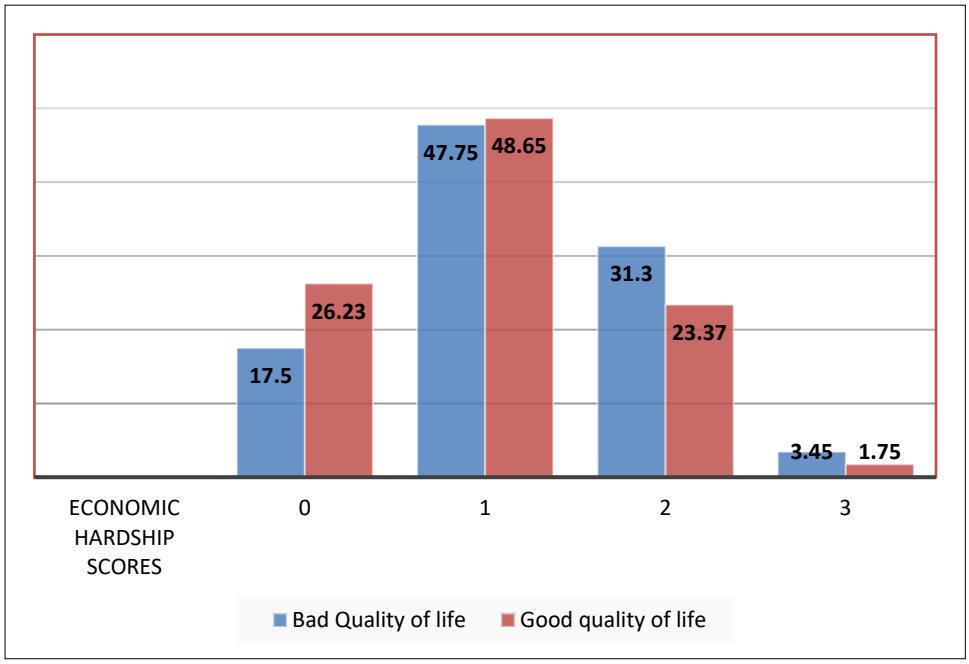


Figure 3. PWB scores and the number of social supports received during the COVID-19 period

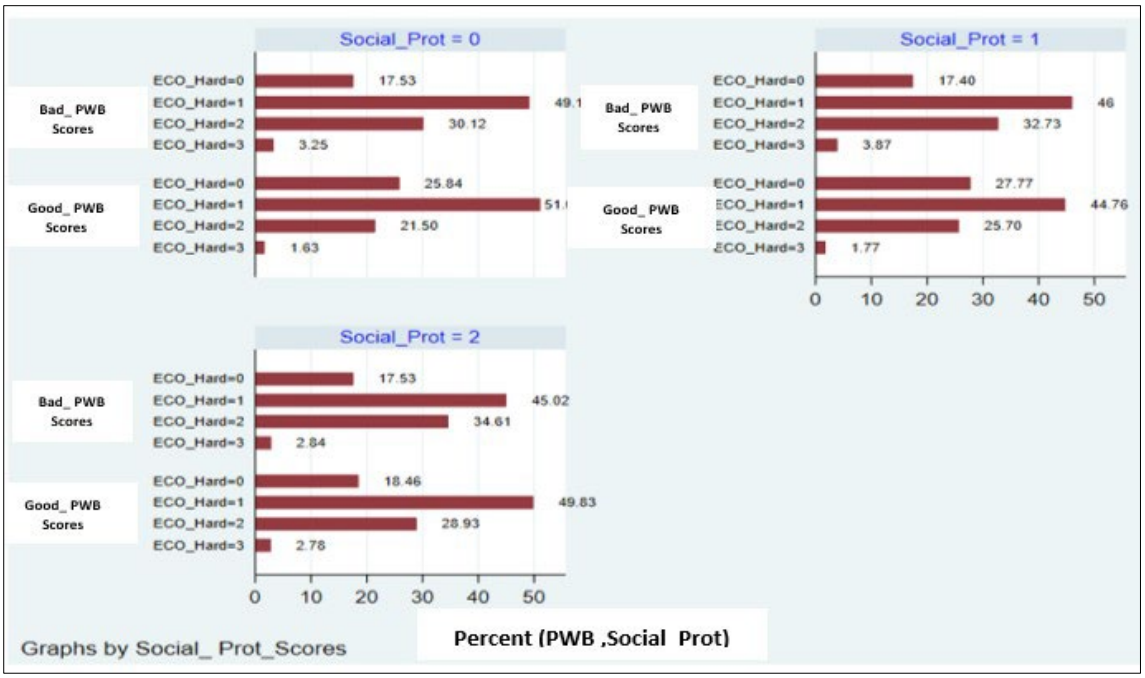


Figure 4. Quality of life and economic hardships by country (Social_Prot=0)

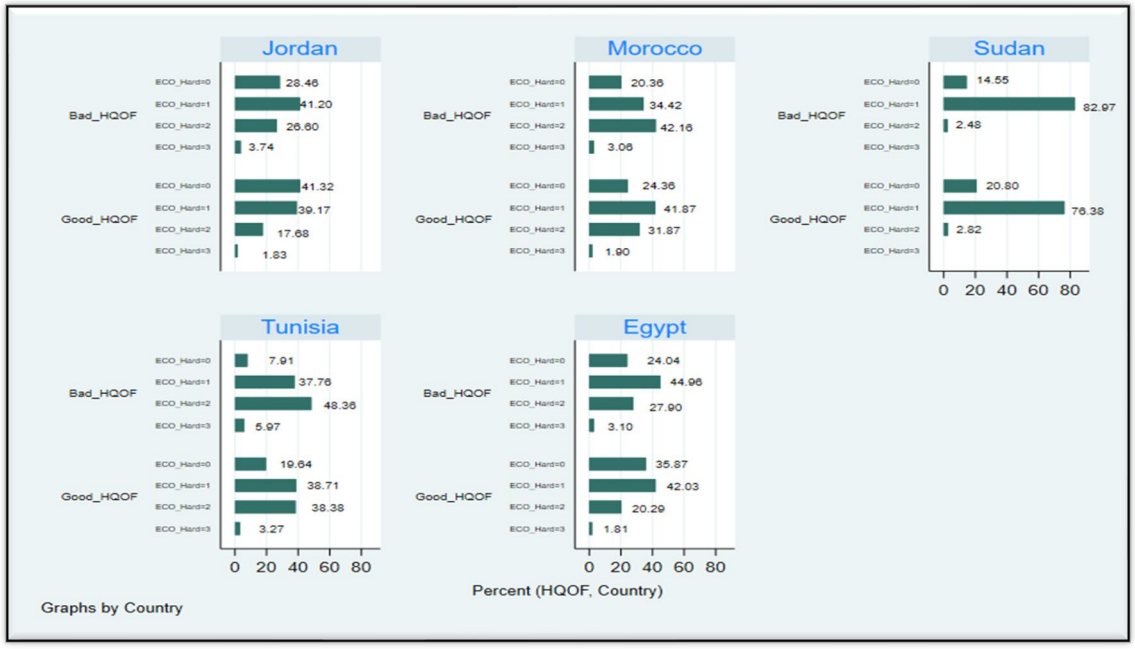
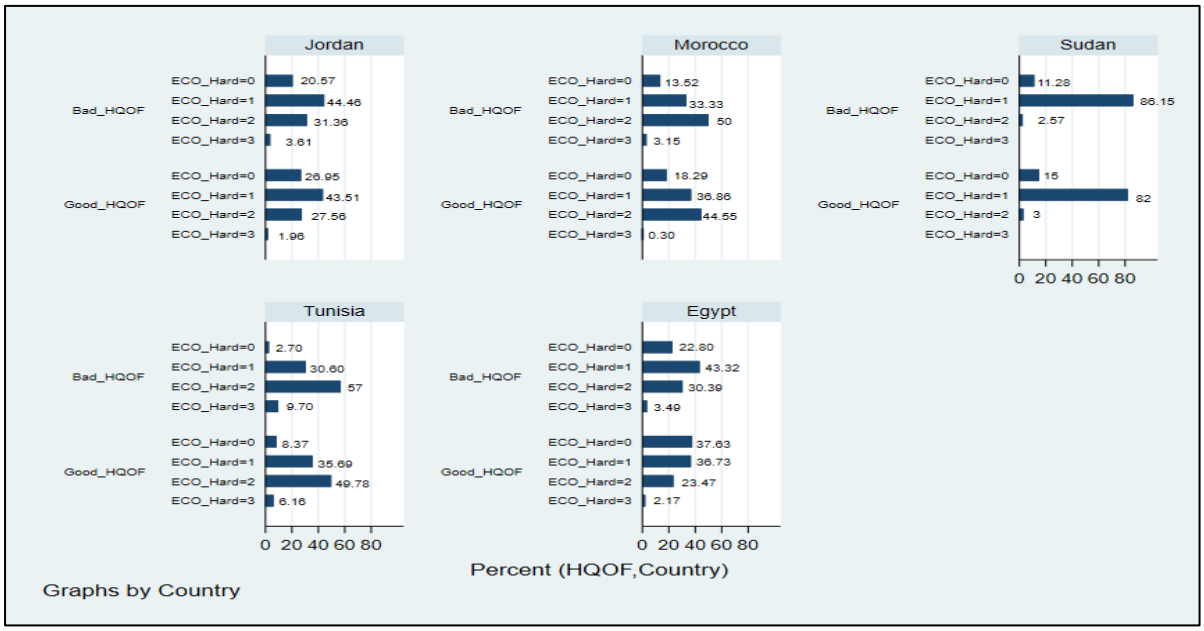


Figure 5. Quality of Life and Economic Hardships by Country (Social_Prot >=1)

Figure 5. Quality of life and economic hardships by country (Social_Prot >=1)



Tables

Table 1. Outcome variable, causal conditions, and membership thresholds

Countries		MENA (Pooled data)	Tunisia	Egypt	Morocco	Sudan	Jordan
PWBScores	Max	25	25	25	25	25	25
	Mean	17.06627	16.921	18.442	16.63976	17.70167	15.83837
	Min	0	0	0	0	0	0
ECO_Burd	Max	3	3	3	3	2	3
	Mean	1	1	1	1	1	1
	Min	0	0	0	0	0	0
SocialProt	Max	2	2	2	2	2	2
	Mean	1	1	1	1	1	1
	Min	0	0	0	0	0	0
hhsize	Max	54	36	19	54	35	14
	Mean	5.261135	4.509	4.7865	4.936721	6.45625	5.353864
	Min	1	1	1	1	1	1
Education	Max	4	4	4	4	4	4
	Mean	2	2	2	2	2	2
	Min	1	1	1	1	1	1
Age	Max	64	64	64	64	64	64
	Mean	35.25411	39.152	35.0545	36.17987	30.47958	36.11887
	Min	18	18	18	18	18	18

Appendix

Table A1. Conditions (combinations) for achieving good well-being scores by country

Tunisia	Assumptions: Frequency Cutoff: 7 Consistency Cutoff: 0.912353						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~ECO_Hard*~Social_Prot*Edu_ind*~Size_Hh	⊗	⊗	●		⊗	0.396425	0.896706
~ECO_Hard*~Social_Prot*Edu_ind*~Age_ind	⊗	⊗	●	⊗		0.347804	0.907949
Solution Coverage: 0.404059 Solution Consistency: 0.890623							
~ECO_Hard♠	⊗					0.554563	0.835588
Solution Coverage: 0.554563 Solution Consistency: 0.835588							
Sudan	Assumptions: Frequency Cutoff: 9 Consistency Cutoff: 0.809483						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~Social_Prot*Edu_ind*~Age_ind		⊗	●	⊗		0.519818	0.770233
~ECO_Hard*Edu_ind*~Age_ind	⊗		●	⊗		0.52159	0.792386
~ECO_Hard*~Social_Prot*~Size_Hh*Edu_ind	⊗	⊗	●		⊗	0.506859	0.806828
Solution Coverage: 0.638154 Solution Consistency: 0.76504							
Morocco	Frequency Cutoff: 8 Consistency Cutoff: 0.850154						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~ECO_Hard*~Social_Prot*~Edu_ind	⊗	⊗	⊗			0.399853	0.835052
~ECO_Hard*~Social_Prot*Age_ind	⊗	⊗		●		0.386936	0.842641
~ECO_Hard*~Social_Prot*Size_Hh	⊗	⊗			●	0.384871	0.854439
~Social_Prot*Age_ind*Size_Hh		⊗		●	●	0.362096	0.841278
Solution Coverage: 0.563207 Solution Consistency: 0.80604							
Egypt	Frequency Cutoff: 10 Consistency Cutoff: 0.901995						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~ECO_Hard*~Social_Prot*EDU_ind	⊗	⊗	●			0.545421	0.838388
~ECO_Hard*~Social_Prot*Size_Hh	⊗	⊗			●	0.449719	0.883248
Solution Coverage: 0.602771 Solution Consistency: 0.8312							
~ECO_Hard*EDU_ind♠	⊗		●			0.586796	0.823456
~ECO_Hard*Size_Hh ♠	⊗				●	0.46687	0.882354
Solution Coverage: 0.645571 Solution Consistency: 0.817922							
Jordan	Frequency Cutoff: 8 Consistency Cutoff: 0.851181						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~ECO_Hard*~Social_Prot	⊗	⊗				0.648777	0.754845
~Social_Prot*~Edu_ind*~Age_ind		⊗	⊗	⊗		0.302578	0.811341
ECO_Hard*Social_Prot*Edu_ind*~Age_ind*~Size_ind	●	●	●	⊗	⊗	0.157409	0.891325
Solution Coverage: 0.702597							

Solution Consistency: 0.743402							
~ECO_Hard♠	⊗					0.686235	0.735837
Social_Prot♠		●				0.25348	0.809543
~Edu_ind*~Age_ind♠			⊗	⊗		0.307393	0.804866
Solution Coverage: 0.750628 Solution Consistency: 0.71869							

♠ *PARSIMONIOUS SOLUTION*

Source: Authors' calculations using fsQCA software.

Table A2. Conditions (combinations) for achieving bad well-being scores by country

Tunisia	Assumptions: Frequency Cutoff: 7 Consistency Cutoff: 0.800617						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
ECO_Hard*~Social_Prot*~Edu_ind*Size_Hh	●	⊗	⊗		●	0.39178	0.777884
ECO_Hard*Social_Prot*~Edu_ind*Age_ind	●	●	⊗	●		0.314242	0.792914
Solution Coverage: 0.441967 Solution Consistency: 0.760902							
~Edu_ind*Size_Hh♠			⊗		●	0.433172	0.760973
Social_Prot*Age_ind		●		●		0.440867	0.690275
Solution Coverage: 0.677532 Solution Consistency: 0.64938							
Sudan	Assumptions: Frequency Cutoff: 4 Consistency Cutoff: 0.714576						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~ECO_Hard*~Social_Prot*Size_Hh* ~Edu_ind*~Age_ind	⊗	⊗	⊗	⊗	●	0.271799	0.746856
~ECO_Hard*~Social_Prot*~Size_Hh* ~Edu_ind*Age_ind	⊗	⊗	⊗	●	⊗	0.25364	0.717321
ECO_Hard*Social_Prot*Size_Hh*Edu_ind* ~Age_ind	●	●	●	⊗	●	0.316022	0.714576
Solution Coverage: 0.436929 Solution Consistency: 0.643314							
Morocco	Frequency Cutoff: 8 Consistency Cutoff: 0.779403						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~Social_Prot*Edu_ind*Age_ind*Size_Hh		⊗	●	●	●	0.275759	0.752757
Solution Coverage: 0.275759 Solution Consistency: 0.752757							
Edu_ind*Age_ind*Size_Hh♠			●	●	●	0.27874	0.752485
Solution Coverage: 0.27874 Solution Consistency: 0.752485							
Egypt	Frequency Cutoff: 10 Consistency Cutoff: 0.80213						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
ECO_Hard*~Social_Prot*~Edu_ind	●	⊗	⊗			0.395163	0.737601
~Social_Prot*~Edu_ind*Size_Hh		⊗	⊗		●	0.424556	0.7587
Solution Coverage: 0.47063 Solution Consistency: 0.721045							
ECO_Hard*~Edu_ind♠	●		⊗			0.408488	0.725842
~Edu_ind*Size_Hh♠			⊗		●	0.436644	0.755846
Solution Coverage: 0.486831 Solution Consistency: 0.710632							
Jordan	Frequency Cutoff: 8 Consistency Cutoff: 0.821074						
Paths	ECO_Hard	Social_Prot	Edu_ ind	Age_ ind	Size_hh	Row Coverage	Consistency
~Social_Prot*~Edu_ind		⊗	⊗			0.487889	0.704311
ECO_Hard*Social_Prot*Edu_ind*~Age_ind *~Size_ind	●	●	●	⊗	⊗	0.196348	0.821074
Solution Coverage: 0.532802 Solution Consistency: 0.692256							

♠ *PARSIMONIOUS SOLUTION*

Source: Authors' calculations using fsQCA software.