



Working Paper Series



YOUTH MULTIDIMENSIONAL POVERTY AND ITS DYNAMICS:
EVIDENCE FROM SELECTED COUNTRIES IN THE MENA REGION

Oznur Ozdamar and Eleftherios Giovanis

Working Paper No. 1339

YOUTH MULTIDIMENSIONAL POVERTY AND ITS DYNAMICS: EVIDENCE FROM SELECTED COUNTRIES IN THE MENA REGION

Oznur Ozdamar¹ and Eleftherios Giovanis²

Working Paper No. 1339

August 2019

This work was supported by the economic Research Forum (ERF) under the call “Non-Monetary Dimensions of Inequality & Poverty Among the Youth in the ERF Region” and it was presented in the workshop organised by the ERF on 7, July 2019. The authors would like to thank Professors Valerie Bérenger and Semih Tumen, as well as, the participants of the workshop for their valuable and constructive comments. The authors are grateful for the financial support received.

The authors would like to thank the OAMDI and ERF Data Portal for granting access to data for Egypt, Jordan and Tunisia. The authors are grateful to ERF Data Portal for the assistance received.

The authors would like to thank Professor Valerie Bérenger for her valuable comments, suggestions and constructive comments that greatly contributed to the improvement of the quality of this paper. Any remaining errors or omissions remain the responsibility of the authors.

Send correspondence to:

Oznur Ozdamar

Adnan Menderes University

oznur.ozdamar@adu.edu.tr

¹ Adnan Menderes University, Faculty of Economics, Department of Econometrics, Aydın, Turkey, oznurozdamar@gmail.com

² Manchester Metropolitan University, Business School, Department of Economics, Policy and International Business (EPIB), Manchester, United Kingdom.

Adnan Menderes University, Nazilli Faculty of Economics and Administrative Sciences, Department of Public finance, Nazilli/Aydın, Turkey. giovanis95@gmail.com and L.Giovanis@mmu.ac.uk

First published in 2019 by
The Economic Research Forum (ERF)
21 Al-Sad Al-Aaly Street
Dokki, Giza
Egypt
www.erf.org.eg

Copyright © The Economic Research Forum, 2019

All rights reserved. No part of this publication may be reproduced in any form or by any electronic or mechanical means, including information storage and retrieval systems, without permission in writing from the publisher.

The findings, interpretations and conclusions expressed in this publication are entirely those of the author(s) and should not be attributed to the Economic Research Forum, members of its Board of Trustees, or its donors.

Abstract

A broad consensus among the academic, and other national and international institutions is that poverty cannot be measured and simply defined by the lack of monetary resources, but it is a combination of a range of non-monetary factors. These factors may act as constraints on individuals' abilities to reach their capabilities; affecting their well-being. Hence, the socio-economic development of a household and a country's overall welfare, cannot be limited to either economic or social factors, but it must be determined by combining both of these aspects. The Multidimensional Poverty Index (MPI) illustrates the importance of taking multiple dimensions of poverty into account. The first aim of this paper is to measure the poverty of youth, aged 15-24, in selected countries of the Middle East and North Africa (MENA) region using the Alkire-Foster (AF) method. The second aim is to explore the determinants of the MPI in the youth population. The results of this study are mixed, as we find that the poverty is reduced in the case of Egypt and Tunisia, but it is increased in Jordan and Iraq. Policy implications are further discussed.

Keywords: Alkire-Foster method; MENA region; Multidimensional poverty; Non-monetary poverty.

JEL Classifications: D31, I31, I32.

1. Introduction

Youth poverty is a major worldwide issue, as a large number of young people and children in developing nations are living in complete poverty. In many cases young people tend to suffer from discrimination based on the age and the uncertainties and dynamism surrounding the transition from childhood to adulthood. The poverty remains highly persistent, not only in the Middle East and North Africa (MENA) countries, but also around the globe, including developed economies. This suggests that poverty is mainly the consequence of the way resources are allocated and society is organised. In the end, political choices are those that will determine how to eradicate poverty.

Over the decades, various definitions of inequality and poverty have been given (World Bank, 1990; Lipton et al., 1995; Kanbur et al., 2000; Abdul-Mamin and Shamshiry, 2014). According to the World bank, poverty is defined as the “pronounced deprivation in well-being” (Haughton and Khandker, 2009). However, there is no common consensus about the definition of poverty due to its multidimensional nature. This is because poverty is made up of several dimensions, including lack of education and income, poor health status, low living standards, the quality of the workplace environment and the work itself, social pressure and discrimination. Poverty can be defined narrowly or more broadly, depending on how well-being is understood. The former includes definitions typically related to consumption, such as whether the individuals or households have enough resources to satisfy and meet their needs. According to the narrow definitions, poverty is mainly expressed in monetary terms in relation to consumption and income (Haughton and Khandker, 2009). However, one of the main issues of those measures, is that consumption and income are generally defined at the household level and thus, do not consider intra-household variations or inequalities within the household which obscures individual poverty (Coudouel et al., 2002). On the other hand, broader definitions of poverty include more dimensions of quality of life and standards using non-monetary aspects, such as life and job satisfaction; physical, psychological and mental health; access to electricity, water supply and clean air; social networks, connections and relationships with friends, relatives and colleagues, and aspects about values, social norms and beliefs (White and Marshall, 2013). Hence, following the definition by Abdul-Mamin and Shamshiry (2014), poverty is defined as a diversity of deprivations an individual or household experiences separately or simultaneously that suppresses the people’s abilities to function, be productive and live a life of fulfillment.

Overall, deprivations are not limited only to monetary and economic dimensions, but include also political, social, cultural, and physical, psychological and mental health dimensions. Therefore, the definition of poverty and inequality goes beyond the strict viewing of consumption and income and it further includes well-being dimensions that are ethically, economically, culturally and socially unacceptable, because various dynamic interactions within the society benefiting some groups more and making other groups worse off. The world leaders during the United Nations Sustainable Development Summit in September 2015, agreed to end all the forms of poverty by 2030 (United Nations, 2015). However, despite this commitment and apart from significant reductions in poverty, various studies report existence of high poverty levels and large disparities and inequalities in economic, social and cultural dimensions around the globe.

With a large and rapidly increasing population of young people, the MENA region countries, by preparing their young citizens in education and employment, can leverage the tremendous untapped potential for economic prosperity. However, over the last 15 years, this opportunity has not been utilised by a well-educated youth population, given the fact that the level of unemployment among young people is ranging between 25-30 percent, higher than that in other areas around the globe. In the region, over 85 million jobs will be needed to simply achieve the worldwide average youth unemployment with more and more people being inactive in the labour market. Healthy economies feed innovation and enthusiasm, but without a proper education and health system and a powerful private sector ready to invest in a country's youth, there is little hope of MENA transformation from the developing world to the developed. It is essential thus, before MENA countries succumb to increasing political instability and explosive population, young people should obtain the education abilities, access to health and improvement in living standards, needed to engage in and catalyse development in the local economies. The labour force in MENA region has risen at an unbelievable pace of around 2.7 percent annually since 2000, faster than almost any other area in the globe (ILO, 2019).

The aim of this study is twofold. First, we aim to measure the non-monetary multidimensional poverty and inequality of youth in a sample of countries in the MENA region, using the most recent multidimensional poverty measure (Alkire and Foster, 2011). In particular, we explore the youth and their households in Egypt, Jordan, Iraq and Tunisia. Our analysis will shed insights about the inequalities on living standards across geographical locations, and gender. Exploring the link of multidimensional poverty index (MPI) with various demographic and socio-economic factors, will allow us to determine the importance and weight of each dimension mentioned earlier, and decomposing the influence of each dimension, the analysis will provide valuable insights to policy makers and suggestion of related policies and reforms. Furthermore, we will explore the intergenerational transmission of parental characteristics on young people, such as parental education, age and employment status. Thus, overall, the main objective of this study is to profile, identify and compare the individual youth multidimensional poverty status, and examine the factors influencing the poverty among the various dimensions mentioned above.

The main population of interest is the youth, which is the individuals aged between 15 and 24. The motivation of focusing on youth population is that one of the main challenges, especially in developing and underdeveloped economies, with respect to poverty reduction is to comprehend how to tackle the crucial issue of youth employment. The advantages of elevated concentrations of productive jobs are evident in social and political stability. It is not a coincidence that high levels of youth unemployment have become a structural feature in North African and Middle East (MENA) nations where the "Arab Spring" movements started in 2011 (Groth and Sousa-Poza, 2012; ILO, 2011). Furthermore, life events, such as college, starting employment, play a vital role in helping to shape vulnerability to poverty, which mainly takes place in the age group of 15-24. Also, it is essential to consider an intergenerational perspective as youth poverty is often related to childhood deprivation and parental poverty. Therefore, measuring the poverty and identifying its main causes, policies shall promote young people's needs and interests, promote strategies intended to enable young people to think critically and to negotiate under risky circumstances; provide them access to information, services, and other related facilities, empower

them and recognize their right to education and skills, and to link young individuals to employment programmes.

The results show that poverty measured by the MPI, was decreased in Egypt between 2012 and 2015 and in Tunisia in the period 2005-2010. On the other hand, we find an increase of poverty in Jordan in the period 2010-2013 and in Iraq between 2007-2012. The poverty levels are remarkably higher in Iraq, as it was expected, due to wars and conflicts the country experiences for many years. Regarding the poverty domains and dimensions; living standards, dwelling characteristics and education contribute mostly to the MPI, followed by health and employment. Overall, deprivation is higher in rural areas, while female, are more likely to experience higher levels of poverty, except for Tunisia, where we find a significant decrease in female youngsters in 2010.

The structure of the paper has as follows: In section 2 we discuss briefly the main studies on poverty exploring countries of the MENA region. In section 3 we describe the methodology, and the data sources employed in the empirical work. In section 4 we report the empirical results, and in section 5 we discuss the main concluding remarks of the study.

2. Literature Review

There is an abundance in the literature on poverty and inequalities; however, the majority of the empirical studies has examined poverty from a unidimensional perspective and to the best of our knowledge, the literature using non-monetary dimensions of poverty in the MENA region is rather limited. For instance, the study by Hlasny and AlAzzawi (2018), uses the asset ownership to build the wealth index in Egypt, Jordan and Tunisia, thus, their analysis is limited into a unidimensional perspective and in particular a monetary dimension. Their findings show significant wealth gaps across urban-rural and educated-uneducated divides. Nevertheless, our study will extend the decomposition effects disaggregated by a higher level of geographical detail. Also, their methodology relies on the principal component analysis, while we will make use of the MPI developed by Alkire and Foster (2011).

The main approaches applied to multidimensional poverty vary from axiomatic measures (Chakravarty et al., 1998; Tsui, 2002; Bourguignon and Chakravarty, 2003), fuzzy sets (Cheli and Lemmi, 1995; Lemmi and Betti, 2006) and latent variables (Kakwani and Silber, 2008; Asselin 2009). Though monetary measures may capture welfare, they have been subject of criticism, because they capture only one dimension of poverty and thus, these measures are inadequate. Furthermore, it is argued that monetary measures ignore the non-monetary components of living standards, such as free access to education, healthcare, sanitation. Hence, if these measures are not correlated with other dimensions of household's living standards, could misrepresent the actual amount of poverty (Blackburn, 1998; Seekings, 2007). Also, the current income may act as a misleading indicator of the household's economic status, because of the difficulties to collect data and also, as it is well documented, income and earnings are susceptible to fluctuations because of transitory events and shocks (Blackburn, 1998; Meyer and Sullivan, 2004; Posel and Rogan, 2014). Similarly, the use of non-monetary approaches has been subject to criticism. One criticism is that the welfare economics do not provide justification for maximizing well-being expressed either by life satisfaction or happiness, because these conceptions do not correspond to utility

(Gibson, 2016). Jansen et al. (2015) also argue that subjective well-being indicators might be less proper for policy making. In particular, people might state are poor, because are not happy or satisfied with their lives, but are wealthy, and this can be misleading when policy makers aim to implement reforms to reduce poverty.

To the best of our knowledge, few studies have explored the non-monetary dimensions of poverty. The works by Bibi (2004) on Egypt and Tunisia and Bibi et al. (2008) on South Africa and Egypt relied on a multidimensional analysis using an indicator for short life span, a measure related to access to education and communication, and a composite index capturing facets of material welfare levels. However, our analysis relies on additional non-monetary dimensions, as well as, the empirical work is based on recent data up to 2015, while the study by Bibi (2004) employed data in 1990 and 1997 respectively for Tunisia and Egypt. Similarly, the study by Ayadi et al. (2006) on Tunisia in years 1998 and 2001, is based on three measures, one for education, the second using a material deprivation index which refers to possession of TV, radio, refrigerator, kitchen and telephone. The third measure shows access to water supply, toilet facilities, quality of soil, type of house, and number of people in the dwelling.

This study contributes to the previous literature by various ways. First, it aims to measure the non-monetary dimensions of poverty and inequality in a sample of MENA countries. The studies most similar to ours include the works by Bérenger (2010, 2017) on Egypt and Jordan, where non-monetary dimensions of poverty are explored. Nevertheless, we make use of a larger set of measures and we extend our analysis in four countries using recent data. Second, it aims to extend these dimensions by exploring education, health, geographical dimensions and more importantly to account for parental characteristics that may affect youth poverty. For instance, the study by Filmer (2010) shows that children coming from poor families tend to complete less years of schooling, indicating that poverty may persist across generations. Third, the objective is to investigate the determinants of multidimensional poverty. Overall, in the MPI explored here, we consider the capability approach, which distinguishes between three levels of conceptualization of poverty; the resource level, including income and entitlements; the intermediate level of “capabilities”, and the “functionings” level, which includes different elements of the quality of life related to health, material comfort, education, quality of the environment, access to services. Furthermore, the main population of interest in this study is the youth. It is crucial to limit our analysis in youth population, as young individuals be recognised as agents of change rather than beneficiaries and secondly, processes need to be established so that young individuals are involved in the decision-making process at the domestic or regional level, enabling them to conceptualize and implement their societal visions. This can be achieved by measuring poverty and implementing policies for its reduction.

3. Methodology and Data

3.1. Multidimensional Poverty Index (MPI)

In this section we provide a brief description of the MPI method proposed by Alkire and Foster (2011). To recall, our main population of interest is the youth, for the reasons and motivations we have discussed in the previous sections. Unless young people are involved and taken into account, development objectives cannot be met. Youth poverty reduction perspective is particularly important, because almost the 65 percent of the population is under the age of 25 years in developing and low-income countries

(Sida, 2009). In addition, a Youth poverty reduction perspective is based on the knowledge that young people are not just a target group, but also initiators, decision makers and potential leaders. Therefore, policy for youth poverty reduction should be based on the recognition that youth population and young leaders must be enhanced and more room for involvement, impact and authority should be provided to them. In realising that, alternative forums, which offer influence to young individuals, such as youth councils and forums, at both local, national and international level, must originate from the views and the true needs of young individuals. We follow the definition given by various international organisations, such as the United Nations (2010), the World Health Organization (WHO, 2011) and the UNICEF (2011), where the youth is defined as those aged between 15 and 24.

In table 1 we present the dimensions and the deprivation indicators employed in the MPI. The MPI consists of five dimensions weighted at 1/5 each one. In the second column we present the variable which is part of each dimension and its associated weight in the third column. The final column shows the binary deprivation cut-off point. However, one issue rises is whether the unit of analysis is the household or the individual. Our aim is to measure the multidimensional poverty at individual level in the youth population, since this level of analysis allow us to better identify also gender differences in poverty. Following earlier studies (Vijaya et al., 2014; Klasen et al., 2016; Bérenger, 2017; Espinosa-Delgado and Silber, 2019), we suggest three dimensions at the individual unit level of analysis, which is the employment activities; health and education, while the remained two dimensions are based on information recorded at the household level.

In particular, the first dimension includes the material deprivation, and it consists of the vehicle ownership and asset-items ownership. In this case, we define as poor a household if does not own either a car, motorcycle or truck. For the asset ownership indicators 1 and 2 we define a household as poor, if does not own three or more of the items listed in table 1. For instance, if a household does not own a TV, radio and mobile phone is considered as poor, while another household that owns these items (or three items), is defined as non-deprived. The last indicator defines as poor a household that does not own one of the items listed, as in the case of the vehicle ownership.

The second dimension refers to the sources of energy used for heating, cooking and whether there is water and electricity supply from the public network or other Grid types. Finally, toilet facility refers on whether the household has access to toilet. Hence, the issue is that even though our aim is to employ an individual based approach (Vijaya et al., 2014; Bérenger, 2017, 2019; Espinosa-Delgado and Silber, 2019), we acknowledge that ownership, especially for females, can be separated from control over these assets. However, due to current data constraints, as this information is recorded only at household level, do not allow for the inclusion of transaction rights and related controls, such as the ability to buy, sell and rent. This is especially important for the investigation of gender differences, however, the next three dimensions are based on the individual based approach.

The third dimension includes employment activities. Earlier studies use the employment as a full dimension, while we extend it by including unemployment and labour force participation of the youngster, since our main interest of study is the youth population. We should notice that we consider

the typical definition of the unemployment and young people who are students are not accounted as unemployed. The fourth dimension is the health which includes one factor, due to data availability, and it refers on whether the respondent is disabled. The fifth dimension is the education with weight 1/5 and according to the first indicator, the individual is considered as deprived if the respondent (youngster) is illiterate. The second indicator defines an individual as poor if the youngster has completed the primary school.

Other dimensions that could be included is the quality of individual life, such as social exclusion, perceptions about the life satisfaction and dignity. However, we do not include this dimension, because of data unavailability and second due to the conceptions that do not correspond to utility (Gibson, 2016) and the subjective wellbeing indicators might be less proper for policy making (Jansen et al., 2015), as we have discussed in the previous section. Nevertheless, exploring additional factors of MPI could be still useful to experiment on other aspects of multidimensional poverty.

The calculation of the MPI will rely on the methodology developed by Alkire and Foster (2011), which is built on the study by Foster et al. (1984). We define a number of households (n) and dimensions (d), where i and j represent respectively the households and dimensions as $i=1, \dots, n$ and $j=1, \dots, d$. Then we define an achievement matrix of a society as $Y = [y_{ij}]$, where y_{ij} is the achievement of the household i^{th} in dimensions j^{th} . The row vector, which is expressed as: $y_i=(y_{i1}, y_{i2}, \dots, y_{id})$ represents the achievements of household in the d dimensions, while the column vector $y_j=(y_{1j}, y_{2j}, \dots, y_{nj})$ represents the distribution of achievements in the j^{th} dimension of the n households.

The deprivation cut-off for the j^{th} dimension is indicated by z_j . and corresponding to the matrix Y , we construct a deprivation matrix with dimensions $n \times d$ as a $g_{ij}^0 = [(g_{ij}^0)]$. Each element in g^0 is equal to one if the i^{th} household is deprived in dimension j^{th} and is equal to zero otherwise. Thence, each entry in the matrix g^0 takes two values as:

$$g_{(ij)}^0 = \begin{cases} 1 & \text{if } y_{ij} < Z_j \\ 0 & \text{if } y_{ij} \geq Z_j \end{cases} \quad (1)$$

Using matrix g^0 , we construct an n -dimensional column vector $c = [c_i]$, where each element c_i shows the number of deprivations faced by the i^{th} households and this depends on the dimensions we set-up in table 1 for a household to be considered multi-dimensionally poor. Weighting dimensions is crucial part of the multidimensional poverty analysis, and the weight vector w whose dimension is $1 \times d$ is used as $w = (w_1, \dots, w_d)$, $\sum_j w_j = 1$, implying that dimensions are equally weighted. So, after weighting deprivation matrix g^0 , the deprivation score of household i equals to $c_i = \sum_{j=1}^d w_j g_{ij}^0$, which is the weighted sum of deprivations. Following this calculation for each household, we can get the column vector c_i with dimension $n \times 1$ and $c_i=(c_1, \dots, c_n)$. At this point a second poverty line is set up, defined as k . In this case, a household is considered as multi-dimensionally poor if $c_i \geq k$, and the value of k depends on the research study.

The first extreme case, the union approach, is when a household or individual is considered as multi-dimensionally poor if it's deprived in at least one dimension (Atkinson, 2003; Bourguignon and Chakarvarty, 2003) and corresponds to $k=\min(w_1, w_2, \dots, w_m)$. However, this approach may lead to overestimated values of poverty as the number of dimension increases, and in our case is set up at five. On the other hand, another special case is the intersection approach, which corresponds to a value $k=1$. Another possible value is to set up $k=d$, which requires for an individual to be classified as multi-dimensionally poor to be deprived in all considered dimensions; however, this value is very restrictive, thus, other intermediate values of k are more appropriate. In our analysis, we will consider the union approach, and as alternative values we take the values of $k=0.33$ and $k=0.5$ as suggested by Alkire and Foster (2011) and Bérenger (2017, 2019).

To do that in the last stage we construct the censored deprivation matrix $g_{ij}^0(k)$ derived from g^0 by $g_{ij}^0(k) = 0$ if $c_i < k$ and $g_{ij}^0(k) = g_{ij}^0$ if $c_i \geq k$. After this calculation, the censored deprivation score vector should be edited with regard to the new deprivation matrix, which is denoted by $c(k)$. If $c_i < k$ then $c_i(k)=0$, and if $c_i \geq k$ then $c_i(k)=k$. Alkire and Foster (2011) define various poverty measures. The first is the headcount ratio (H), which is the ratio of the number of individuals belonging in the poor set (q) over the total number of households (n). However, there are issues with this measure. First drawback is that this measure does not respond to changes in the intensity and distribution of poverty and it does not satisfy the transfer axiom, where a transfer from a poorer to a richer person must increase measured poverty. Moreover, it does not satisfy the properties of monotonicity in the single dimensional context (Sen, 1976), where monotonicity requires the poverty increasing property of a decrement in achievements to be satisfied if such decrement occurs for those deprived in at least k dimensions. Since monotonicity implies also dimensional monotonicity, the H violates also the property of the latter. In particular, if a household is identified as poor, becomes also poor in another dimension that was not deprived previously, the H does not change, which can be misleading for policy recommendations and implementations.

To overcome the limitations of the multidimensional headcount ratio, Alkire and Foster (2011) propose the Adjusted Headcount Ratio M^0 defined as:

$$M^0 = \left(g_{ij}^0(k) \right) = H \times A \quad (2)$$

Where A is the average deprivation share across the poor defined as:

$$A = \frac{|g_{ij}^0(k)|}{q} = \frac{\sum_{i=1}^q c_i(k)}{q} \quad (3)$$

So M^0 is the adjusted headcount ratio found by the product of the percentage of multidimensional poor individuals (H) and the average deprivation share across individuals (A). The H is defined also as the incidence, which measures the percentage of people-youth in our case- who are poor and A is the intensity, which is the percentage of dimensions, in which people are deprived and the adjusted headcount ratio (M^0), which combines both measures. The advantage of the adjusted headcount ratio over measure

H is that it satisfies the dimensional monotonicity, but it violates the monotonicity, as if a poor household becomes more deprived in one dimension then the measure M^0 will not change. However, since our deprivation and poverty indices are dichotomized or binary variables taking value 1 for deprived and 0 otherwise, the monotonicity condition will be met. In this case $\alpha=0$ and so we limit our analysis on M^0 defined in (2). In particular, if the deprivation indices are based on continuous variables, such as number of durable goods, health expenditures or income, then we need to consider other measures. In the second stage we will estimate the determinants of the MPI scores derived by the measurement of Alkire and Foster's (2011) study as:

$$W_{ijt} = b_0 + b' \mathbf{X} + l_j + \theta_t + u_{ijt} \quad (4)$$

Where W is the MPI scores derived for the first objective and \mathbf{X} is a vector of individual and household characteristics, such as age, marital status, household size, welfare and social assistance-benefits, for individual i in area j , which is defined by governorates - and time-year t . Furthermore, we will include parental characteristics, such as age, education and main activity status. Set l_j denotes the area-fixed effects and θ_t expresses the time-year effects of the survey. We will implement a Generalised Linear Model (GLM), since the common assumptions of the Ordinary Least Squares (OLS) fall short. More specifically, the range of the dependent variable is bounded and may not follow a normal distribution, while GLM allow also for response variables that have other than a normal distribution (McCullagh and Nelder, 1989; Foster et al., 2015).

3.2. Data

The empirical work relies on various data sources. In particular, we employ the Household Income, Expenditure, and Consumption Survey (HIECS) for Egypt over the years 2012 and 2015 (OAMDI, 2014a, 2017a); the National Survey on Household Budget, Consumption and Standard of Living (EBCNV) in Tunisia in years 2005 and 2010 (OAMDI, 2014b, 2014c); the Household Socio-Economic Survey (IHSES) in Iraq in years 2006 and 2012; and the Household Expenditure and Income Survey (IHSES) of Jordan in years 2010 and 2013 (OAMDI, 2014d, 2017b). The data are derived by the ERF data portal, and in particular, the Open Access Micro Data Initiative (OAMDI) and the ERF Micro Data Catalogue (NADA). For the case of Iraq the analysis relies on the Livings Standards Measurement Study (LSMS) available by the World Bank (<http://iresearch.worldbank.org/lsmssurveyFinder.htm>).

4. Empirical Results

In the first part of this section we report the main MPI estimates in the countries we explore, and then we present the GLM and Logit regressions investigating the determinants of MPI. In table 4 we report the MPI estimates following the AF method and using different values of k : the union approach, $k=33\%$ as suggested and chosen by UNDP's report (2010) and $k=50\%$ to include households affected by severe poverty. As we mentioned earlier, the countries of our interest in this study is Egypt, Jordan, Iraq and Tunisia and the main group of interest is the youth population aged between 15 and 24. In table 2 we present the estimates for the headcount ratio (H) and the share of deprivations of poor individuals (A), which are used to derive the adjusted headcount ratio (M^0). According to the results we find a significant

decrease in poverty in Egypt and Tunisia, while on the other hand, we find an increase in the multidimensional poverty in Jordan and Iraq.

Overall, as it was expected the values of the poverty incidence H , decrease with the dimensional cut-off value of k , indicating that higher poverty thresholds provide lower levels of poverty and the value of H are higher, because poor individuals and households are much less likely to be deprived in all dimensions. For instance, considering the union approach in Egypt, the value of H during the period 2012-2015 is 0.895, indicating the 89 percent of the population is deprived, while the value of M^0 , suggests that 26 percent is multidimensionally poor. The value is considerably decreased when the threshold value of $k=33\%$ is chosen, at 35 and 15 percent on average respectively for H and M^0 . Consequently, we observe that these values decrease with increasing values of k and the difference also between those two measures decline as k increases. This is because a high proportion of the population is deprived in only one dimension. In other words, a higher percentage of the population may be defined as poor based on the material deprivation dimension only, but only a small percentage of the individuals can be deprived in all dimensions.

In table 2 we report the multidimensional poverty indices for the youth and the total population for comparison purposes. In this case, we define the total population as those who are older than 24 years old and we exclude the retired people. This is because we aim to compare the poverty between youth and adult population sharing main characteristics, which is the working age. Furthermore, we do not consider for the children's poverty due to data unavailability, but also because it's out of the current study's topic. In the case of Egypt, we observe that the Headcount and the adjusted Headcount Ratios H and M^0 decreased on an annual basis between 2-12 percent considering the threshold values of $k=0.33$ and $k=0.50$, while the Average Deprivation Share A , which measures the intensity of poverty, was decreased only by 0.5 percent. Thus, the incidence of poverty has significantly reduced by 3 and 11 percent respectively for the total and youth population, and in particular from 36 to 32 percent for the total population and 12 to 8 percent for the youth. In other words, in 2012 the 12 percent of the youth was in poverty, while the respective number of poor people in the total population in the same year was three times higher. However, the intensity, expressed by A , noted only a very small decrease. A similar concluding remark is observed in Tunisia, where the poverty reduced even more reaching the 15 percent. Furthermore, the poverty presented a higher decline in the youth population. However, the period examined in these two countries, is not so comparable, as the analysis for Tunisia goes up to 2010, due to data availability. On the other hand, we observe high increases in poverty in Jordan and Iraq. We should notice that we test the mean of the indices' changes across the period examined between the total and youth population by applying the *t-statistic*. For instance, in Egypt we test the mean of the change in the total population between 2012-2015 with the respective change in the youth population across the same period. In all cases, based on table 2, we reject the null hypothesis, implying that the mean differences in the changes of the poverty indices differ between these two samples.

In tables 3-6 we report the MPI for the youth population by gender of the youngster; rural-urban area and governorates, considering as the threshold value of $k=33\%$. The results confirm the findings of table 2, where the poverty is decreasing in the case of Egypt and Tunisia, but shows an increasing trend in Jordan

and Iraq. In all countries, we observe that the incidence and intensity of poverty is higher in the female youngsters, except for Iraq. However, the multidimensional poverty shows a much higher declining trend in the females, possibly due to increasing education attainment, and labour opportunities for women, especially after the Arab Spring in 2011. On the other hand, in the case of Iraq and Jordan, we observe a higher increase of poverty for young women, reaching even two and three times more than the percentage change compared to young men. This may also be associated with the continuous conflicts, wars and hunger the country experiences over the last two decades, leaving many women widowed or disabled husbands and transmitting the poverty to the young generation or to young women who are married. Based on the panel B of tables 3-6, the poverty in the rural areas is higher compared to the young people located in urban areas, with the exception of Iraq, where the incidence and intensity of poverty is very close between the two areas, especially in 2012.

Next the poverty decomposition by governorate level is reported in panel C. In Egypt we observe higher derivation and multidimensional poverty levels in the Rural Lower and Upper Egypt, confirming the estimates found in panel B, while the lowest reductions of poverty are observed in Urban and Rural frontiers. Furthermore, even though the poverty is higher in the rural areas, the incidence and intensity of poverty have noted a higher decline by 7 percent in the Rural Upper Egypt compared to the 5-6 percent in the urban areas in Upper and Lower Egypt and the 2.3 percent in the urban governorates, such as Cairo and Alexandria. This is also consistent with the reduction of poverty in urban and rural areas by 3.8 and 7 percent found in panel B of table 3.

In Jordan overall, we find an extreme increase of poverty, as we have shown in table 2, however, in some areas, the MPI notes a reduction, especially in Madaba at 24 percent annually, in Maan at 16 percent annually, followed by Al Karak and Az Zaroa at 3 percent. This may be explained by the fact that inequality is lower in the South of Jordan and Madaba (Shahatee, 2006), coming also from potential industrial policies implemented in these areas, which are not explored in this study.

In Tunisia we observe a large drop in MPI, but the higher multidimensional poverty values are presented in the Centre West, North West and North East, which can be explained by the high unemployment rates noted in this region, which is one of the MPI dimensions. Furthermore, a disproportionate share of the country's water supply is also directed to the capital and the Grand Tunis area. The result is a nearly universal access to improved water source in 2010, with a very low rate reported in the North East, North-West and Center-West regions, which are more deprived (Frija et al., 2015), and the access to water is one of the deprivation indicators included in the second dimension-dwelling characteristics. More specifically, while in 2005 the 97 percent of households in Grand Tunis had access to piped water as their main water source, only the 61 percent of households in the North West and Centre West did, and only the 40 percent of the rural households in North West had access. Similarly, more than 90 percent of the households in Grand Tunis and South West had a toilet in their dwelling, while only the 66 percent in Centre-West did.

Despite the large incidence and intensity of poverty in those areas, we observe a large improvement, in terms of the annual percentage declining from 2005 to 2010. While we do not discuss the situation in

Iraq, the overall situation shows high increases in both incidence and intensity of poverty in the majority of the governorates. Furthermore, some governorates even though present MPI levels lower than the national average, have presented extreme annual increase in the poverty level, such as the governorates of Sulaimaniya, Najaf and Salah Al-Deen.

In Appendix we provide more detailed results of the dimensional decomposition by the respondent's gender, and the location- urban-rural area and governorate. In particular, in table A1, we report the M^0 values decomposed by the contribution in each domain, while in tables A2 and A3 we report the dimensional decomposition by gender and urban rural area, while in tables A4-A7 we present the domain decomposition by governorate level respectively in Egypt, Jordan, Iraq and Tunisia. We conclude that in Jordan and Iraq, material deprivation and employment dimensions are the most important domains followed by health, while in Egypt and Tunisia, education followed by material deprivation, employment and then health, contribute mostly to the issue of poverty. In table A2 we find mixed results. Even though we have shown in tables 3-6 that females present higher levels of poverty, this varies by each dimension. More specifically, in the case of Egypt, we observe that males are more deprived in the dimensions of material deprivation; dwelling characteristics; health and present poverty values very close to women's in the education dimension. On the other hand, the situation is the opposite in the employment dimension, where the proportion of young women deprived is nearly doubled. The case is similar to Jordan, where in that case young women are significantly more deprived in the material deprivation dimension. In Iraq, we observe rather similar values of multidimensional poverty for both young women and men, but women are more deprived in the material deprivation, education and health dimensions, while in Jordan, young women are significantly more deprived in the health and education domains. Besides the gender differences, the main concluding remark is that poverty is reduced in young women sample in higher rates compared to young men's poverty rates in Egypt and Tunisia. In Iraq, we observe an increase in poverty, with the most highlighted increases in the employment sector for both young males and females, while in Jordan we observe small reductions in female poverty in dwelling characteristics, health and education, but a large increase in the employment domain.

In table A3 we report the poverty decomposition by urban and rural areas. It is remarkable that in a period of 3 years, the poverty levels in urban areas were significantly reduced compared to rural areas. More specifically, the poverty was higher in urban areas in three dimensions; employment, health and education, and is significantly reduced in health and education domains. In Jordan we observe higher poverty rates in urban areas regarding the health and education dimensions, and a slight higher poverty rate in employment dimension, while a significant lower poverty rate is reported in the material deprivation dimension compared to the youth population located in the rural areas. In Iraq we observe that poverty is mostly more persistent in the urban areas, regarding the material deprivation and employment domains, while in Tunisia, poverty is more persistent in the rural areas except for employment. Overall, we conclude that young people located in urban areas report higher poverty rates in the employment dimension, which can be explained by the high urbanisation rates that lead to higher competition to the labour market and thus on employment opportunities for young people. Then in tables A4-A7 we report the poverty decompositions by governorate level. The results confirm the estimates found earlier in tables 3-6, where certain areas report persistent higher poverty levels across the period

examined in each country. Further policy recommendations and implications are discussed in the next section.

Next, using the multidimensional deprivation scores we explore the determinants of multidimensional poverty. A positive sign implies higher levels of poverty, since MPI calculates the multidimensional deprivation scores. Furthermore, as we examine in the following sections, we estimate a binary variable taking value 1 if the individual is defined as multidimensionally deprived and 0 otherwise. Therefore, as we have discussed in the methodology section, we apply the GLM and Logit models. In table 7, we see that females in Iraq and Tunisia are less likely to live in a household with high deprivation scores, while we observe the opposite situation in Egypt. In all countries, youth's age is negatively associated with MPI and is statistically significant. Father's age is positively correlated with deprivation and poverty, in Egypt and Tunisia, as well as, is the mother's age in the former country, while on the contrary, we find that households with elder mothers are less likely to report high deprivation scores in Jordan. The gender of the head of the household and in particular female heads, are more likely to live in more deprived households in Egypt and Tunisia. This could be explained by the presence of discrimination against women in the labour market and educational attainment, leading to lower salaries (Anyanwu, 2014). Furthermore, some of the households led by women could be those where women are widowed.

Employment status of the youth population and also parental employment activity are important determinants of the MPI. As it was expected in all cases, when both respondents and parents are disabled and unemployed, the chances of being multidimensionally poor are the highest. For women we considered also being active in housework, as the men traditionally do not register themselves as being involved only on housework. Being student the possibilities of being deprived are lower compared to the reference category of being employed. However, we can say that wealthy households, measured also by MPI, are more likely to give opportunities to the young people to study, rather than being a student reduces poverty.

About the education of both parents, we find in all countries the expected negative and significant sign, implying that higher education is associated with lower poverty levels. This is expected, as education empowers the household members and the head with skills increasing employment opportunities, potential earnings and living standards (Oyekale et al., 2012; Twerefou et al., 2014; Adepoju and Akinluyi, 2017). Lower parental education levels may hinder the ability to earn more and accumulate wealth, leading to vicious cycle of multidimensional poverty affecting also the next generations. The household size and more specifically, couples with three or more children report higher levels of deprivation scores.

Additional determinants considered in the regressions for Egypt and Jordan, is the number of earners and the sources of income, due to availability of data. As it was expected the number of earners is negatively associated with poverty, especially when both spouses are employed. The second determinant is the sources of income with reference category those who earn income from household business. This may refer to agriculture business activities or self-employment; however, more detailed information is unavailable. In the case of Egypt and Jordan, we observe that households receiving their main income

from salaries and also receiving income from remittances from country or abroad are more deprived are more deprived, compared to the reference category, which refer to the income earned from household business. Finally, as we have shown earlier, the urban households are less likely to experience higher levels of deprivation and poverty, compared to the young people living in rural areas, confirming the previous results.

5. Discussions and Conclusions

In this study we attempted to estimate the multidimensional poverty using the AF method in a sample of the MENA region countries. The findings suggest an improvement in the living standards of the youth population, except for Jordan and Iraq. Young males report lower levels of MPI, except for Tunisia, while rural households experience higher poverty levels.

The findings may offer insights for policy implications. Apart from the fact that poverty was reduced in Egypt and Tunisia, there are areas that still poverty is persistent. The same applies for Jordan and Iraq, where the overall multidimensional poverty has noted a significant increase; however, there are areas where poverty is reduced. Therefore, identifying the gender and area differences in poverty, it will provide a mapping on poverty persistency and thus, local and national policies may focus on those areas to fight poverty. As we have shown earlier, young women are more deprived in the majority of the dimensions of poverty explored in this study, even though significant reductions were noted. Although this is encouraging, still the women's poverty is higher in the employment dimensions. Nevertheless, this dimension includes also the labour force participation, which is traditionally lower for women in the MENA region countries for various reasons, including discrimination, social norms and gender role attitudes. Thus, future research studies may consider also these dimensions, regarding the active participation of women in the labour market and also, their opportunities of finding a job. This is further associated with other issues, including the gender wage-gap and the equal opportunities for young women to be employed in similar jobs or higher managerial positions compared to the opportunities given to the young men.

Regarding the analysis and poverty decomposition by urban and rural area we found that there is a higher concentration of poverty in rural areas, but there are indications of a shifting balance, and increasing urban poverty, especially, in the employment sector when we decomposed the analysis by dimensions. This is also associated with a persistent high unemployment among the youth population, even though an increasing trend in education is observed and the poverty in that dimensions has noted a reduction. Hence, this is further supported by the fact that governments in the MENA region have tried to reduce poverty and income inequalities mainly through subsidies, a large public sector and strong focus on education, but not policies that enhance productivity and the establishment of an efficient private sector creating jobs for the young population. Moreover, the past higher unemployment and poverty rates, as well as, other potential socio-cultural factors, such as social norms, have led to an increasing urbanisation, hitting mostly the young people, who compete for a fewer number of jobs in the absence of a productive private sector. Other factors related to the increase of poverty, especially in the case of Iraq, are political and military conflicts that increase poverty both directly and indirectly, through the increasing public spending on arms and military forces, through labour migration and flows of remittances, through

reduced trade and foreign investment due to security challenges, and further deterioration on living standards, dwelling characteristics and health, which are the main dimensions of our analysis. The same concluding remarks are derived, when we expand our analysis by decomposing the multidimensional poverty by governorate level.

Thus, apart from gender related policies, the governments should also focus on policies that reduce regional inequalities and enhance the national economy. This may include the reduction of conflicts and military dominance in governments, contributing significantly to the economic growth and the reduction of poverty. Primary school enrollment should be a priority field, where the establishment of laws about compulsory schooling may not be enough, without its proper enforcement. In line with this, the quality of vocational training programmes needs improvement, and it should fit the demands of the market and prepare the young people in a way that will fit and successfully respond to the demands of the labour market. Along with this, apprenticeships and training programmes, as part of “active” policies should be encouraged and implemented. These programmes could be supported by the government, especially to firms in the private sector that face huge challenges related to financial constraints and access to funding.

A regional development encouraging young people to avoid migration from rural and less developed areas to urban areas should be highly prioritized. This may include major reforms to land distribution and ownership, and agricultural institutions, access to credit funding, increase efficiency of public sector firms, and reduction of rules and regulations that considerably increase bureaucracy. This can be supported by future studies on agriculture sector, energy and environmental related sciences. Furthermore, as we have shown in our results, there are large discrepancies and persistent poverty in certain governorates, which may further, increase poverty and migration to other areas, creating additional poverty in the destination governorates. Therefore, the urgent need for job creation in both urban and rural areas requires a strong, efficient and sustained economic growth, which depends on two main factors. The first includes policy reforms and institutional strengthening, to make the MENA region countries internationally more competitive and more efficient users of land, labour and capital. Dwelling characteristics, even though were found to contribute less in multidimensional poverty, access to water at the agriculture sector, especially in the rural areas, should be highly prioritised. More precisely, water management policies have significant effects on the urban-rural relations, and the urbanization and such, social effects should be taken into account in all co-operation on water and related issues. The second factor is the investment levels need to generate growth. In their majority, MENA countries receive substantial amounts of foreign aid, including the countries explored here, and especially Egypt and Iraq. Nonetheless, the total volume of those foreign direct investments and the insufficient level of savings recorded in these countries are not enough to elevate investment levels and to allocate in high productive activities that will create jobs and improve living standards.

One major component of public health that leads to disability related issues is the high prevalence of obesity rates ranging between 23 percent for adult males and 40 percent for adult females, while the rates may range between 10-30 percent for young people (Mabry et al., 2016). This is especially the case for women, where a large proportion is getting married before the age of 18, and is a strong driver of obesity and further effects, such as disability (Hamamy, 2011). Family planning and reproductive health are

complex issues in the MENA region and of high importance to poverty. Even though the family planning programmes seem to have positive effects, reproductive health should be focused more to young women's health and not only to the mother-child health.

The policies should address the level of economic inactivity in the society identified and mapped by gender and area, to focus on the regional development, internal migration and urbanisation effects, family planning and the excessive promotion and consumption of unhealthy foods.

However, the study is not without drawbacks. One major issue is the data structure and in particular, the analysis relies on repeated cross-sectional surveys instead of panel data, with all the advantages associated with the latter. In our opinion, another drawback of the study is the dimensions included in the MPI. More specifically, we consider the typical socio-economic factors, such as living standards, educational attainment and health conditions, where additional factors capturing social and cultural norms could have been included in future empirical applications. More precisely, community factors and cultural norms, as gender role attitudes and domestic violence have not been explored so far and these can be considered as additional domains of dimensions of deprivation and poverty. Another limitation of the study is the period explored, especially in the case of Iraq and Jordan where the last year of examination is 2012 and 2013 respectively, while for Tunisia the analysis is limited up to 2010. However, the analysis relied on the most recent data available. Data from the latest surveys in future empirical applications will reveal valuable insights about the development and the dynamics of multidimensional poverty in these countries.

References

- Abdul-Mamin, A. and Shamshiry, E. (2014). *Linking sustainable livelihoods to natural resources and governance: the scale of poverty in the Muslim world*, Springer, Germany.
- Adepoju, A.O. and Akinluyi, O.I. (2017). Multidimensional poverty status of rural households in Nigeria: Does family planning have any effect? *International Journal of Social Economics*, 44(8), 1046-1061.
- Alkire, S. and Foster, J. (2011). Counting and multidimensional poverty measurement. *Journal of Public Economics*, 95(7), 476-487.
- Anyanwu J. (2014). Marital status, household size and poverty in Nigeria: Evidence from the 2009/2010 survey data. *African Development Review*, 26(1), 118-137.
- Asselin, L.-M. (2009). *Analysis of Multidimensional Poverty: Theory and Case Studies*. Springer/IDRC.
- Atkinson, A.B. (2003). Multidimensional deprivation: contrasting social welfare and counting approaches. *Journal of Economic Inequality*, 1(1), 51-65.
- Ayadi, M., El Lahga, A. and Chtioui, N. (2006). Analyse de la pauvreté et des inégalités en Tunisie entre 1988 et 2001: une approche non monétaire. PMMA, Network Session Paper.
- Blackburn, M. (1998). The sensitivity of international poverty comparisons. *Review of Income and Wealth*, 44(4), 449-472.
- Bérenger, V. (2010). Multidimensional Fuzzy Poverty and Pro-Poor Growth Measures in non-monetary Dimensions in Egypt between 1995 and 2005. *Middle East Development Journal*, 2(1), 15-38.
- Bérenger, V. (2017). Using Ordinal Variables to Measure Multidimensional Poverty in Egypt and Jordan. *Journal of Economic Inequality*, 15(2), 143-173.
- Bérenger, V. (2019). The counting approach to multidimensional poverty. The case of four African countries. *The South African Journal of Economics*. <https://doi.org/10.1111/saje.12217>
- Bibi, S. (2004). Comparing Multidimensional Poverty between Egypt and Tunisia. Cahier de recherche, Working Paper 04-16.
- Bibi, S. and El Lagha, A. (2008). Comparaisons ordinales robustes de la pauvreté multidimensionnelle: Afrique du Sud et Egypte, *Revue d'économie du développement*, 22(1), 5-36.
- Bourguignon, F. and Chakravarty, S.R. (2003). The measurement of multidimensional poverty. *Journal of Economic Inequality*, 1(1), 25-49.
- Chakravarty, S.R. and D'Ambrosio, A. (2006). The measurement of social exclusion. *Review of Income and Wealth*, 52(3), 377-398.
- Cheli, B. and Lemmi, A. (1995). A totally fuzzy and relative approach to the multidimensional analysis of poverty. *Economic Notes*, 24, 115-133.
- Coudouel, A., Hentschel, J. S. and Wodon, Q. T. (2002). Poverty measurement and analysis. In *The PRSP Sourcebook*. Washington, DC: World Bank.
- Espinosa-Delgado, J. and Silber, J. (2019). Multi-dimensional poverty among adults in Central America and gender differences in the three I's of poverty: Applying inequality sensitive poverty measures with ordinal variables. MPRA Paper 88750, University Library of Munich, Germany.
- Filmer, D. (2010). Education Attainment and Enrollment Around the World: An International Database. DECRG, The World Bank May 26, <http://econ.worldbank.org/projects/edattain>.
- Foster, J., Greer, J. and Thorbecke, E. (1984). A Class of Decomposable Poverty Measures. *Econometrica*, 52(3), 761-766.
- Foster, J., Roche, J.M., Santos, M.E., Ballon, P., Alkire, A. and Seth, S. (2015). *Multidimensional Poverty Measurement and Analysis*. Oxford University Press, Oxford, UK.
- Frija, A., Makhlof, M., Chebil, A. and Thabet, C. (2015). Potential adaptations of the Tunisian agricultural sector to water scarcity. Economic Research Forum, Working paper series 943.
- Gibson, J. (2016). Poverty measurement: we know less than policy makers realize. *Asia and the Pacific Policy Studies*, 3(3), 430-442.

- Groth, H. and Sousa-Poza, A. (2012). *Population Dynamics in Muslim Countries: Assembling the Jigsaw*. Springer.
- Hamamy, H., Antonarakis, S.E., Cavalli-Sforza, L.L., Temtamy, S., Romeo, G., Ten Kate, L.P., Bennett, R.L., Shaw, A., Megarbane, A., van Duijn, C., Bathija, H., Fokstuen, S., Engel, E., Zlotogora, J., Dermitzakis, E., Bottani, A., Dahoun, S., Morris, M.A., Arsenault, S., Aglan, M.S., Ajaz, M., Alkalamchi, A., Alnaqeb, D., Alwasiyah, M.K., Anwer, N., Awwad, R., Bonnefin, M., Corry, P., Gwanmesia, L., Karbani, G.A., Mostafavi, M., Pippucci, T., Ranza-Boscardin, E., Reversade, B., Sharif, S.M., Teeuw, M.E. and Bittles, A.H. (2011). Consanguineous marriages, pearls and perils: Geneva International Consanguinity *Workshop Report*. *Genetics in Medicine*, 13(9), 841-847.
- Haughton, J. and Khandker, S. R. (2009). *Handbook on poverty and inequality*. Washington, DC: World Bank.
- Hlasny, V. and AlAzzawi, S. (2018). Asset inequality in the MENA: The missing dimension? *The Quarterly Review of Economics and Finance*, <https://doi.org/10.1016/j.qref.2018.07.010>
- ILO (2019). World Employment and Social Outlook – Trends 2019. International Labour Organization. <https://www.ilo.org/global/research/global-reports/weso/2019/lang--en/index.htm>
- ILO (2011). *The Global Crisis: Causes, Responses and Challenges*. International Labour Organization. Geneva.
- Jansen, A., Moses, M., Mujuta, S. and Yu, D. (2015). Measurements and determinants of multifaceted poverty in South Africa. *Development Southern Africa*, 32(2), 151-169.
- Kakwani, N. and Silber, J. (2008). *Quantitative Approaches to Multidimensional Poverty Measurement*. Palgrave Macmillan, Basingstoke.
- Kanbur, R., Calvo, M., Das Gupta, M., Grootaert, C., Kwakwa, V. and Lustig, N. (2000). *World development report 2000/2001: attacking poverty*. World development report. Washington, DC: World Bank Group.
- Klasen, S. and Lahoti, R. (2016). How Serious is the Neglect of Intra-Household Inequality in Multi-dimensional Poverty Indices?, Courant Research Centre: Poverty, Equity and Growth - Discussion Papers 200, Courant Research Centre PEG.
- Lemmi, A. and Betti, G. (2006). *Fuzzy Set Approach to Multidimensional Poverty Measurement*. Economic Studies in Inequality, Social Exclusion and Well-being. Springer, New York.
- Lipton, M. and Ravallion, M. (1995). Poverty and policy. In *Handbook of Development Economics*, Chenery, H. and Srinivasan, T.N. (Eds.), 1st Edition, Volume 3, Chapter 41, 2551-2657.
- Mabry, R., Koohsari, M.J., Bull, F. and Owen, N.A. (2016). Systematic review of physical activity and sedentary behaviour research in the oil-producing countries of the Arabian Peninsula. *BMC Public Health*. 16(1), 1003.
- McCullagh, P. and Nelder, J.A. (1989). *Generalized Linear Models*. 2nd Ed. Chapman & Hall, London.
- Meyer, B.M. and Sullivan, J.X. (2004). The effects of welfare and tax reform: the material well-being of single mothers in the 1980s and 1990s. *Journal of Public Economics*. 88, 1387-1420.
- Musaiger, A.O., Hassan, A.S. and Obeid, O. (2011). The paradox of nutrition-related diseases in the Arab countries: the need for action. *International Journal of Environmental Research and Public Health*, 8(9), 3637-3671.
- OAMDI (2014a). Harmonized Household Income and Expenditure Surveys (HHIES), <http://erf.org.eg/data-portal/>. Version 2.0 of Licensed Data Files; HIECS 2012/2013 - Central Agency for Public Mobilization and Statistics (CAPMAS). Egypt: Economic Research Forum (ERF).
- OAMDI (2014b). Harmonized Household Income and Expenditure Surveys (HHIES), <http://erf.org.eg/data-portal/>. Version 2.0 of Licensed Data Files; EBCNV 2005 - National Institute of Statistics (INS), Tunisia. Egypt: Economic Research Forum (ERF).

- OAMDI (2014c). Harmonized Household Income and Expenditure Surveys (HHIES), <http://erf.org.eg/data-portal/>. Version 2.0 of Licensed Data Files; EBCNV 2010 - National Institute of Statistics (INS), Tunisia. Egypt: Economic Research Forum (ERF).
- OAMDI (2014d). Harmonized Household Income and Expenditure Surveys (HHIES), <http://erf.org.eg/data-portal/>. Version 2.0 of Licensed Data Files; HEIS 2010 - Department of Statistics (DOS), The Hashemite Kingdom of Jordan. Egypt: Economic Research Forum (ERF).
- OAMDI (2017a). Harmonized Household Income and Expenditure Surveys (HHIES), <http://erf.org.eg/data-portal/>. Version 2.0 of Licensed Data Files; HIECS 2015 - Central Agency for Public Mobilization and Statistics (CAPMAS). Egypt: Economic Research Forum (ERF).
- OAMDI (2017b). Harmonized Household Income and Expenditure Surveys (HHIES), <http://erf.org.eg/data-portal/>. Version 2.0 of Licensed Data Files; HEIS 2013 - Department of Statistics (DOS), The Hashemite Kingdom of Jordan. Egypt: Economic Research Forum (ERF).
- Oyekale A., Adepoju A. and Balogun A. (2012). Determinants of poverty among riverine rural households in Ogun State Nigeria. *Studies in Tribes Tribunals*, 10(2), 99-105.
- Posel D. and Rogan M. (2014). Measured as poor versus feeling poor: comparing money-metric and subjective poverty rates in South Africa. *Journal of Human Development and Capabilities*, 17, 1-19.
- Seekings J. (2007). Poverty and inequality after apartheid. CSSR Working Paper No. 200, Centre for Social Science Research, University of Cape Town.
- Shahateh, M.I. (2006). How Serious Regional Economic Inequality in Jordan? Evidence from Two National Household Surveys. *American Journal of Applied Sciences*, 3(2), 1735-1744.
- Sida (2009). The Role of Young People in Poverty Reduction: Tackling Poverty Together. The National Council of Swedish Youth Organisations. Swedish International Development Cooperation Agency, Stockholm, Sweden. <https://www.un.org/esa/socdev/publications/TPTPublication.pdf>.
- Tsui, K. (2002). Multidimensional poverty indices. *Social Choice and Welfare*, 19, 69-93.
- Twerefou D. K., Senadza B. and Owusu-Afriyie (2014). Determinants of poverty among male-headed and female-headed households in Ghana. *Ghanaian Journal of Economics*, 2, 77-96.
- UNDP (2010). *Human Development Report 2010*. The Real Wealth of Nations: Pathways to Human Development. United National Development Programme (UNDP), Palgrave Macmillan, New York.
- UNICEF (2011). Adolescence An Age of Opportunity https://www.unicef.org/adolescence/files/SOWC_2011_Main_Report_EN_02092011.pdf.
- United Nations (2015). http://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_RES_70_1_E.pdf
- United Nations (2010). World Programme of Action for Youth. Economic and Social Affairs. <https://www.un.org/esa/socdev/unyin/documents/wpay2010.pdf>.
- Vijaya, R. M., Lahoti, R. and Swaminathan, H. (2014). Moving from the household to the individual: Multidimensional poverty analysis. *World Development*, 59(C), 70-81.
- White, S. and Marshall, N. (2013). An integrated approach to assessing wellbeing. Wellbeing and Poverty Pathways Briefing No. 1. University of Bath, Bath, UK. <https://assets.publishing.service.gov.uk/media/57a08a1340f0b649740003e8/60722-BP1rev-web.pdf>
- WHO (2011). Youth and health risks: Report by the Secretariat. Sixty-Fourth World Health Assembly A64/25 Provisional agenda item 13.16. https://apps.who.int/gb/ebwha/pdf_files/WHA64/A64_25-en.pdf.

World Bank (1990). *World Development Report 1990: Poverty*. New York: Oxford University Press.

Table 1. List of parameters for MPI specifications

Dimension	Indicators	Relative Weight	Cut-off Threshold
Material deprivation (1/5)	V1: Vehicle Ownership: Motor cycle or car	1/20	Deprived if the household does not own a motor cycle or car or truck
	V2: Asset Ownership 1: Electronic Devices	1/20	Deprived if the household does not own more than three of the following: radio, TV, mobile and telephone
	V3: Asset Ownership 2: Major Housing Appliances	1/20	Deprived if the household does not own more than three of the following: refrigerator, cooker, washing machine and iron
	V4: Asset Ownership 3: Other Housing Appliances	1/20	Deprived if the household does not own one of the following: computer, heater and water heater.
Dwelling Characteristics, Energy, Water and Sanitation (1/5)	V1: Source of energy for lightening and cooking	1/20	Deprived if the household uses coal, dung, or kerosene as energy source
	V2: Electricity Supply	1/20	Deprived if the household does not use electricity for lighting from the Grid
	V3: Water Supply	1/20	Deprived if the household does not have access to the water supply of the public network
	V4: Toilet Facility	1/20	Deprived if the household does not have toilet facility or has access only to shared toilet
Employment (1/5)	V1: Labour Force Participation of the Young	1/10	Deprived if the youngster does not participate in the labour market
	V2: Employment status of the Young	1/10	Deprived if the youngster is unemployed (except for students)
Health (1/5)	Disability Status of the Young	1/5	Deprived if the young is disabled
Education (1/5)	V1: Literacy Status of the Young	1/10	Deprived if the youngster is illiterate
	V2: Educational Attainment of the Young	1/10	Deprived if the youngster has completed up to primary school education

Table 2. MPI by different values in k

EGYPT	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0		
k=Union	2012	2015	Annualised Change % 2012-2015	2012	2015	Annualised Change % 2012-2015	2012	2015	Annualised Change % 2012-2015
Total	0.893 (0.002)	0.896 (0.002)	0.111	0.293 (0.001)	0.283 (0.001)	-1.137	0.262 (0.001)	0.254 (0.001)	-1.017
Youth	0.963 (0.002)	0.962 (0.002)	-0.034	0.234 (0.001)	0.220 (0.001)	-1.994	0.225 (0.001)	0.211 (0.001)	-2.074
T-statistic test for differences			-42.76 [0.000]			-62.34 [0.000]			-75.05 [0.000]
k=33%									
Total	0.365 (0.004)	0.328 (0.003)	-3.376	0.444 (0.001)	0.439 (0.001)	-0.375	0.162 (0.002)	0.144 (0.001)	-3.704
Youth	0.119 (0.004)	0.080 (0.003)	-10.923	0.424 (0.002)	0.421 (0.004)	-0.236	0.050 (0.002)	0.033 (0.001)	-11.333
T-statistic test for differences			-151.36 [0.000]			17.02 [0.000]			-106.81 [0.000]
k=50%									
Total	0.125 (0.003)	0.115 (0.002)	-2.667	0.533 (0.001)	0.530 (0.001)	-0.188	0.067 (0.001)	0.059 (0.001)	-3.980
Youth	0.033 (0.002)	0.021 (0.001)	-12.120	0.508 (0.001)	0.502 (0.007)	-0.394	0.017 (0.001)	0.011 (0.001)	-11.765
T-statistic test for differences			-142.28 [0.000]			459.184 [0.000]			-108.81 [0.000]
JORDAN									
	2010	2013	Annualised Change % 2010-2013	2010	2013	Annualised Change % 2010-2013	2010	2013	Annualised Change % 2010-2013
k=Union									
Total	0.604 (0.006)	0.747 (0.004)	7.894	0.341 (0.002)	0.319 (0.001)	-2.149	0.206 (0.002)	0.238 (0.002)	5.178
Youth	0.676 (0.008)	0.886 (0.004)	10.357	0.280 (0.001)	0.269 (0.001)	-1.310	0.189 (0.002)	0.238 (0.002)	8.642
T-statistic test for differences			86.818 [0.000]			74.657 [0.000]			62.737 [0.000]
k=33%									
Total	0.248 (0.005)	0.254 (0.004)	0.806	0.460 (0.003)	0.408 (0.001)	-3.768	0.114 (0.003)	0.117 (0.002)	0.877
Youth	0.120 (0.006)	0.116 (0.004)	-1.111	0.389 (0.005)	0.411 (0.005)	1.885	0.047 (0.002)	0.048 (0.002)	0.709
T-statistic test for differences			-38.480 [0.000]			182.754 [0.000]			27.693 [0.000]
k=50%									
Total	0.094 (0.004)	0.099 (0.003)	1.773	0.574 (0.003)	0.575 (0.003)	0.058	0.054 (0.002)	0.057 (0.002)	1.852
Youth	0.015 (0.002)	0.016 (0.002)	2.222	0.625 (0.016)	0.691 (0.013)	3.520	0.010 (0.001)	0.011 (0.001)	3.333
T-statistic test for differences			-35.392 [0.000]			425.128 [0.000]			-58.402 [0.000]

Table 2 (cont.) MPI by different values in k

IRAQ	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0			
	$k=$ Union	2007	2012	Annualised Change % 2007-2012	2007	2012	Annualised Change % 2007-2012	2007	2012	Annualised Change % 2007-2012
Total	0.827 (0.002)	0.918 (0.001)	2.201	0.364 (0.001)	0.417 (0.001)	2.912	0.301 (0.001)	0.383 (0.001)	5.449	
Youth	0.914 (0.002)	0.965 (0.002)	1.116	0.377 (0.001)	0.416 (0.001)	2.069	0.344 (0.001)	0.402 (0.001)	3.372	
T-statistic test for differences			-78.804 [0.000]			-57.781 [0.000]			-74.282 [0.000]	
k=33%										
Total	0.560 (0.002)	0.763 (0.002)	7.250	0.426 (0.001)	0.452 (0.001)	1.221	0.239 (0.001)	0.345 (0.001)	8.870	
Youth	0.751 (0.003)	0.879 (0.003)	3.409	0.407 (0.001)	0.433 (0.001)	1.278	0.305 (0.001)	0.380 (0.002)	4.918	
T-statistic test for differences			-78.804 [0.000]			-57.781 [0.000]			-74.282 [0.000]	
k=50%										
Total	0.132 (0.002)	0.259 (0.002)	19.242	0.531 (0.001)	0.547 (0.001)	0.603	0.070 (0.001)	0.141 (0.001)	20.286	
Youth	0.108 (0.002)	0.215 (0.004)	19.815	0.528 (0.001)	0.517 (0.001)	0.417	0.057 (0.001)	0.111 (0.002)	18.947	
T-statistic test for differences			-15.394 [0.000]			-9.099 [0.000]			-27.335 [0.000]	
TUNISIA										
$k=$ Union	2005	2010	Annualised Change % 2005-2010	2005	2010	Annualised Change % 2005-2010	2005	2010	Annualised Change % 2005-2010	
Total	0.840 (0.002)	0.587 (0.006)	-6.024	0.325 (0.001)	0.256 (0.001)	-4.246	0.273 (0.001)	0.150 (0.002)	-9.011	
Youth	0.875 (0.003)	0.529 (0.010)	-7.909	0.223 (0.001)	0.174 (0.002)	-4.395	0.195 (0.001)	0.092 (0.001)	-10.564	
T-statistic test for differences			-129.285 [0.000]			31.653 [0.000]			-74.892 [0.000]	
k=33%										
Total	0.312 (0.003)	0.121 (0.004)	-12.244	0.485 (0.002)	0.451 (0.004)	-1.402	0.151 (0.001)	0.055 (0.001)	-12.715	
Youth	0.066 (0.002)	0.035 (0.002)	-17.714	0.439 (0.004)	0.398 (0.004)	-1.867	0.029 (0.001)	0.015 (0.001)	-9.655	
T-statistic test for differences			178.538 [0.000]			-22.243 [0.000]			61.441 [0.000]	
k=50%										
Total	0.114 (0.002)	0.042 (0.002)	-12.632	0.649 (0.002)	0.609 (0.003)	-1.233	0.074 (0.001)	0.025 (0.001)	-13.243	
Youth	0.014 (0.001)	0.013 (0.001)	-1.429	0.621 (0.007)	0.616 (0.007)	-0.161	0.009 (0.001)	0.008 (0.001)	-2.222	
T-statistic test for differences			527.111 [0.000]			218.527 [0.000]			293.179 [0.000]	

Standard errors within brackets, p-values within square brackets

Table 3. Youth MPI in Egypt by Gender and Area Groups using $k=33\%$

Panel A: Gender of the Youngster	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0		
	2012	2015	Annualised Change % 2012-2015	2012	2015	Annualised Change % 2012-2015	2012	2015	Annualised Change % 2012-2015
MALE	0.093	0.089	-1.434	0.398	0.326	-1.843	0.037	0.029	-7.207
FEMALE	0.148	0.125	-5.180	0.439	0.336	-0.228	0.065	0.042	-11.795
Panel B: Area									
RURAL	0.155	0.137	-3.871	0.426	0.439	-6.477	0.066	0.047	-9.596
URBAN	0.066	0.052	-7.071	0.409	0.429	-5.128	0.027	0.018	-11.111
Panel C: Governorates									
URBAN GOVERNORATES	0.057	0.053	-2.339	0.421	0.442	-4.953	0.024	0.019	-6.944
URBAN LOWER EGYPT	0.054	0.044	-6.173	0.389	0.441	-4.113	0.021	0.015	-9.524
RURAL LOWER EGYPT	0.117	0.104	-3.704	0.410	0.429	-5.208	0.048	0.036	-8.333
URBAN UPPER EGYPT	0.091	0.076	-5.495	0.418	0.435	-12.327	0.038	0.020	-15.789
RURAL UPPER EGYPT	0.198	0.154	-7.407	0.439	0.444	-6.240	0.087	0.055	-12.261
URBAN FRONTIER	0.045	0.042	-1.333	0.378	0.357	-5.462%	0.017	0.015	9.804
RURAL FRONTIER	0.111	0.106	-0.901	0.423	0.406	-4.195%	0.047	0.043	13.475

Table 4. Youth MPI in Jordan by Gender and Area Groups using $k=33\%$

Panel A: Gender of the Youngster	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0		
	2010	2013	Annualised Change % 2010-2013	2010	2013	Annualised Change % 2010-2013	2010	2013	Annualised Change % 2010-2013
MALE	0.077	0.096	8.225	0.416	0.427	0.881	0.032	0.041	9.375
FEMALE	0.078	0.138	25.641	0.551	0.399	-9.195	0.043	0.055	9.302
Panel B: Area									
RURAL	0.119	0.124	1.401	0.412	0.411	-0.081	0.049	0.051	1.361
URBAN	0.079	0.110	13.080	0.418	0.409	-0.718	0.033	0.045	12.121
Panel C: Governorates									
AMMAN	0.057	0.068	6.433	0.421	0.456	2.771	0.024	0.031	9.722
AL-BALQA	0.077	0.125	20.779	0.364	0.424	5.495	0.028	0.053	29.762
AZ ZARQA	0.133	0.121	-3.008	0.391	0.405	1.194	0.052	0.049	-1.923
MADABA	0.149	0.042	-23.937	0.456	0.429	-1.974	0.068	0.018	-24.510
IRBID	0.099	0.137	12.795	0.404	0.409	0.413	0.040	0.056	13.333
AL-MAFRAQ	0.144	0.182	8.796	0.382	0.418	3.141	0.055	0.076	12.727
JERASH	0.157	0.208	10.828	0.363	0.375	1.102	0.057	0.078	12.281
AJLOUN	0.071	0.149	36.620	0.465	0.383	-5.878	0.033	0.057	24.242
AL-KARAK	0.111	0.100	-3.303	0.378	0.380	0.176	0.042	0.038	-3.175
AL-TAFILAH	0.071	0.131	28.169	0.451	0.382	-5.100	0.032	0.050	18.750
MAAN	0.125	0.065	-16.000	0.448	0.523	5.580	0.056	0.034	-13.095
AL-AQABA	0.192	0.213	3.646	0.443	0.357	-6.471	0.085	0.076	-3.529

Table 5. Youth MPI in Iraq by Gender and Area Groups using $k=33\%$

Panel A: Gender of the Youngster	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0		
	2007	2012	Annualised Change % 2007-2012	2007	2012	Annualised Change % 2007-2012	2007	2012	Annualised Change % 2007-2012
MALE	0.897	0.919	0.491	0.409	0.442	1.614	0.367	0.406	2.125
FEMALE	0.566	0.723	5.548	0.403	0.401	-0.099	0.228	0.290	5.439
Panel B: Area									
RURAL	0.693	0.856	4.704	0.427	0.435	0.375	0.296	0.372	5.135
URBAN	0.761	0.878	3.075	0.396	0.431	1.768	0.302	0.378	5.033
Panel C: Governorates									
DUHOK	0.805	0.859	1.342	0.412	0.423	0.534	0.332	0.363	1.867
NAINAWA	0.809	0.914	2.596	0.431	0.434	0.139	0.349	0.397	2.751
SULAIMANIYA	0.677	0.853	8.666	0.412	0.433	1.699	0.279	0.369	10.753
KIRKUKA	0.712	0.752	1.873	0.397	0.435	3.191	0.283	0.327	5.183
ERBIL	0.726	0.841	5.280	0.419	0.434	1.193	0.304	0.365	6.689
DIYALA	0.866	0.923	1.316	0.397	0.445	2.418	0.344	0.411	3.895
ANBAR	0.759	0.871	2.951	0.391	0.429	1.944	0.297	0.374	5.185
BAGHDAD	0.749	0.891	3.792	0.393	0.433	2.036	0.294	0.386	6.259
BABYLON	0.733	0.857	3.383	0.400	0.438	1.900	0.293	0.375	5.597
KARBELA	0.715	0.913	5.538	0.404	0.423	0.941	0.289	0.386	6.713
WASIT	0.751	0.883	3.515	0.407	0.431	1.179	0.306	0.381	4.902
SALAH AL-DEEN	0.701	0.862	4.593	0.394	0.433	1.980	0.276	0.373	7.029
NAJAF	0.674	0.893	6.499	0.411	0.436	1.217	0.277	0.389	8.087
QADISIYA	0.723	0.837	3.154	0.418	0.430	0.574	0.302	0.360	3.841
MUTHANNA	0.704	0.883	5.085	0.411	0.425	0.681	0.289	0.375	5.952
THI-QAR	0.827	0.904	1.862	0.412	0.444	1.553	0.341	0.401	3.519
MAYSAN	0.835	0.907	1.725	0.414	0.429	0.725	0.346	0.389	2.486
BASRAH	0.809	0.910	2.497	0.400	0.435	1.750	0.324	0.396	4.444

Table 6. Youth MPI in Tunisia by Gender and Area Groups using $k=33\%$

Panel A: Gender of the Youngster	Headcount Ratio H			Average Deprivation Share A			Adjusted Headcount Ratio M^0		
	2005	2010	Annualised Change % 2005-2010	2005	2010	Annualised Change % 2005-2010	2005	2010	Annualised Change % 2005-2010
MALE	0.048	0.022	-10.833	0.458	0.409	-2.140	0.022	0.009	-11.818
FEMALE	0.084	0.035	-11.667	0.417	0.371	-2.206	0.035	0.013	-12.571
Panel B: Area									
RURAL	0.131	0.071	-9.160	0.420	0.352	-3.238	0.055	0.025	-10.909
URBAN	0.022	0.009	-11.818	0.500	0.444	-2.240	0.011	0.004	-12.727
Panel C:									
Governorates									
GRAND TUNIS	0.031	0.013	-11.613	0.484	0.385	-4.091	0.015	0.005	-13.333
NORTH EAST	0.084	0.026	-13.810	0.429	0.346	-3.869	0.036	0.009	-15.000
NORTH WEST	0.105	0.053	-9.905	0.429	0.358	-3.310	0.045	0.019	-11.556
CENTRE EAST	0.041	0.02	-10.244	0.439	0.400	-1.777	0.018	0.008	-11.111
CENTRE WEST	0.141	0.024	-16.596	0.411	0.375	-1.752	0.058	0.009	-16.897
SOUTH EAST	0.061	0.049	-3.934	0.426	0.429	0.141	0.026	0.021	-3.846
SOUTH WEST	0.043	0.026	-7.907	0.442	0.423	-0.860	0.019	0.011	-8.421

Table 7. Determinants of MPI for youth

Variables	GLM				LOGIT			
	Egypt	Jordan	Iraq	Tunisia	Egypt	Jordan	Iraq	Tunisia
Gender (Female)	0.0065*** (0.0013)	-0.0044 (0.0068)	-0.2254*** (0.0254)	-0.0194*** (0.0067)	0.0123** (0.0058)	-0.0592 (0.1239)	-1.8914*** (0.1998)	-0.1243** (0.0587)
Age	-0.0053*** (0.0003)	-0.0068*** (0.0018)	-0.0059*** (0.0012)	-0.0109*** (0.0014)	-0.1794*** (0.0204)	-0.0924*** (0.0273)	-0.0373*** (0.0123)	-0.0296* (0.0159)
Father's Age	0.0004*** (0.0001)	0.0003 (0.0007)	-0.002 (0.005)	0.0040*** (0.0006)	0.0165** (0.0077)	0.0083 (0.0089)	-0.0092 (0.0148)	0.0424*** (0.0103)
Mother's Age	0.0004** (0.0002)	-0.0025*** (0.0009)	0.006 (0.005)	-0.0003 (0.0007)	0.0255*** (0.0092)	-0.0036*** (0.0012)	0.0131 (0.0154)	-0.0101 (0.0128)
Gender of the Household Head (Female)	0.0482*** (0.0033)	-0.0066 (0.0924)	-0.2802 (0.1850)	0.1652*** (0.0463)	0.7692 (0.4731)	-0.0360 (0.0482)	-0.1279 (0.4488)	1.3125* (0.7502)
Youth Job Status (Reference Employed)								
Unemployed	0.0787*** (0.0031)	0.6001*** (0.045)	0.1029*** (0.0205)	0.6039*** (0.0144)	0.4013** (0.1609)	2.1844*** (0.2640)	0.4474** (0.2112)	2.1932*** (0.2135)
Student	-0.0356*** (0.0024)	-0.5349*** (0.0132)	-0.1432 (0.1822)	-0.1411*** (0.0120)	-2.014*** (0.1400)	-1.3849*** (0.2747)	-1.2890 (0.6335)	-0.9210*** (0.2734)
Disabled/Unable to work	0.3463*** (0.0168)	2.4153*** (0.0719)	0.2690*** (0.0801)	2.1798*** (0.0344)	4.7842*** (0.3581)	9.7923*** (1.1440)	2.2156*** (0.2262)	2.5032*** (0.3325)
Housework	0.0824*** (0.0040)	0.6426*** (0.0189)	0.0736*** (0.0150)	0.0241*** (0.0036)	0.6355*** (0.1679)	2.5070*** (0.2948)	0.2221** (0.1009)	2.1350*** (0.6824)
Father's Job Status (Reference Employed)								
Unemployed	0.0224** (0.0103)	0.0586*** (0.0140)	0.0710*** (0.0086)	0.0772*** (0.0208)	0.1271** (0.0576)	0.3582** (0.1955)	0.3848** (0.1849)	0.4865* (0.2516)
Disabled/Unable to work	0.0307*** (0.0071)	0.0674*** (0.0126)	0.1016** (0.0474)	0.01676* (0.0096)	0.5581*** (0.1803)	0.5948*** (0.1659)	1.1030** (0.4979)	0.8022*** (0.2235)
Mother's Job Status (Reference Employed)								
Unemployed	0.0111 (0.0077)	0.0206 (0.0265)	0.0513*** (0.0175)	0.0135 (0.0548)	0.0482* (0.0268)	0.5860 (0.3680)	0.2605* (0.1317)	1.1728** (0.4747)
Disabled/Unable to work	0.0122** (0.0055)	0.0820** (0.0387)	0.0510** (0.0242)	0.0066 (0.0292)	0.1030 (0.41128)	1.037** (0.4628)	0.4187* (0.2090)	0.1740 (0.3425)
Housework	0.0013 (0.0017)	0.0020 (0.0125)	0.0183* (0.0110)	0.0565 (0.0596)	0.0499 (0.1090)	0.0484 (0.2369)	0.0019 (0.0025)	0.2023 (0.2531)
Mother's education (Reference-None)								
Primary school	-0.0150*** (0.0020)	-0.0911*** (0.0115)	-0.0274* (0.0281)	-0.0912** (0.0255)	-0.6745*** (0.2007)	-0.8238*** (0.1374)	-0.3344* (0.1876)	-0.2347* (0.1232)
Secondary school	-0.0172*** (0.0019)	-0.1086*** (0.0137)	-0.0397* (0.0208)	-0.1154*** (0.0139)	-0.0182** (0.0082)	-1.5872*** (0.2713)	-0.4330** (0.2072)	-0.6012** (0.2639)
High School	-0.0176*** (0.0035)	-0.1242*** (0.0136)	-0.0399** (0.0178)	-0.1641*** (0.0318)	-0.5189* (0.2829)	-1.4005*** (0.2652)	-0.4341* (0.2418)	-0.8367* (0.4284)
University-Higher Education	-0.0291*** (0.0028)	-0.1345*** (0.0175)	-0.0861* (0.0476)	-0.2070*** (0.0296)	-0.8992* (0.5302)	-1.5731*** (0.2871)	-0.7056** (0.3083)	-0.9788*** (0.3372)
Father's education (Reference-None)								
Primary school	-0.0223*** (0.0021)	-0.0726*** (0.0127)	-0.0183** (0.0085)	-0.0984*** (0.0198)	-0.8499*** (0.1474)	-0.6373*** (0.1433)	-0.2661* (0.1431)	-1.9054* (0.9944)
Secondary school	-0.0296*** (0.0018)	-0.1045*** (0.0157)	-0.0309*** (0.0108)	-0.1240*** (0.0108)	-1.3020*** (0.1554)	-1.0535*** (0.2292)	-0.4845** (0.2364)	-0.8658** (0.4112)
High School	-0.0390*** (0.0029)	-0.1439*** (0.0161)	-0.0286*** (0.0097)	-0.2471*** (0.0255)	-1.4816*** (0.3839)	-1.5071*** (0.3422)	-0.5275*** (0.1665)	-1.0134** (0.4227)
University-Higher Education	-0.0519*** (0.0052)	-0.1268*** (0.0159)	-0.0412*** (0.0124)	-0.2585*** (0.0169)	-1.5003*** (0.3561)	-2.0878*** (0.4647)	-0.9745** (0.4672)	-1.1449** (0.5525)

Table 7 (cont.) Determinants of MPI for youth

Variables	GLM				LOGIT			
	Egypt	Jordan	Iraq	Tunisia	Egypt	Jordan	Iraq	Tunisia
Household Type (Reference- Two adults with one dependent child)								
Two adults with two dependent children	-0.0228 (0.0039)	-0.1219** (0.0426)	-0.0240** (0.0116)	-0.0665** (0.0215)	-1.0079 (0.8449)	-1.2086 (0.0782)	-0.1775* (0.1068)	-0.0683 (0.0579)
Two adults with three or more dependent children	0.0077** (0.0029)	0.0089 (0.0121)	0.0229* (0.0119)	0.0247* (0.0149)	0.2516** (0.1043)	0.2469 (0.1732)	0.1976 (0.1538)	0.3547* (0.1965)
Number of earners	-0.0027** (0.0009)	-0.0122*** (0.0028)	-0.0238** (0.0108)		-0.1075** (0.0418)	-0.2012*** (0.0542)	-0.2276** (0.1032)	
Sources of Income (Reference Household Business)								
Salaries-Wages	0.0113*** (0.0015)	0.0586*** (0.0174)			0.1168 (0.0961)	0.8206** (0.3928)		
Remittances from country or abroad	0.0053* (0.0029)	0.1996*** (0.0265)			0.0153* (0.0082)	2.3269*** (0.4145)		
Urban Area	-0.0244*** (0.0017)	-0.0172* (0.0087)	-0.0307*** (0.0068)	-0.1404*** (0.0074)	-0.4328*** (0.1243)	0.0413 (0.1273)	-0.4600*** (0.1277)	-1.6514*** (0.1691)
No. Observations	11,607	7,112	6,533	10,919	11,382	6,865	6,248	10,246
Log Pseudo Likelihood	-4,067.092	-2,643.313	-2,358.983	-3,548.002	-2,082.897	-1,333.851	-1,603.113	-1,947.528
Wald Chi-Square					1,162.20 [0.000]	578.32 [0.000]	872.65 [0.000]	853.13 [0.000]

Robust standard errors within brackets, p-values within square brackets. ***, ** and * indicate significance at 1%, 5% and 10% level respectively.

Appendix

Table A1. M^0 in the Deprivation Domains for Youth Population

Dimensions	Egypt				Jordan			
	2012-2015	2012	2015	Annualised Change % 2012-2015	2010-2013	2010	2013	Annualised Change % 2010-2013
Material deprivation	0.247	0.249	0.245	-0.535	0.319	0.325	0.312	-1.333
Dwelling Characteristics, Energy, Water and Sanitation	0.072	0.051	0.082		0.18	0.184	0.181	
Employment	0.220	0.230	0.220	-1.449	0.262	0.269	0.26	-1.115
Health	0.135	0.138	0.132	-1.449	0.173	0.159	0.178	3.983
Education	0.326	0.332	0.321	-1.104	0.066	0.063	0.069	3.175
Dimensions	Iraq				Tunisia			
	2007-2012	2007	2012	Annualised Change % 2007-2012	2005-2010	2005	2010	Annualised Change % 2005-2010
Material deprivation	0.307	0.314	0.302	-0.764	0.195	0.203	0.191	-1.182
Dwelling Characteristics, Energy, Water and Sanitation	0.035	0.038	0.032					
Employment	0.364	0.368	0.361	-0.380	0.296	0.259	0.328	5.328
Health	0.224	0.214	0.231	1.589	0.159	0.168	0.148	-2.381
Education	0.070	0.066	0.074	2.424	0.272	0.284	0.261	-1.620

Table A2. M^0 in the Deprivation Domains for Youth Population by Gender

Dimensions	Egypt				Jordan			
	2012		2015		2010		2013	
	Male	Female	Male	Female	Male	Female	Male	Female
Material deprivation	0.243	0.204	0.291	0.26	0.299	0.329	0.291	0.327
Dwelling Characteristics, Energy, Water and Sanitation	0.129	0.112	0.097	0.107	0.171	0.169	0.179	0.187
Employment	0.102	0.213	0.141	0.218	0.258	0.261	0.256	0.268
Health	0.150	0.110	0.160	0.096	0.201	0.155	0.192	0.160
Education	0.376	0.361	0.311	0.319	0.071	0.086	0.082	0.058
	Iraq				Tunisia			
	2007		2012		2005		2010	
	Male	Female	Male	Female	Male	Female	Male	Female
Material deprivation	0.311	0.318	0.305	0.314	0.174	0.155	0.156	0.131
Dwelling Characteristics, Energy, Water and Sanitation	0.038	0.039	0.033	0.034	0.121	0.113	0.133	0.102
Employment	0.380	0.344	0.389	0.372	0.206	0.261	0.297	0.320
Health	0.213	0.218	0.210	0.226	0.282	0.158	0.219	0.146
Education	0.058	0.081	0.063	0.054	0.217	0.313	0.195	0.301

Table A3. M^0 in the Deprivation Domains for Youth Population by Urban-Rural Area

Dimensions	Egypt				Jordan			
	2012		2015		2010		2013	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Material deprivation	0.210	0.222	0.260	0.236	0.300	0.342	0.299	0.325
Dwelling Characteristics, Energy, Water and Sanitation	0.081	0.129	0.119	0.044	0.168	0.177	0.187	0.179
Employment	0.177	0.169	0.190	0.227	0.260	0.258	0.262	0.264
Health	0.140	0.110	0.113	0.168	0.184	0.156	0.175	0.174
Education	0.392	0.370	0.318	0.325	0.088	0.067	0.077	0.058
Dimensions	Iraq		Tunisia		2010		2010	
	2007		2012		2005		2010	
	Urban	Rural	Urban	Rural	Urban	Rural	Urban	Rural
Material deprivation	0.374	0.345	0.371	0.351	0.270	0.250	0.158	0.21
Dwelling Characteristics, Energy, Water and Sanitation	0.065	0.082	0.027	0.035	0.095	0.133	0.067	0.119
Employment	0.288	0.276	0.361	0.371	0.316	0.260	0.412	0.346
Health	0.215	0.214	0.219	0.206	0.150	0.162	0.159	0.104
Education	0.058	0.083	0.022	0.037	0.169	0.195	0.204	0.221

Table A4. M^0 in the Deprivation Domains for Youth Population by Governorate in Egypt

Dimensions	URBAN GOVERNOR ATES	URBAN LOWER EGYPT	RURAL LOWER EGYPT	URBAN UPPER EGYPT	RURAL UPPER EGYPT	URBAN FRONTIER	RURAL FRONTIER
	2012						
Material deprivation	0.261	0.258	0.276	0.264	0.269	0.150	0.262
Dwelling Characteristics, Energy, Water and Sanitation	0.067	0.082	0.14	0.096	0.122	0.107	0.176
Employment	0.202	0.164	0.169	0.143	0.167	0.267	0.235
Health	0.182	0.274	0.124	0.151	0.162	0.192	0.092
Education	0.288	0.222	0.291	0.346	0.280	0.284	0.235
Dimensions	URBAN GOVERNOR ATES	URBAN LOWER EGYPT	RURAL LOWER EGYPT	URBAN UPPER EGYPT	RURAL UPPER EGYPT	URBAN FRONTIER	RURAL FRONTIER
	2015						
Material deprivation	0.241	0.209	0.258	0.242	0.262	0.198	0.259
Dwelling Characteristics, Energy, Water and Sanitation	0.036	0.015	0.103	0.053	0.122	0.108	0.211
Employment	0.24	0.224	0.197	0.202	0.171	0.267	0.171
Health	0.172	0.282	0.139	0.173	0.118	0.177	0.050
Education	0.311	0.27	0.303	0.33	0.327	0.250	0.309

Table A5. M^0 in the Deprivation Domains for Youth Population by Governorate in Jordan

	AMMAN	AL-BALQA	AZ ZARQA	MADABA	IRBID	AL-MAFRAQ
Dimensions	2010					
Material deprivation	0.273	0.39	0.337	0.376	0.421	0.367
Dwelling Characteristics, Energy, Water and Sanitation	0.175	0.13	0.198	0.188	0.201	0.174
Employment	0.252	0.3	0.256	0.254	0.244	0.263
Health	0.189	0.14	0.147	0.101	0.196	0.148
Education	0.111	0.04	0.062	0.081	0.038	0.048
	JERASH	AJLOUN	AL-KARAK	AL-TAFILAH	MAAN	AL-AQABA
Dimensions	2010					
Material deprivation	0.434	0.239	0.381	0.233	0.294	0.327
Dwelling Characteristics, Energy, Water and Sanitation	0.168	0.177	0.139	0.111	0.121	0.126
Employment	0.277	0.29	0.278	0.278	0.252	0.252
Health	0.101	0.229	0.151	0.211	0.161	0.139
Education	0.02	0.065	0.051	0.167	0.172	0.156
	AMMAN	AL-BALQA	AZ ZARQA	MADABA	IRBID	AL-MAFRAQ
Dimensions	2013					
Material deprivation	0.227	0.32	0.305	0.309	0.272	0.34
Dwelling Characteristics, Energy, Water and Sanitation	0.184	0.158	0.214	0.227	0.213	0.169
Employment	0.261	0.271	0.261	0.255	0.25	0.258
Health	0.219	0.155	0.154	0.136	0.199	0.162
Education	0.109	0.096	0.066	0.073	0.066	0.071
	JERASH	AJLOUN	AL-KARAK	AL-TAFILAH	MAAN	AL-AQABA
Dimensions	2013					
Material deprivation	0.372	0.336	0.388	0.398	0.208	0.425
Dwelling Characteristics, Energy, Water and Sanitation	0.198	0.206	0.163	0.135	0.14	0.153
Employment	0.206	0.286	0.277	0.279	0.235	0.280
Health	0.164	0.136	0.144	0.152	0.263	0.117
Education	0.060	0.036	0.028	0.036	0.154	0.025

Table A6. M^0 in the Deprivation Domains for Youth Population by Governorate in Iraq

	DUHOK	NAINA WA	SULAIM ANIYA	KIRKUKA	ERBIL	DIYALA	ANBAR	BAGH DAD	BABYLON
Dimensions	2010								
Material deprivation	0.300	0.29	0.304	0.318	0.297	0.319	0.328	0.327	0.321
Dwelling Characteristics, Energy, Water and Sanitation	0.043	0.064	0.055	0.026	0.057	0.060	0.03	0.02	0.042
Employment	0.361	0.340	0.353	0.387	0.343	0.399	0.400	0.397	0.366
Health	0.228	0.216	0.221	0.208	0.235	0.206	0.208	0.209	0.210
Education	0.068	0.090	0.067	0.061	0.068	0.016	0.034	0.047	0.061
	KERBELA	WASIT	SALAH AL- DEEN	NAJAF	QADIS IYA	MUTHANNA	THI-QAR	MAYS AN	BASRAH
Dimensions	2010								
Material deprivation	0.337	0.332	0.332	0.331	0.326	0.321	0.339	0.329	0.328
Dwelling Characteristics, Energy, Water and Sanitation	0.004	0.024	0.026	0.038	0.019	0.021	0.012	0.01	0.025
Employment	0.302	0.311	0.309	0.262	0.321	0.326	0.323	0.307	0.284
Health	0.226	0.212	0.21	0.215	0.223	0.204	0.202	0.211	0.219
Education	0.131	0.121	0.123	0.154	0.111	0.128	0.124	0.143	0.144
Dimensions	2013								
Material deprivation	0.337	0.332	0.332	0.331	0.326	0.321	0.339	0.329	0.328
Dwelling Characteristics, Energy, Water and Sanitation	0.013	0.042	0.035	0.034	0.056	0.028	0.042	0.035	0.006
Employment	0.368	0.368	0.391	0.331	0.330	0.363	0.372	0.371	0.383
Health	0.210	0.211	0.206	0.217	0.223	0.217	0.211	0.211	0.212
Education	0.094	0.068	0.040	0.101	0.082	0.078	0.063	0.065	0.077
	DUHOK	NAINA WA	SULAIM ANIYA	KIRKUKA	ERBIL	DIYALA	ANBAR	BAGH DAD	BABYLON
Dimensions	2013								
Material deprivation	0.337	0.334	0.329	0.337	0.332	0.335	0.33	0.336	0.326
Dwelling Characteristics, Energy, Water and Sanitation	0.005	0.042	0.022	0.007	0.039	0.043	0.035	0.038	0.008
Employment	0.293	0.302	0.319	0.288	0.314	0.327	0.325	0.335	0.309
Health	0.212	0.206	0.206	0.217	0.214	0.207	0.207	0.204	0.214
Education	0.153	0.116	0.124	0.151	0.101	0.088	0.103	0.087	0.143
Dimensions	2013								
Material deprivation	0.337	0.334	0.329	0.337	0.332	0.335	0.330	0.336	0.326
Dwelling Characteristics, Energy, Water and Sanitation	0.005	0.042	0.022	0.007	0.039	0.043	0.035	0.038	0.008
Employment	0.293	0.302	0.319	0.288	0.314	0.327	0.325	0.335	0.309
Health	0.212	0.206	0.206	0.217	0.214	0.207	0.207	0.204	0.214
Education	0.153	0.116	0.124	0.151	0.101	0.088	0.103	0.087	0.143
Dimensions	2013								
Material deprivation	0.337	0.334	0.329	0.337	0.332	0.335	0.330	0.336	0.326
Dwelling Characteristics, Energy, Water and Sanitation	0.005	0.042	0.022	0.007	0.039	0.043	0.035	0.038	0.008
Employment	0.293	0.302	0.319	0.288	0.314	0.327	0.325	0.335	0.309
Health	0.212	0.206	0.206	0.217	0.214	0.207	0.207	0.204	0.214
Education	0.153	0.116	0.124	0.151	0.101	0.088	0.103	0.087	0.143

Table A7. M^0 in the Deprivation Domains for Youth Population by Governorate in Tunisia

	GRAND TUNIS	NORTH EAST	NORTH WEST	CENTRE EAST	CENTRE WEST	SOUTH EAST	SOUTH WEST
Dimensions	2005						
Material deprivation	0.201	0.246	0.232	0.232	0.252	0.253	0.241
Dwelling Characteristics, Energy, Water and Sanitation	0.109	0.114	0.119	0.077	0.123	0.09	0.058
Employment	0.267	0.243	0.253	0.278	0.254	0.27	0.242
Health	0.138	0.063	0.065	0.121	0.052	0.087	0.101
Education	0.285	0.334	0.331	0.292	0.319	0.3	0.358
	GRAND TUNIS	NORTH EAST	NORTH WEST	CENTRE EAST	CENTRE WEST	SOUTH EAST	SOUTH WEST
Dimensions	2010						
Material deprivation	0.232	0.251	0.219	0.206	0.266	0.277	0.258
Dwelling Characteristics, Energy, Water and Sanitation	0.092	0.083	0.143	0.062	0.101	0.075	0.048
Employment	0.364	0.4	0.254	0.344	0.263	0.275	0.234
Health	0.13	0.054	0.063	0.111	0.053	0.075	0.092
Education	0.182	0.212	0.321	0.277	0.317	0.298	0.368