

## **How to Protect the Poor Food Insecure in the MENA region?**

**Racha Ramadan<sup>1</sup>**

### **Abstract**

The Middle East and North Africa (MENA) region faces important challenges concerning food insecurity reflected in the double burden of malnutrition, under nutrition and over nutrition, with high prevalence of anaemia especially among children and women. Social Protection Programs may play significant role in affecting food security “directly” by affecting food supply and availability through providing basic goods at low prices or through agricultural subsidies. But the SPPs in the region are fragmented, poorly targeted, covering only formal employees with an increasing budget and low adequacy. This yields to an impact on food security and poverty less than what is expected. Using data from the World Development Indicator, FAOSTAT and IFPRI-Arab Spatial, the paper studies the impact of social expenditure on food security. Two dimensions are analyzed; food access and food availability, in eight countries of the region during the period from 2000 to 2011. The estimated results show that the prevalence of undernourishment and the prevalence of anemia among children decrease with the increase of social protection spending and with the existence of universal subsidies. Conditional and unconditional cash transfers have a significantly negative effect only on food access but not on food utilization. Additionally, the higher the share of agriculture in GDP and the lower the food price volatility, the better the food security status in the region.

Key Words: food insecurity, MENA, social expenditures, undernourishment

JEL Classifications: I1, I3, Q1, O1

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## **Introduction**

In a context of increasing population, limited natural resources, especially arable land and water, and vulnerability to human crises, the Middle East and North Africa (MENA) region faces important challenges concerning poverty and food insecurity. This later is reflected in the double burden of malnutrition, under nutrition and over nutrition, with high prevalence of anaemia especially among children and women. Food insecurity and poverty present important constraints to the region's development given its impacts on productivity and performance in addition to its direct costs related to health care (Fan, 2014). The region is the world's most food-import-dependent; importing 50% of regional food consumption (Perezniето, 2011). Hence, the region is highly vulnerable to international food prices and to food supply volatility. Additionally, low-income level, waste and leakage, bad nutritional habits, conflicts and civil insecurity are important drivers of food insecurity in the region.

In such context, Social Protection Programs (SPPs) may play significant role in affecting food security directly by affecting food supply and availability through providing basic goods at low prices or through agricultural subsidies. While other programs may affect food security indirectly through increasing household income, reducing poverty, enhancing human capital and increasing resilience to livelihoods crises (Capone et al, 2013 and FAO, 2013).

The most important components of SPPs in the region are food and fuel subsidies. For instance, in Egypt, food and fuel subsidies represent together more than 50% of total subsidies budget in FY 2016/17 (Ministry of Finance, 2017), which represent an important fiscal burden. Other programs include pensions, unemployment insurance, cash transfers, targeted social assistance to vulnerable groups and medical care. However, the SPPs in the region are fragmented, poorly targeted with an increasing budget and low adequacy. This yields to an impact on food security and poverty less than what is expected. Additionally, most of the existent programs mainly cover formally employed individuals, leaving various vulnerable groups behind, such as agriculture workers, informal workers in rural areas and the self-employed (Slater et al., 2014 and Jawad, 2014). These vulnerable groups depend mainly on informal social programs such as religion-based charity groups and NGOs, in addition to the family and friends supports. According to Loewe (2012); in Egypt, Jordan and the Palestinian Territories; 10 % of all households receive regular support from friends and neighbors. However, this rate is much higher in other countries as Philippines where 93% of households receive relatives supports (Loewe, 2012).

In such a context, it is necessary to study the impact of SPPs on the food security status in the region. The impact of social spending and the difference between the different social assistance programs used on food security and poverty has been extensively analyzed in international literature, however, the literature tackling the impact of social protection programs on food security in the MENA region is scarce if not inexistent. So, the main objective of this paper is to review the different programs of social protection programs in

MENA countries and study empirically the impact of social expenditure on the food access and food availability. More precisely, the paper is organized as follows; Section 1 reviews the social protection programs in the MENA region and the literature measuring the impact of different social assistance programs (mainly in kind and cash transfer) on households' food security, poverty and consumption behavior. Section 2 overviews the food security and poverty status in the MENA region. Section 3 represents the methodology used in estimating the impact of the social protection spending on two measures of food security; prevalence of undernourishment and prevalence of anemia among children under five years old. Section 4 describes the used data and the main results. Finally, section 5 concludes.

## **1. Literature Review**

Food security is verified: "*when all people, at all times, have physical and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life*" (WHO, 2014, Tielens and Candel, 2014). Therefore, food security is a multi-dimensional phenomenon reflecting three criteria: food availability, food access and food use (Carletto et al, 2012; Ramadan, 2016). Food security is affected by both micro and macro factors. At the micro level, food access means that the households have enough purchasing power and have physical access to food, while at the macro level food availability means the existence of sufficient food quantities at the national level through local agriculture production or imports (War, 2014 and Ramadan, 2015). SPPs role appears in providing the households with basic food items at low prices or by providing income transfer. SPPs may as well play significant role at the macro level in increasing local agriculture production by providing farmers with input subsidies.

At the micro level, the literature is rich with studies measuring the impact of social assistance programs on different social outcomes related to the households. The main focus is to compare between two main social programs; food subsidy/ in-kind transfers versus cash transfer. Social outcomes include household's consumption pattern, food security of the different members of the household and poverty status. The results show that social assistance has positive impact on household's food security status. Cash transfers, especially the conditional ones, were found positive factors for health and education, which indirectly positively affect income status and food security of the individuals (Schultz, 2004; Barham, 2005; Sultana and Kiani, 2011; Quinones and Roy, 2016).

Using twelve impact evaluations, Gentilini (2014) compares between food and cash transfer and finds that the transfer's performance differs based on the profile of the beneficiaries, the capacity of local markets, the objective and designs of the program. For instance, Aker et al (2013) found that transferring cash electronically to the households in Niger saved them time, which yield to higher diet diversity. And Muralidharany et al (2014) found that biometric smart card in the State of Andhra Pradesh in India, improved the performance of the food based Public Distribution System.

Moreover, such programs should not consist on only transferring income to the households; it should include visits from experts and raising awareness campaigns for the beneficiaries. Berhane et al (2017) examined the impact of Ethiopia's Productive Safety Net Programme (PSNP) on the nutritional status of children over the period from 2008 to 2012. They found that the program had no impact on chronic under-nutrition or acute under-nutrition of children. Although the program provides food and cash transfers, mothers had not contact with health extension workers and had not received any information concerning feeding practices.

The literature shows that there is difference in the effectiveness between the two types of social assistance based on the used indicator; cash transfer is more effective in enhancing food consumption, while food transfer is more effective in increasing caloric intake (Gentilini, 2014). Furthermore, the literature shows that the positive impact of cash transfer programs requires the presence of an extensive database about households, mainly the poor, their consumption and their expenditures, good governance and clear communication mechanisms between the involved institutions and the beneficiaries of the program (Sanyal, 2011; Slater et al., 2014; Jawad, 2014).

At the macro level, which is the focus of this paper, food security is affected by economic growth, poverty level, inequality, unemployment rate, agricultural production, climate change, population size, urbanization, food prices; safety nets and political stability (Khattak et al, 2003; Hossain et al, 2005; Breisinger et al, 2010; Pereznieto, 2011; Deng et al, 2014; Warr, 2014 and Ramadan, 2017).

Lampietti et al (2011) found that rise in agriculture commodity and food prices increased poverty and malnutrition in Arab countries. Similar results were found by Warr (2014). Using data for 85 "not advanced" countries, Warr (2014) concluded that lower level of food prices and higher level of agricultural productivity reduce prevalence of undernourishment. Additionally, income level is a main determinant of food security; as food access means both physical and economic access. In Egypt; Ramadan (2017) found that the economic situation, measured by the GDP per capita, and urbanization are significant determinants for food access and utilization in Egypt from 1990 to 2015. It was found as well that in the years following the uprising of 2011, there was deterioration in food access and food utilization. This means that political stability plays a significant role in food security.

During crisis periods, as the global crisis of 2008 or the uprising of 2011, real income decreases and macroeconomic performance of the countries declines. In such context; households, especially the low-income ones, use several coping strategies to overcome the decrease in their income. Such strategies may include the increase dependence on less expensive food or the decrease of expenditure on non-food items such as education (WFP, 2013; Ramadan, 2017).

In such context, SPPs play significant role in alleviating poverty and providing basic food items. But policy makers face challenges when it comes to decide which social program should be applied. There are three sub-categories of SPPs in MENA region: Social Insurance Programs, Social Assistance Programs and Social Services. Social Insurance (SI) programs are contributory schemes, such as contributory old age pension, contributory unemployment insurance or contributory health insurance. They mostly cover formal employees and are used to mitigate risk during retirement and active employment. Social Assistance (SA) programs, the focus of this paper, are protective, non-contributory programs and their main objective is to alleviate poverty. SA programs include subsidies (food and energy), conditional/unconditional cash transfers (CCT/UCT), in kind transfers (food, agriculture inputs subsidies) and workfare schemes. Social Services (SS) consist of public health care and education services. They help mitigating the risk of illnesses and providing skills that help people achieving income security (Slater and McCord, 2009 and UN-ESCWA, 2015). The SPPs in the MENA region cover mainly the formal workers, excluding the agricultural workers, informal workers and other vulnerable groups. These excluded groups depend mainly on informal social programs as religion-based organizations and NGOs, in addition to family and relatives supports (Loewe, 2013).

Social spending differs according to the income level of the country; in middle-income countries as Egypt, Morocco, Tunisia and Lebanon, 30% to 40% of the population are covered and programs range from health insurance to family benefits. While high income countries as Bahrain and Oman, where social spending is based on oil revenues, social programs range from marriage allowances to publicly funded hospitals and schools (Jawad, 2014).

The impact of social spending on food security differs according to the type of the program used. Some programs such as food subsidies affect food availability by directly providing basic food items at lower prices. Others as pensions, family allowances, CCT/UCTs affect food access and availability by providing households with income. While social services programs as health fee waivers and health care subsidies may affect hygiene, sanitation and childcare practices. The latter are key factors for positive nutritional outcomes from food utilization.

Food and Fuel subsidies are major components of the social spending in the MENA region. According to the World Bank, countries of the region spend on average 5.7% of GDP on subsidies compared to 1.3 average benchmark in developing countries. While the non-subsidy social programs are fragmented and under sourced with low coverage and limited benefits (Silva et al, 2012). Food subsidies play a significant role in keeping poverty and food insecurity levels lower than they would otherwise be. However, it was found that the subsidized goods may have a negative impact on the nutrient diet of the poor households as the governments subsidize the energy rich but nutritionally poor carbohydrates such as cereals and sugar (Silva et al, 2012 and Smulders, et al., 2013, Ramadan, 2015 and UN-ESCWA, 2015). While Fuel subsidies have been known as pro-rich (Silva et al, 2012), but, higher fuel costs will increase the price of diesel; making it unaffordable for many

farmers yielding to a significant decrease in their income. Moreover, high fuel costs increase transportation costs making access to food and other services more difficult especially for the vulnerable poor households in remote areas (UN-ESCWA, 2015).

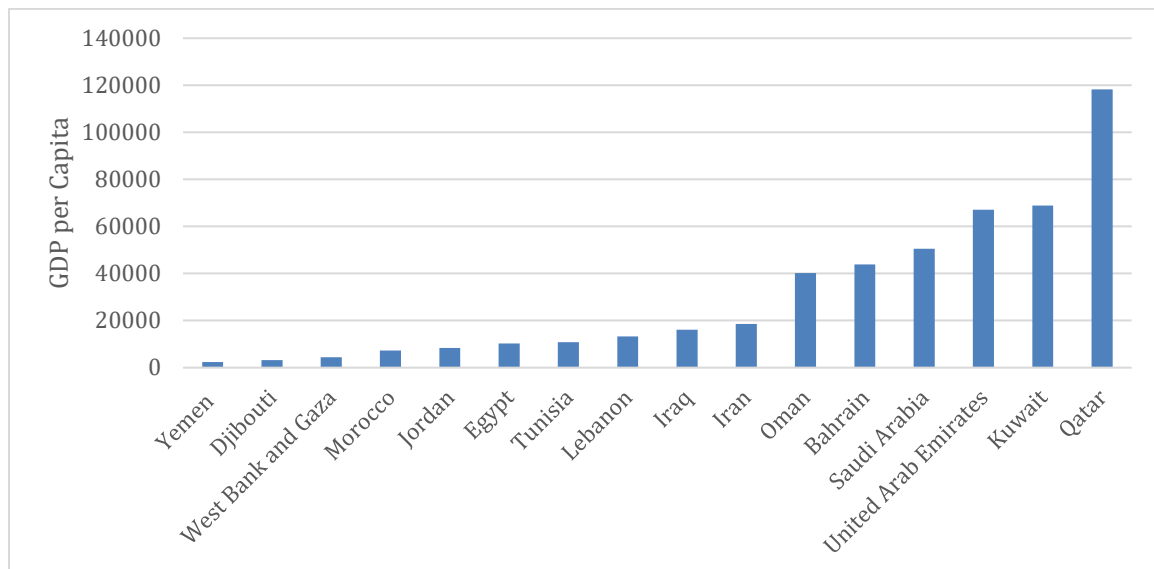
Additionally, Squire (1993) showed that universal programs result in costly leakage to the non-poor, while targeted programs may yield to incomplete coverage of the poor (Laabs and Limam, 2004). While Heady (2014) showed that food transfer is more appropriate in ensuring food availability and food access in case of high inflation and poor performance of the markets, as cash transfer may not have the expected positive results of providing high purchasing power and more choices to the households.

Therefore, social expenditure may play a role in securing the food insecure by providing income and basic goods, however, the impact may change according to the type of social programs used. To the author’s knowledge, there is no empirical analysis of the impact of the social expenditure on the food security status in MENA region. This paper aims to fill this gap.

## 2. Poverty, Food Security and Social Programs in MENA Region

The countries of the MENA region differ in their income level; some countries are considered as high-income countries with a GDP per capita higher than 60000 constant 2011 USD PPP such as Qatar, Kuwait and United Arab Emirates, while other countries have a GDP per capita lower than 10000 constant 2011 USD PPP such as Yemen and Djibouti (Figure 1).

**Figure 1: GDP Per Capita- Constant 2011 USD PPP in 2016**



Source: World Development Indicators

Note: GDP per capita for Bahrain, Djibouti and Oman are for 2015 as it is the latest available year.

Most of the countries of the MENA region, where poverty data is available, have less than 4% of their population living below the 2USD per day poverty line, except Djibouti where 22.5% of the population are considered poor (Table 1). It worth noting that there is another story of poverty when we consider the national poverty line for each country. For instance; countries like Egypt, Jordan and Tunisia with less than 3% poverty rate according to the 2 USD per day, have more than 10% of their population living below the national poverty lines.

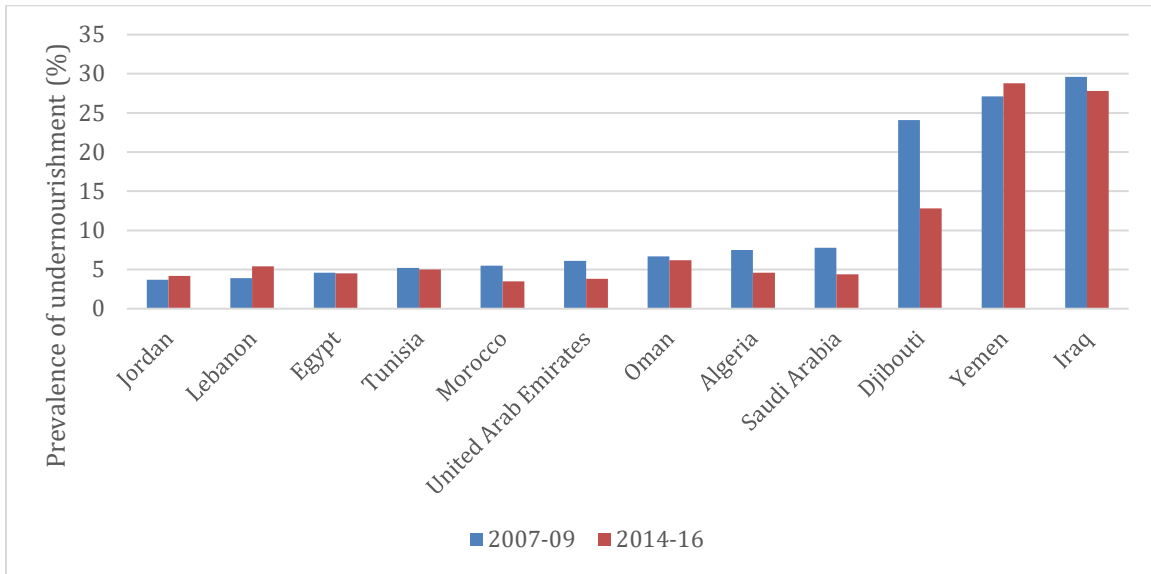
**Table 1: Poverty Headcount Ratio (% of the Population) (PR) at the 2 USD/day and at the NPL, in selected countries and selected years**

| Country            | Year      | PR at 2USD person/day | NPR  |
|--------------------|-----------|-----------------------|------|
| Djibouti           | 2013      | 22.5                  | 23   |
| Egypt              | 2015      | 1.4                   | 27.8 |
| Jordan             | 2010      | 0.1                   | 14.4 |
| Morocco            | 2006/2007 | 3.1                   | 8.9  |
| West Bank and Gaza | 2011      | 0.2                   | 25.8 |
| Tunisia            | 2010      | 2                     | 20.5 |

Source: World Bank Development Indicators-2017

Concerning food security, the situation differs as well between the different countries. Some countries have less than 5% of their population suffering from undernourishment, such as Jordan, Lebanon and Egypt. While others have more than 20% of their population suffering from undernourishment as Djibouti, Yemen and Iraq. It worth noting that Yemen and Iraq have been suffering from political instability and has been in crisis for long time. Figure 2 shows that Djibouti is a successful story, where the prevalence of undernourishment decreases from an average 24.1% in 2007-2009 to an average of 12.8 in 2014-2016.

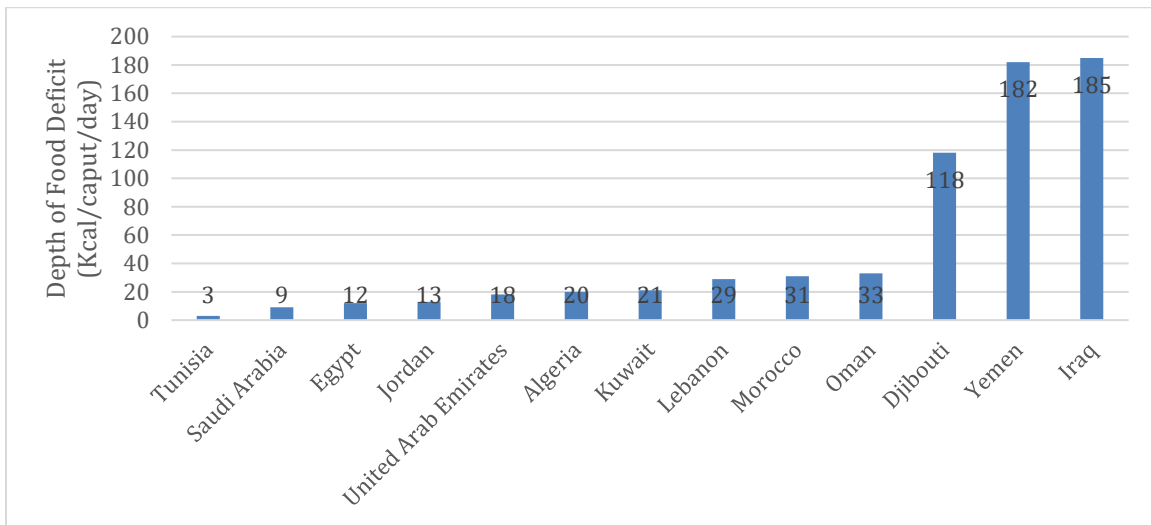
**Figure 2: Prevalence of undernourishment for some selected countries (2007-2016)**



Source: FAOSTAT- Food Security Indicators

The depth of the food deficit, which is the number of calories required to lift the undernourished from their status, everything else being constant, vary between the different countries of the region. For instance, Tunisia has the lowest food deficit with only 3 kilocalories needed per person per day. While, Djibouti, Yemen and Iraq have the higher depths of food deficit that is higher than the World value (81 Kcal/person/day) (Figure 3).

**Figure 3: Depth of Food Deficit in some MENA Countries: Kilocalories per Person per day (2014-2016)**



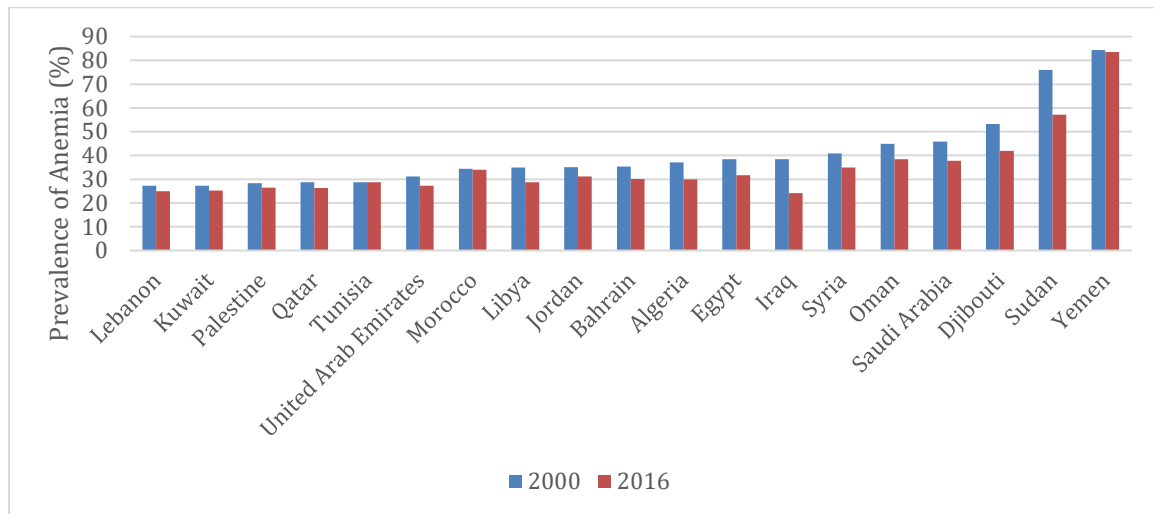
Source: World Bank Development Indicators-2017

Anemia among children is an important challenge facing the region given its impact on decreasing productivity that may result in intergenerational poverty and decrease in GDP.



The prevalence of anemia among children under five years old is higher than 20% in all countries. However, its importance decreases between 2000 and 2016 almost for all countries but with different rates. For instance, Djibouti and Sudan succeeded in decreasing the prevalence of anemia among children by more than 10% between 2000 and 2016 (figure 4).

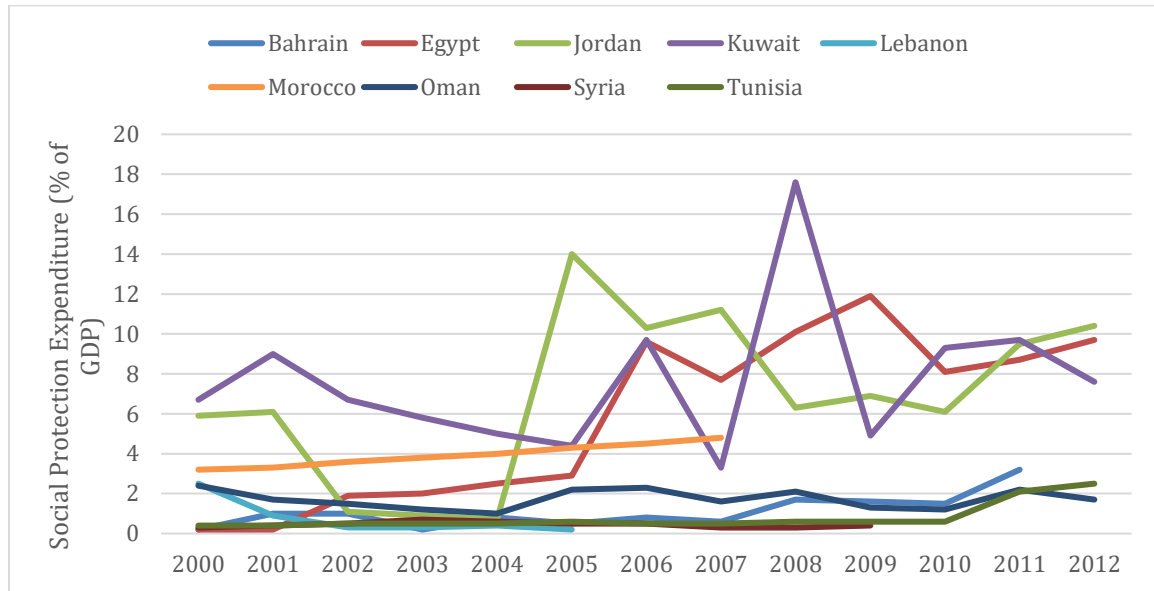
**Figure 4: Prevalence of Anemia (%) among children under five years old**



Source: World Bank Development Indicators-2017

Figure 5 shows the share of the social spending in GDP from 2000 to 2012, countries as Egypt, Jordan, Kuwait and Morocco have high social spending expenditure that represent more than 2% of GDP. While Syria, Tunisia and Yemen have lower level of social spending less than 2% of GDP. Additionally, the importance of social protection programs budget increased over time and especially during crisis time where poverty and inequality increase. For instance, during the food crisis of 2008, Egypt increased its social protection spending from 7.7 % of GDP in 2007 to 11.9% of GDP in 2009. Then it decreased in 2010 to become 8.1%, then it increased again because of the uprising of 2011 to reach 9.7% in 2012 (Figure 5).

**Figure 5: Government spending on Social Protection as share of GDP (%)**

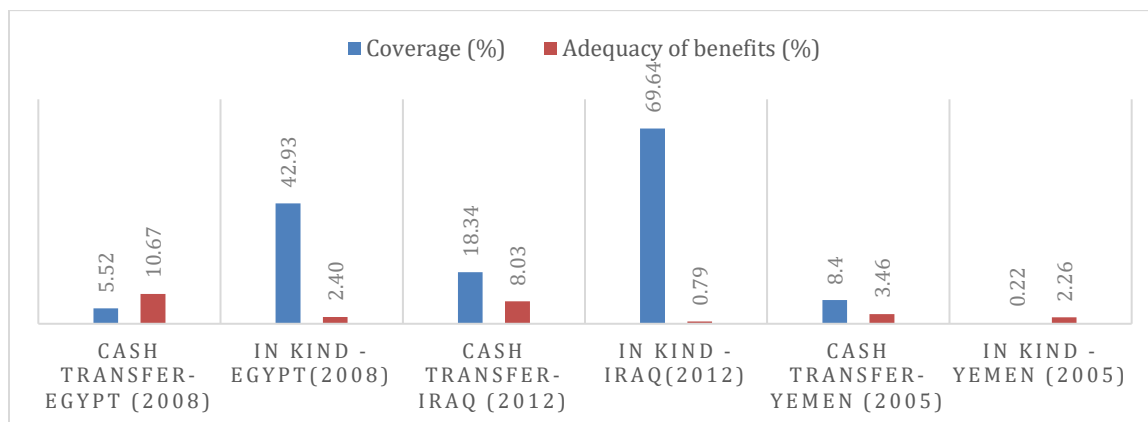


Source: Arab Spatial-IFPRI

However, the increase in the social spending expenditure does not necessarily mean the expansion of the coverage of social programs or the increase of the amount of goods transferred. It may result from the increasing cost of providing the same assistance to the same number of people, especially in the case of subsidies that mainly depend on food imports as in Iraq and Egypt.

The coverage rate and the adequacy of benefits vary as well between the different SPPs. Figure 6 shows that for Egypt (2008), the adequacy of benefits for the in-kind programs is 25% of the adequacy of benefits of cash transfer, although, the coverage of the in-kind program is 8 times the coverage of the cash transfers. Similarly, for Iraq (2012), the coverage of in kind is more important than the coverage rate of the cash transfer, while the adequacy of benefits of cash transfer are much higher. For Yemen (2005), the coverage of cash transfer is more important than the in-kind coverage, however for both programs the adequacy of benefits is less than 5%.

**Figure 6: Coverage (%) and Adequacy of benefits of in Kind program and Cash Transfer in Egypt (2008), Iraq (2012) and Yemen (2005)**



Source: World Bank Development Indicators-2017

Given this gap between the coverage and benefits in addition to the increasing budget and inefficiency of the subsidies and in-kind programs, more countries in the region start implementing cash transfer programs, especially after its success in the Latin American countries (such as PROGRESA/Oportunidas in Mexico and Bolsa Familia in Brazil). Table 2 shows the different cash transfer programs actually implemented in the region:

**Table 2: The cash transfer programs (CCT/UCT) Applied in the region**

| Program  | Description  | Year      |
|--|--|-----------|
| Algeria- Allowance for school children                         | Targets primary-aged children in poor households and persons with disabilities.  | 2007      |
| Egypt- Takaful and Karama                                      |  | 2014      |
| Jordan- National Aid Fund                                      | It is unconditional transfers targeting orphans, elderly, persons with disabilities and families headed by divorced or abandoned women   |           |
| Morocco- Tayssir program                                       | is conditional on school attendance and targeting areas with high incidences of school dropouts and poverty. The program has had a significant positive impact in reducing dropouts in rural areas, especially among girls | 2008/2009 |
| Tunisia-National Programmes for Helping Needy Families (PNAFN) |  | 2007      |
| Yemen- Social Welfare Fund                                     | It is unconditional cash transfer to low income groups.  | 2006      |

Source: Perezniето (2011); World Bank (2012); Slater et al. (2014); Jawad (2014)

### 3. Methodology

This section studies the impact of social protection spending on two aspects of food security; food access and food utilization. The access dimension is measured by the prevalence of undernourishment, while the utilization aspect is measured by the prevalence

of anaemia among children under 5 years old. In addition to the social expenditure, other determinants of food security are included in the model as control variables. Following the literature, the other determinants include urban population, food price volatility and food supply per capita. The income level of the country may be expected to play a role in food security status of its population. However, given the correlation between the GDP per capita and spending on social protection; the share of agricultural value added in the GDP is used as proxy for the income level and to measure the importance of such sector in the decomposition of the country's GDP.

As explained in the literature, the type of program used have different impacts on food security dimensions. And cash transfer programs are seen as the best alternative for the universal subsidies that are widely used in the region. Therefore, a dummy variable reflecting the existence of cash transfer program, conditional or unconditional, is included in the model. It would have been better to include the program's budget or coverage; however, this could not be done due to data limitation. So, a dummy variable "CCT/UCT" equals 1 if the country *i* have a cash transfer program at year *t*, 0 otherwise, is included in the model. And a dummy variable called "subsidies" equals 1 if the country has a universal food or fuel subsidies program, 0 otherwise. Finally, a dummy variable called "instability" is included in the model to reflect the years and the countries that suffered from political instability following the uprising of 2011. More precisely the following two models will be estimated:

Model 1:

$$\begin{aligned} \text{undernourishment}_i &= \alpha_i + \beta_1 \text{social expenditure}_i + \beta_2 \text{Food Price volatility}_i \\ &+ \beta_3 \text{Agriculture VA}_i + \beta_4 \text{food supply per capita}_i + \beta_5 \text{subsidies}_i \\ &+ \beta_6 \text{UCT\_CCT}_i + \beta_7 \text{instability}_i + v_i \end{aligned}$$

Model 2:

$$\begin{aligned} \text{anemia}_i &= \alpha_i + \beta_1 \text{social expenditure}_i + \beta_2 \text{Food Price volatility}_i + \beta_3 \text{Agriculture VA}_i \\ &+ \beta_4 \text{food supply per capita}_i + \beta_5 \text{subsidies}_i \\ &+ \beta_6 \text{UCT\_CCT}_i + \beta_7 \text{instability}_i + \epsilon_i \end{aligned}$$

Where  $\text{undernourishment}_{it}$  ( $\text{anemia}_{it}$ ) is the prevalence of undernourishment (prevalence of anemia among children under five years old) in country *i*. The coefficients  $\beta$ 's measure the partial effect of change in social expenditure or in any of the other control variables on the food security measures. Finally,  $v_i$  and  $\epsilon_i$  are the error terms.

#### **4. Data and Estimated Results**

Using data from the World Development Indicators, Arab Spatial- IFPRI and FAOSTAT, a data set was constructed covering only eight MENA countries during the period from 2000 to 2011, due to data limitations on social expenditure. These 8 countries are: Algeria, Egypt, Jordan, Kuwait, Morocco, Oman, Tunisia and Yemen. The pooled cross section

data is used to estimate both models 1 and 2.

Table 3 represents the summary statistics of the used variables. The average value of prevalence of undernourishment is 7.16%. The lowest prevalence of undernourishment is 2.5% reached by Kuwait (2010), while the highest value is 30.90% in Yemen (2004). The prevalence of children suffering from anemia is higher, with an average of 36.36%.

The social expenditure represents less than 15% of GDP in all countries and years of the sample. Only Jordan spent around 14% of its GDP on social programs in 2005, while the lowest expenditure is found in Yemen with 0% in 2007 and 0.1 in years 2003-2006. Table 3 shows as well that agriculture sector is not an important component of the GDP structure in the region; with only 0.4% in Kuwait (2011). The highest values of agriculture value added were observed in Morocco and Egypt with more than 13% of GDP. As a result, urban population is more than 70% in Kuwait and Oman, while it is around 40-50% in Morocco and Egypt.

**Table 3: Summary Statistics of the used variable**

| Variable                            | Std.  |       |       |        |
|-------------------------------------|-------|-------|-------|--------|
|                                     | Mean  | Dev.  | Min   | Max    |
| Prevalence of undernourishment      | 7.16  | 6.05  | 2.50  | 30.90  |
| Prevalence of anemia among children | 36.36 | 12.90 | 24.60 | 83.70  |
| Social Expenditure (% of GDP)       | 4.29  | 3.57  | 0.00  | 14.00  |
| Food Price Volatility               | 9.87  | 5.06  | 2.90  | 35.00  |
| Food Supply per capita              | 43.19 | 22.46 | 9.00  | 114.00 |
| Agriculture Value Added (% of GDP)  | 9.43  | 4.78  | 0.41  | 16.74  |
| Urban Population (% of Population)  | 61.60 | 16.33 | 28.39 | 98.28  |

Source: World Development Indicators (2018)- FAOSTAT and IFPRI-Arab Spatial.

Table 4 represents the estimated results of the estimation of the two models; model 1 and model 2. Column 1 and 3 shows that social expenditure, without taking into consideration the different types of SPPs, has a negative significant effect on both measures of food security. However, when the two common used types of social protection programs; cash transfer and subsidies, are taken into account; the overall social spending is not significant anymore (Columns 2 and 4 of table 4). As found in Gentilini (2014); the results show that there is difference in the effectiveness between the two types of social assistance based on food security indicator used. Both types of social assistance programs have negative significant effect on the prevalence of undernourishment. However, only subsidies reduce significantly the prevalence of anemia among children. The non-significance of cash transfer is understood as explained by Berhane et al (2017) that the cash transfers may not be effective if it consists only on transferring income without raising awareness programs or experts visits to the beneficiaries.

For the control variables, it is found that the higher the share of the agriculture value added

in GDP, the lower the prevalence of undernourishment and anemia among children. This is similar to what was found by Warr (2014), the decomposition of the GDP matters for food security. This is expected as agriculture is the main source of local food supply and given the importance of the agriculture sector in providing income to the poor households who are concentrated in rural areas in the region.

The food price volatility significantly increases the share of population suffering from undernourishment and the share of children suffering from anemia. The food price increase reduces access to food, especially in countries where food insecurity is highly correlated with poverty as in Egypt. It worth noting that this is the main constraint against the implementation of cash transfer, as households are concerned that inflation may decrease their purchasing power.

Finally, instability is found not significant in affecting the prevalence of undernourishment and of anemia among children. And surprisingly, the higher the urban population the lower the two measures of food security.

**Table 4: Estimated Results of Models 1 and 2**

|                                    | <b>Model 1: Prevalence of undernourishment</b> |                      | <b>Model 2: Prevalence of Anemia among children</b> |                        |
|------------------------------------|--|----------------------|---|------------------------|
|                                    | (1)  | (2)                  | (3)   | (4)                    |
| Social Expenditure (% of GDP)      | -0.431***<br>(0.119)                           | -0.008<br>(0.093)    | -0.384*<br>(0.198)                                  | -0.028<br>(0.219)      |
| Food Price Volatility              | 0.447***<br>(0.111)                            | 0.175**<br>(0.082)   | 0.594***<br>(0.185)                                 | 0.377*<br>(0.193)      |
| Food Supply per capita             | -0.034*<br>(0.020)                             | -0.039**<br>(0.015)  | 0.003<br>(0.033)                                    | -0.008<br>(0.035)      |
| Agriculture Value Added (% of GDP) | -0.940***<br>(0.203)                           | -1.109***<br>(0.138) | -2.877***<br>(0.338)                                | -3.034***<br>(0.323)   |
| Urban Population (% of Population) | -0.338***<br>(0.068)                           | -0.539***<br>(0.052) | -1.120***<br>(0.114)                                | -1.282***<br>(0.122)   |
| instability                        | -2.530<br>(2.186)                              | -0.726<br>(1.528)    | -5.645<br>(3.644)                                   | -3.754<br>(3.581)      |
| CCT_UCT                            |  | -1.511**<br>(0.662)  |   | -1.862<br>(1.550)      |
| subsidies                          |  | -8.011***<br>(0.964) |   | -6.581***<br>(2.258)   |
| _cons                              | 35.821***<br>(6.686)                           | 52.798***<br>(4.891) | 128.299***<br>(11.143)                              | 142.573***<br>(11.458) |
| Number of observations             | 64   | 64                   | 64  | 64                     |
| R2                                 | 0.779  | 0.905                | 0.865   | 0.885                  |
| Adjusted R2                        | 0.756  | 0.891                | 0.851   | 0.868                  |

note: .01 - \*\*\*; .05 - \*\*; .1 - \*

## **5. Concluding Remarks**

The paper is an attempt to empirically study the effect of social expenditure, as share of GDP, in MENA countries on two dimensions of food security; food access and food utilization. Food access and utilization are affected by the food supply in the country, economic level of the households, food price level and social protection programs.

Social programs in the region, include subsidies, cash transfers, family benefits, health care and education services...etc. These programs suffered from being fragmented and not well targeted. Moreover, food and fuel subsidies are major protection tool used in the region although it has low benefit adequacy and important budget considered as fiscal burden for the governments of the region, especially in countries like Egypt and Iraq. Many countries in the region started applying cash transfer programs, especially the conditional ones, given the role it may play in human development as usually the conditions are related to the health and the education of the beneficiaries and their children. Such transfers increase household's income, hence reduce food insecurity. But still policy makers in the region are faced with the question: What is the most effective program to be implemented to reduce food security?

Therefore, the paper estimated the impact of social expenditure and the existence of cash transfer programs and subsidies on the prevalence of undernourishment and prevalence of anemia among children under five years old in eight countries of the MENA region during the period from 2000 to 2011.

The estimated results show that the higher the social protection expenditure, the better the food access reflected in lower prevalence of undernourishment. Both types of social assistance; subsidies and cash transfer improve households' access to food. While for food utilization; the higher social spending and the existence of universal subsidies decrease the prevalence of anemia among children under five years old. Additionally, the higher the share of agriculture in GDP and the lower the food price volatility, the better the food security status in the region.

Finally, it worth noting that there are some caveats related to such analysis. First, due to data limitations, only eight countries of the region are covered and the analysis stopped at 2011. So, some programs are not considered such as *Takaful* and *Karama* in Egypt, and several countries with important social protection programs are missing such as Iraq. Second, only dummy variables reflecting two types of social assistance programs are included in the model, in addition to total social expenditure as share of GDP. It would be better to include the budget or the coverage of the different social assistance programs to better reflect the importance of each program in the social budget of the country. Such caveats might be considered as future research questions that require more updated data and further investigation.

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