

Food security in the Mediterranean countries

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Introduction

The events of 2007/2008 and those of 2010/2011 have unfortunately been more than an alarm-bell. The most recent spike in food prices alone has shifted almost 45 million people below the poverty line, synonymous with leading an existence on less than 1.25 USD a day, which is already experienced by more than 1.2 billion people around the world. The tensions between supply and demand suggest that this is a structural imbalance that will grow in the years to come. The failure to meet the first of the millennium development goals, a reduction in hunger in the world, ought to restore a sense of urgency and determination in order to conceive and design renewed policies at the international level, to build a new overview of global food security.

The issue of access to, and availability of, food on a global basis, known as food security, has been making headway on the political and media agenda since the start of the twenty-first century. What now

Abstract

We have experienced a period of great agricultural capacity almost on a global scale, called "the Green Revolution". This is a term used to refer to the remarkable increase in the world agricultural production between the early 1960s and the end of the 1980s. The technological progress experienced in the more developed economies and its transfer to other regions, especially Asia and Latin America, led, at that moment, to the doubling of yields for some cereal crops which are basic for the human diet, like rice, wheat and maize, besides the productivity of other plant species and livestock. This real production boom has been able to meet rising food demand in the past 30 years and has also ensured a certain stability to food prices. What has changed? How can we account for an alarming situation that today goes well beyond the ever-neglected issue of hunger in the world's poor areas? What has compromised the reaching of internationally-agreed goals regarding the war against malnutrition? The international markets for agricultural commodities are the stage on which the new scarcity is shown in all its clarity. The roller-coaster ride of commodity prices fully expresses the tensions between demand and supply which are responsible for price rises. Since for many years these changes have not been perceived or have been at the very least underestimated, in this paper we try to address the impact on food security in Mediterranean Countries of this "new paradigm", emphasizing the most critical aspect drawn from major indicators in the field.

Keywords: food security, food consumption, food supply, food prices, Mediterranean countries.

Résumé

Entre le début des années 1960 et la fin des années 1980, nous avons vécu une période de grande capacité agricole qui a pris une dimension presque planétaire et est connue comme « Révolution verte ». Cette expression est utilisée pour évoquer un accroissement formidable de la production agricole mondiale. Le progrès technologique réalisé dans les économies plus avancées et son transfert vers d'autres régions, notamment l'Asie et l'Amérique latine, a abouti, dans cette période, au doublement des rendements de certaines cultures céréalières qui sont à la base de l'alimentation humaine, comme le riz, le blé et le maïs, et à l'augmentation de la productivité d'autres espèces végétales et du bétail. Ce véritable boom de la production a permis de répondre à la demande alimentaire croissante au cours des trente dernières années et d'assurer une certaine stabilité des prix alimentaires. Qu'est-ce qui a changé ? Comment pouvons-nous expliquer une situation alarmante qui, aujourd'hui, va bien au-delà de la question jamais négligée de la faim dans les zones les plus pauvres du monde ? Qu'est ce qui a compromis la réalisation des objectifs définis internationalement pour lutter contre la malnutrition ? Les marchés internationaux des produits agricoles sont la scène où cette nouvelle pénurie se révèle d'une manière flagrante. Les fortes fluctuations des prix alimentaires reflètent clairement les tensions entre la demande et l'offre qui provoquent la hausse des prix. Etant donné que ces changements sont passés inaperçus pendant longtemps ou ont du moins été sous-estimés, nous essayons dans cet article d'évaluer l'impact de ce « nouveau paradigme » sur la sécurité alimentaire dans les pays méditerranéens, en insistant sur les aspects les plus critiques mis en évidence à l'aide des principaux indicateurs sur le terrain.

Mots-clés: sécurité alimentaire, consommation alimentaire, approvisionnement alimentaire, prix alimentaires, pays méditerranéens.

gives cause for concern is the increase in food price levels and their volatility. Since the mid-1990s we are observing sharp peaks in farm commodity prices (e.g. 2007/2008 and 2010/2011). The most recent forecasts indicate a sizeable rise in prices for the coming years. Despite the debate on the role played by the various factors involved, most academics agree that the long era of abundant food, available at low prices, is over, and has given way to an era of new scarcity. The phenomenon is usually linked to projections on demographic growth, according to which, in 2050, there will be more than 9 billion inhabitants on the planet.

In tackling the issue of security in the food supply the analysis of population dynamics has given way to examination of distribution dynamics. The problem, as posed in recent years, is not scarcity, but the inequitable distribution of food resources, which has ended up penalizing vast populous areas in the world (De Castro *et al.*, 2012). Such a problem has recently been aggravated, leading to the

number of poor, undernourished people worldwide exceeding one billion. Though inter-related with the broader issue of natural resource depletion, food scarcity assumes conno-

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tations of greater or equal urgency compared with numerous delicate problems, such as market instability and price volatility, conveyed more loudly by public opinion.

Economic theory tells us that the rise in prices is due to a change in market equilibrium, caused by the increasing gap between the demand and supply of a certain product. In the case of agricultural markets, there are concerns regarding the increase in food demand, which in recent years has advanced at sustained rates, especially in emerging areas, such as the Mediterranean Partner Countries.

In such a complex, evolving and risky context, the analysis of food security and poverty need to be conducted, deepening understanding of the structure of current risk management strategies.

To emphasize the question of inequitable food distribution, it is important to recall that we have experienced a period of great agricultural capacity almost on a global scale, called “the Green Revolution”. This is a term used to refer to the remarkable increase in world agricultural production between the early 1960s and the end of the 1980s. The technological progress experienced in the more developed economies and its transfer to other regions, especially Asia and Latin America, led at that moment to the doubling of yields for some cereal crops which are basic for the human diet, like rice, wheat and maize, besides the productivity of other plant species and livestock.

This real production boom has been able to meet rising food demand in the past 30 years and has also ensured a certain stability in food prices. A historical phase, in which giant steps were taken in developing pesticides and fertilizers, combined with an improvement in production techniques and plant breeding, allowed a rapid growth in farmland yields. This is certainly not the case everywhere: in Asia, yield increases were obtained practically without increases in cultivated areas, while in Africa yields were stationary despite the bringing into cultivation of new lands.

However, we are talking about a quarter-century of sustained yield increases, coinciding with a marked rise in public investment in agricultural research, both in more developed and in developing countries. The result was a mean annual global increase in cereal production of 2%, with the highest rises in Asia (+2.5%). The Green Revolution seemed universally to be the death knell of the Malthusian theory of growth.

What has changed? How can we account for an alarming situation that today goes well beyond the ever-neglected issue of hunger in the world’s poor areas? What has compromised the reaching of internationally-agreed goals regarding the war against malnutrition?

The international markets for agricultural commodities are the stage on which the new scarcity is shown in all its clarity. The roller-coaster ride of commodity prices fully expresses the tensions between demand and supply which are responsible for price rises.

It would be clear now that, referring to market instability,

one of the main drivers is the headlong growth in food consumption, associated with population growth, but especially with the higher purchasing power among increasingly broad ranges of the population in emerging countries. As early as the mid-1990s, major increases were being witnessed in the demand for some strategic agricultural commodities, such as wheat, whose prices had long been in constant decline. Demand began to rise at an average rate of 2% per annum, especially thanks to China, India and Brazil, able on their own to account for at least one-third of increases in world requirements at that time.

The return of scarcity

From the early fifties there was a long period of stagnating and declining prices on agricultural markets, interrupted only by some spurt in concomitance with extraordinary events (like the “oil shock” in the 1970s). The scenario changes in the mid-1990s, where an inverse trend begins, with sharp peaks in farm commodity prices in 2007/2008 and 2010/2011. The most recent forecasts indicate a sizeable rise in prices for the coming years.

Several causes are driving the increase in agricultural commodity prices. One of the main ones is the headlong growth in food consumption, associated with population growth, but especially with the higher purchasing power among increasingly broad ranges of the population in emerging countries. According to the FAO, world population will exceed nine billion in 2050. This represents an increase of about one third against the current population of 6.9 billion, which will be lower than in the past. In fact, the population increase of over 30% predicted by the FAO for the next 40 years is well below the relative growth in the past four decades, during which the population more than doubled.

The largest increases will take place in developing countries, while the population in high-income economies will remain almost stable; in some areas, especially in some regions of Europe, there may even be population declines. By contrast, in Africa the population is expected to double, growing from one to two billion by 2050. In emerging areas, growth will continue to be sustained, especially in India, while China’s growth should slow down; absolute increases will remain appreciable. In these two countries, which now make up over one-third of the world’s population, the number of inhabitants is expected to rise from the current 2.5 billion to 3.2 by the year 2050.

The global effects of population increases will be strictly linked to migration intensity between countryside and town. Around 50% of the world’s population is now distributed in urban areas, with the other half in rural areas. In 1950 only 28% of the population lived in large urban agglomerations; in 2050 this percentage is destined to reach 70%. Compared with today, there will be 19 more cities with over ten million inhabitants and five of these will be in Asia where the trend toward metropolitan concentration will be particularly marked. FAO estimates the population

reduction active in agriculture in the next 40 years at around 30%.

The most important contribution to the global convergence of diets will be made by the expansion of the middle classes in emerging areas. Individual income in countries like India, Brazil and China rose at sustained rates in recent years, only to slow down, but not to stop, during this long phase of world economic recession. The cases that stand out most are those of China and India, which have recorded annual growth rates close to double figures in the years immediately prior to the recession, and which are forecast, according to the International Monetary Fund, to continue their trend at least for the next 20 years. This means, on one hand, that expenditure on food consumption will grow fast, and on the other, that food habits change radically (the so-called “substitution effect” explained by Engel’s Law).

As populations gradually become richer, in their diets the unprocessed starch products (like rice and flour) are replaced by products with a higher protein content (such as meat, milk and other dairy products) and by processed products with greater value added, promoting a process of dietary convergence worldwide along the models of richer populations. This trend involves several billion people in emerging countries, so that the demand for livestock product is forecast to increase very fast in the coming years, with the consequence of a multiplying effect on the demand for some agricultural raw materials, like soya and wheat, which are at the basis of animal feed¹.

Critical situations concerning water consumption may arise from overexploitation, climatic stress and pollution, in the case where water courses receive more waste than they can assimilate. Over the course of time, some such situations have been alleviated in many parts of the world thanks to technological progress, which has allowed an increase of about 700% in the storage capacity of fluvial systems in the past 50 years, promoting economic development, especially agriculture.

By contrast, problems have become more serious in other areas, for example where economic and urban expansion has required large quantities of water, exchanged for ever greater doses of pollution. There are also cases where erosion has led to a reduction in water availability in many large areas of Africa, including some SEMC. This is a clear constraint to possible expansion in the agriculture sector, which becomes even more serious if we view the growing negative implications accompanying the relationship between water and agriculture, starting with the Green Revolution: agriculture is indirectly responsible for about 40% of the pollution of surface water, stemming from the increase in the use of chemicals, as fertilizers and pesticides,

whose use seems to intensify when areas are devoted to bio-fuel production.

In past years the adjustment of supply to demand was guaranteed by technical progress. The technological progress experienced in the more developed economies and its transfer to other regions, has led especially to the doubling of yields for some cereal crops which are basic for the human diet, like rice, wheat and maize, besides the productivity of other plant species and livestock. The sustained yield increases was led by a marked rise in public investment in agricultural research, both in more developed and in developing countries.

Now we are faced with two types of limits: on the one hand, there is the need for more sustainable agriculture, hence based on less use of chemical inputs, one of the main protagonists of the Green Revolution; on the other, there is concern at having reached a technological barrier such as to be able to achieve only marginal short-term increases.

The OECD and FAO recently estimated that for the coming years the annual growth in production will continue to be slower than in the past, falling from an annual average of 2.4% for the previous decade to 1.7% for the coming years. According to many analysts, these data indicate unequivocally the end of the season of the Green Revolution and the reaching of a level of efficiency that will be hard to beat in the short-medium term (Brown, 2012).

Also those of a contingent nature have far more impact than in the past, since the greater integration of the economy favors a more rapid transfer of signals (and shocks) from one market to another (De Castro *et. al.*, 2012). Such integration is also partly responsible for another aspect of the current scenario: market volatility.

This term is used when the frequency and range of price variations recorded in a given time span are greater than the historical average. Between 2007 and 2008 the farm price index used by the International Monetary Fund (IMF) rose by 50%, to then drop sharply (without returning to its pre-boom levels) and rise to even higher levels at the beginning of 2011, representing a rise of 130% against 2002 levels.

This phenomenon, depending on several causes, exacerbates the natural instability of agricultural markets linked to the seasonal cycles. One cause arises from the small-scale market, characterized by low volumes and a restricted number of exporters. Only 12% of maize and 18% of wheat are traded on international markets; the remaining part stays within producer countries.

This means that also in the case of modest shocks, repercussions on prices may be significant and the return to equilibrium may take a long time. This is what has happened with the increasing frequency of extreme meteorological events linked to the broader phenomenon of climate change.

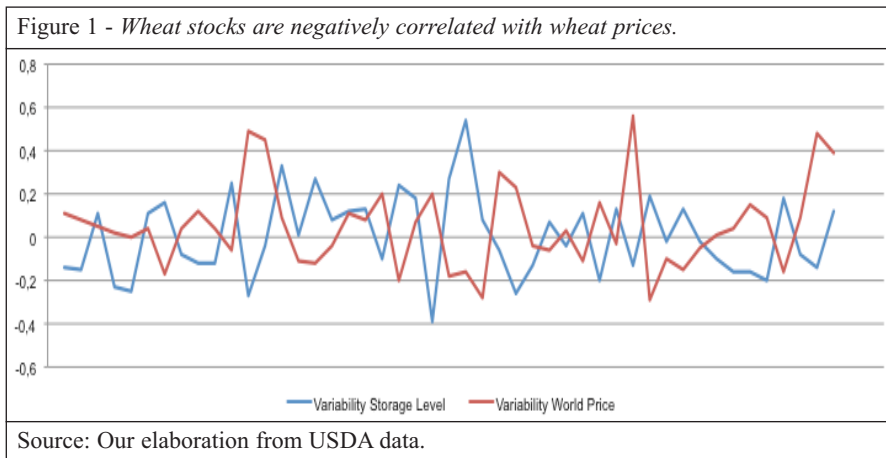
Often reactions to these events have led to restrictions in trade. In 2010 we experienced a new cycle of measures that were completely uncoordinated at the international level. In summer 2010, following huge wildfires that hit Russia and

¹ To globally satisfy a diet which will be increasingly enriched in calories and changing in its composition, annual cereals production will have to reach around three billion tons, about one third higher than today, that of soya will have to increase by 140% and that of meat will have to reach 470 million tons, 200 million more than current production (FAO 2010).

caused damage to crops, Moscow banned grain exports, triggering price increases. The Russian example was followed by Ukraine, while in parallel many governments began to subsidize imports or reduce their taxation. The announcement of the ban was enough for many concerned importers to begin to negotiate higher volumes than in the past, fearing subsequent price rises. According to FAO, world wheat prices increased by between 60 and 80% between July and September 2010 after the export ban decided by Russia.

Government reactions to price booms have aimed to stabilize domestic supply as rapidly as possible by adopting protective measures (such as bans on exports or incentives for imports), to alleviate the impact of increases upon its citizens. Yet these initiatives have had the sole result of exporting instability (and inflation), taking it from national to international markets (Tangermann, 2011), amplifying price oscillations and triggering a vicious circle which made the markets even more precarious.

The scenario is further complicated by the state of reserves of strategic agricultural products (Figure 1). Today, the level of food reserves is much lower than in the past. In 2007 cereal reserves reached their historical minimum. This actually made the agricultural supply even more inelastic than it is naturally, further restricting the capacity to respond to price increases.



Moreover, the role played by the financial markets during the price rises is more hotly debated. Some governments as well as several analysts and representatives of international institutions have pointed the finger at financial speculation, it being identified as one of the main drivers behind recent booms in farm prices.

In its broader, more authoritative strands in the economics literature they are rather skeptical regarding the nexus of di-

rect causality which is thought by many to connect speculation and price rises. The trend in futures quotations is theoretically tied to expectations on demand-supply relations and thus tends to converge on the real market value of the traded commodity as the contract expiry date approaches.

By contrast, financial operations conducted outside commodity exchange circuits are different, such as in the so-called “over the counter” (OTC) market, where it is large institutional intermediaries which trade commodities through non-standardized contracts and without solvency guarantees made available by stock exchanges. This generates large risks, like those that became reality during the financial bubble in 2007, in which the contractual renegeing of many players who had taken on excessive risks led to real market failure.

The development in the analysis of the field of food security reflects the shift from a former focus on food energy availability to a more comprehensive appraisal of this phenomenon developed in recent years.

Food security in South Mediterranean Countries: Towards a more comprehensive approach

In September 2000, 189 nations approved the “United Nations Millennium Declaration” (UNMD), which called for halving by the year 2015 the number of people who live on less than one dollar a day. The Millennium Development Goals pointed out by the UNMD include eight priorities: To eradicate extreme poverty and hunger, achieve universal primary education, promote gender equality and empower women, reduce child mortality, improve maternal health, combat HIV/AIDS, malaria and other diseases, ensure environmental sustainability and develop a global partnership for development. The level of these goals is measured each year using more than 60 indicators².

What emerges by applying the upgraded \$1.25-a-day poverty line, which is used to measure progress toward the first Millennium Development Goal (MDG), is that official poverty rates in most south Mediterranean countries are lower than in many other low- and middle-income countries (LMICs). Extreme poverty affects less than 3% of the population. But going deeper into the analysis of non-income MDG indicators, the situation changes and the differences between south Mediterranean countries (and in general all Arab countries) and other LMICs appears less pronounced (IFPRI, 2012; World Bank, 2011).

In this field, it is interesting to note that the results coming out from a study conducted by the International Food Policy Institute (IFPRI) in 2012³ pointed out how poverty and income inequality in the SEMC context are likely higher than official numbers have long suggested. In this study

² The official list is available on <http://mdgs.un.org/unsd/mdg/Host.aspx?Content=Indicators/OfficialList.htm>

³ *Beyond the SEMC Awakening: Policies and Investments for Poverty Reduction and Food Security* (IFPRI 2012).

a new indicator of food insecurity risk is developed, merging a macro-level and a micro-level measure of food insecurity. The first one is defined as the share of food imports divided by total exports plus net remittance inflows⁴, while the prevalence of undernourished children is used for representing the micro-level measure of food insecurity. The result is a classification of SEMC countries into five risk groups, based on this composed indicator. In IFPRI (2011), it can be seen that the situation is for more deficit recorded for Mauritania, Sudan and Yemen. The situation is relatively better than these indices in Libya, Egypt, Morocco, Tunisia, Turkey and Syria.

Mediterranean Countries and Food Security Indicators

This approach goes beyond the traditional micro-aspects posing at the basis of the Global Hunger Index (GHI)⁵, calculated each year by the International Food Policy Research Institute (IFPRI). The GHI provides a multi-dimensional overview of the hunger, combining three equally weighted indicators:

- the proportion of the undernourished as a percentage of the population, which reflects the share of the population with insufficient dietary energy intake,
- the prevalence of underweight children under the age of five, which indicates the proportion of children suffering from low weight with regard to the adequate weight for their age, and
- the mortality rate of children under the age of five, reflecting the interaction between an inadequate energy intake and an unhealthy environment.

The scores for some selected North Africa and Middle East countries, in comparison with the six countries at the bottom of the world list in 2010, show that the situation of South Mediterranean countries is relatively good and widely differs from the situation of those African countries that suffer the most from food insecurity. All the selected countries are classed, in 2010, in the category of countries with low hunger levels, with the exception of Morocco and Syria, which appear with moderate hunger levels. The best scores among the SEMC correspond to Tunisia, and the worst to Morocco, where the prevalence of underweight children under five years of age has increased between the average of 1988-92 and the average of 2003-08, to 9,9%.

A factor that becomes more and more crucial in measuring the multiple dimension of the concept of food security

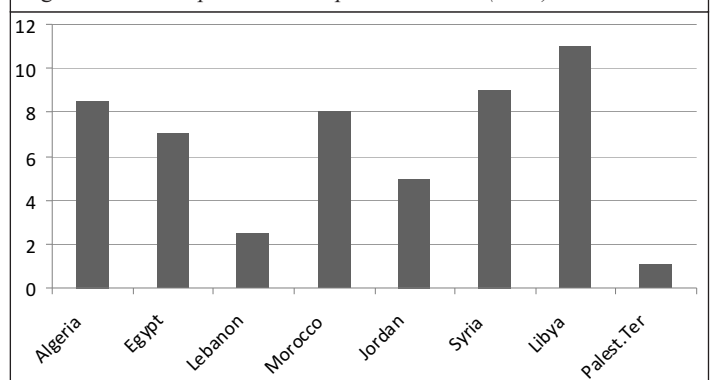
⁴ Food imports / [total exports + net remittance inflows]

⁵ The GHI ranks countries on a 100-point scale. Values less than 5.0 reflect low levels of hunger, values between 5.0 and 9.9 reflect moderate hunger, values between 10.0 and 19.9 indicate the presence of a serious problem of hunger, values between 20.0 and 29.9 are alarming, and values of 30.0 or higher are considered as extremely alarming.

⁶ Food trade deficits may be an acceptable way of guaranteeing the availability of food supplies, but only under the condition that deficit-prone countries are able to generate enough foreign currency to pay for their imports.

is the exposure to food import. The South Mediterranean region is one of the most food import-dependent areas in the world, with net food imports accounting for 25-50% of national consumption. This result is a consequence of a very rapid demographic growth in the last few decades combined with the change in consumption patterns linked to the increasing average income. A direct consequence of this development has been the rising external food trade deficits, which in general should not mean self-sufficiency deficit⁶; in the cases of some South Mediterranean countries, the figure gives rise to some concerns related to the high ratio of food imports over total exports. In particular, in those countries characterized with a high dependence on export earnings from oil, the exposure to food security risks is directly related with the oil price fluctuations. The quota of total exports used to pay for imports is higher in the SEMC than the world average. Food dependence is more pronounced for the Palestinian Territories, Lebanon, Jordan and Egypt than in the other countries included in the region (Figure 2).

Figure 2 - Total exports/Food imports in SEMC (2010).



Source: Breisinger et al. (2010).

Combining the number of times total exports cover food imports with food production per capita, the GHI, and Gross National Income per capita, on the basic distinction grounded on the mineral resources endowment of each country, Breisinger *et al.* (2010) have proposed a food security countries classification in which all the South Mediterranean countries considered are included in the category countries facing a food security challenge.

The most recent multi-dimensional food security indicator is the Global Food Security Index (GFSI) developed by *The Economist Intelligence Unit*, that considers the core issues of affordability, availability, quality and safety across a set of 105 countries (Table 1). The index is a dynamic quantitative and qualitative benchmarking model, constructed from 25 unique indicators, that measures these drivers of food security across both developing and developed countries, providing a rank of countries as a function of their food vulnerability. The 2012 GFSI for the South Mediterranean countries covered by the survey provides the following result.

Table 1 - *Global Food Security Index in some SEMC (2012).*

	Overall Score	Affordability	Availability	Quality and Safety	GFS Rank
Algeria	40,1	38,2	39,1	47,6	72
Egypt	50,4	38,1	59,8	55,3	52
Morocco	49,1	49,5	47,5	52,6	57
Tunisia	52,2	52	48,6	66	49
Turkey	62,2	55,6	66,6	66,2	33
Jordan	49,8	51,8	49	47,1	49
Syria	40,9	33,6	44,9	47,9	70

Source: "The Economist" Intelligence Unit

Structural factors affecting food security in South Eastern Mediterranean Countries

The population growth rate of SEMC countries has averaged 2.1% in the last seven years compared to a world rate of 1.2%. In the southern and eastern Mediterranean countries, high population growth rates have been recorded over the past three decades with natural growth peaks of 3% and more. Profiles vary widely, however. Population growth in the Maghreb countries is controlled as the result of a steep decline in fertility rates: this is the case in Tunisia, whose population has grown from 5 million in 1970 to 10 million at the present time but should not exceed 15 million by 2050. Population growth is still buoyant in most of the countries in the Near East. In Syria, Jordan, Egypt and the Palestinian Territories, the annual growth rate is still around 2%. Egypt, for example, which had a population of 35 million in 1970, now has some 75 million inhabitants, and the figure could rise to almost 120 million by 2050. In the Near East, population trends are very correlated to socio-economic disparities: the demographic and socio-economic profile of Lebanon, for instance, is far removed from that of Syria.

This trend has been accompanied by a rapid urban growth in the SEMC, where the number of city dwellers will have doubled by 2020 compared to the figure for 1990. Yet rural areas, on the whole, are not becoming depopulated. There has been a steep decline in the rural population in most SEMCs in general terms, but the relative share of the rural population

is decreasing in absolute terms as a necessary corollary of galloping urbanization; rural areas have never been so populated, particularly in the countries of the Near East and in Egypt, where the rural population is still larger than the urban population and farming still remains the primary activity in large parts of this region (World Bank, 2011).

At the same time, the average income growth rate has been roughly 3.0% in the last decade, compared to the world average of 1.1%, redrawing, hand in hand with the increasing urbanization, the consumption patterns of the entire region, and leading, as previously noted, towards progressive exposure in terms of food trade deficits.

The competition in covering soil has seen an increasing role of the urban area, often at the expense of fertile areas. Since this region is characterized by limited resources of arable land and water, this means limiting options available for contributing to cover the increasing food demand. In Algeria, Jordan, Libya and Egypt, for example, the acreage of arable land accounts for less than 5% of the total area of the country. In many of the SEMCs the arable land per capita is below the global average and its decline has been rapid.

In order to get around water scarcity, the people of the SEMCs developed efficient systems of water engineering, which they used mainly for watering their crops (CIHEAM 2012). In Egypt, where crops cannot grow without irrigation, numerous techniques have been used for thousands of years to exploit Nile spates. But it was in the 20th century that irrigation was developed most, at least in terms of areas covered.

Irrigation is no doubt reaching its limit after years of rapid development, particularly in SEMCs, which are amongst the least endowed in the world in terms of available water resources: half of the world's "water-poor" (less than 1000 cubic meters per capita) live in the region. The natural resources exploitation index (the ratio between the volumes abstracted and the renewable water resources available) gives a worrying indication of the pressure that now weighs on water resources. Most of the SEMCs have an exploitation index of over 50%, for instance, but it is the situation in the east of the basin that is reason for the greatest concern. With the exception of Lebanon and Turkey, both of which have water resources, the indexes are already very high (over 75%) and, to judge by trend scenarios, are liable to rise further. These quantitative limits are compounded by signs of deterioration in water quality. The increase in the volume of water abstracted from groundwater aquifers, for example, makes these aquifers more sensitive to marine intrusion.

Food dependency and price pass-through

As seen previously, SEMCs are particularly concerned about food security because they are highly dependent on international commodity markets. The level of exposure is directly related both to the ratio of food imports to total exports and the fiscal balances.

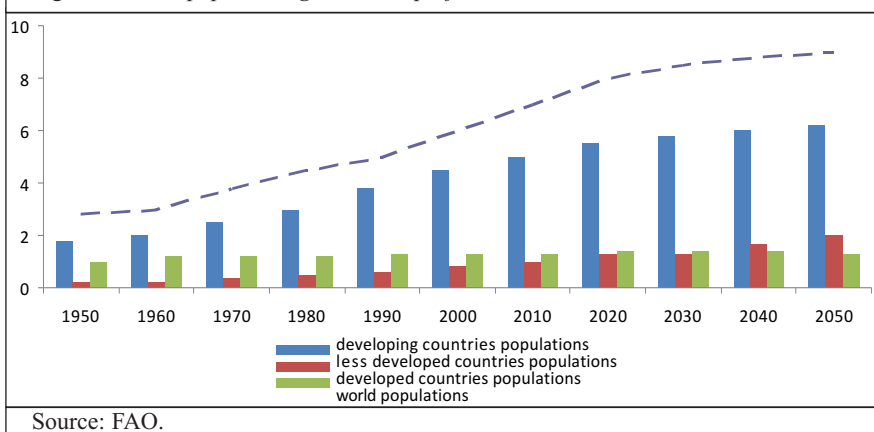
Figure 3 - *Total population growth and projections.*

Table 2 - Food Dependency Ratios, Import, and Consumption Share for 2010.

Country/ Food Item	Net Imports as a Share of		Commodity Consumptions Shares	Country/ Food Item	Net Imports as a Share of		Commodity Consumptions Shares
	Consumptions	Import Shares			Consumptions	Import Shares	
Algeria				Lebanon			
Grains	68%	52%	52%	Grains	87%	39%	32%
Oils	88%	22%	18%	Oils	38%	7%	8%
Meat	33%	7%	15%	Meat	56%	38%	49%
Sugar	89%	19%	15%	Sugar	100%	10%	11%
Food	69%	100%	100%	Food	70%	100%	100%
Bahrain				Morocco			
Grains	100%	28%	25%	Grains	51%	57%	61%
Oils	n/a	n/a	n/a	Oils	50%	24%	21%
Meat	88%	62%	65%	Meat	n/a	n/a	n/a
Sugar	100%	10%	9%	Sugar	57%	19%	18%
Food	92%	100%	100%	Food	89%	100%	100%
Egypt				Syria			
Grains	39%	54%	62%	Grains	51%	53%	62%
Oils	78%	27%	14%	Oils	6%	7%	19%
Meat	37%	10%	13%	Meat	n/a	n/a	n/a
Sugar	37%	9%	11%	Sugar	104%	27%	16%
Food	33%	100%	100%	Food	43%	100%	100%
Jordan				Tunisia			
Grains	97%	42%	35%	Grains	68%	58%	63%
Oils	68%	17%	20%	Oils	-73%	15%	22%
Meat	25%	27%	34%	Meat	n/a	n/a	n/a
Sugar	98%	14%	11%	Sugar	104%	27%	10%
Food	67%	100%	100%	Food	43%	100%	100%

Source: Calculations using USDA data collected by Cristina Savescu

SEMCs are the largest net importers of cereal calories in the world, importing roughly 56% of the cereal calories they consume. This dependence on foreign markets concerns all countries of the south Mediterranean region, which are the world's largest net importers of cereal calories, buying on the international market more than 50% of the cereal-consumed calories. Wheat represents a significant part of the SEMC diet, reaching in the case of Tunisia roughly 50% of the total consumed calories.

The exposure of SEMC countries to world food price volatility is firstly linked to their high dependence on the external market. The World Bank (2012) has calculated the ratios of net imports to domestic consumption, as indicative of the dependency on foreign imports to satisfy domestic food demand⁷. The results show that dependence on food imports in general is high across SEMCs.

Conclusion and Policy recommendations

The exposure of MPCs to world food price volatility is firstly linked to their high dependence on the external market (see Figure 10.2 above). The World Bank (2012) has calculated the ratios of net imports to domestic consumption, as indicative of the dependency on foreign imports to satisfy domestic food demand. The results show that dependence on food imports in general is high across MPCs.

This situation shall produce, in the case of price shock, dramatic consequences in terms of food inflation. The MPC region is the largest wheat importer in the world, and wheat

prices increased by 70% in the second half of the 2000s. The incidence of food consumption in the basket household expenditures in MPCs in fact accounts for between 30% and 50%, and consequently food inflation often represents the most important component of the overall inflation.

It is well known that the effects on the field of food security are strictly correlated with the income distribution among the population. The question of the high concentration of households living near the poverty line that characterizes the MPC area would represent, in the case of prolonged price shock, a threat in increasing the severity of poverty levels (IFPRI, 2012). About half of the populations of the MPCs live in rural areas, and within this category the

agricultural sector plays a key role in Syria, Egypt, Tunisia and Morocco. Therefore, we need to emphasize that rural poverty is at the core of food security problems in the region, and recent rises in food prices have contributed to an increase in the incidence, depth and severity of poverty. Some preliminary analyses carried out during the last years have stressed the link between an increase in food prices and an increase in poverty in these countries; these results suggested that about a 30% increase in food prices in Egypt would result in a 12%-point increase in poverty, and a 14% increase in food prices in Morocco would result in a 4%-point increase in poverty (World Bank, 2011).

Furthermore, the tight supply available on the food commodity market for certain strategic products, like cereals, increases the risk of disruptions in procurement and shortfalls in food availability in countries with high food dependency ratios (World Bank and FAO 2012). A further point which should be emphasized is the similarity, often misleading, of the concept of food security compared with self-sufficiency; indeed, food trade deficits may be an acceptable way of guaranteeing the availability of food supplies, but only under the condition that deficit-prone countries are able to generate enough foreign currency to pay for their imports. In practice it means being able to keep a relatively low ratio of food imports over total exports. In this context, MPCs are currently using 11.5% of their total exports to pay for their food imports. As underlined by the joint World Bank/IFAD/FAO report on improving food security in MPCs (World Bank, 2009), food security in the region is determined by resource endowments which affects the level of food import requirements, and also by fiscal balance which influences a country's ability to afford food imports.

⁷ The dependency ratio is calculated as: $D_i = \frac{M_i}{C_i}$ where M_i is net imports of food product i , C_i is the domestic consumption, with i corresponding to grains, edible oils, meat, and sugar.

This means that vulnerability to food price shock is basically influenced by the import dependence, as well as the fiscal position of the considered country. High import dependence associated with a sound fiscal position is not of concern, except in the case of quantity shock such as export bans (African Development Bank, 2012).

Global price movements in some strategic agricultural products markets is one important source in conditioning domestic price levels, accompanied by others linked to country-specific factors, including public policy measures.

Therefore, programs need to be targeted to the poor because they are most affected by price shocks, spending proportionately more on staple foods. Most cash-transfer programs in the region are small, amounting to less than 1% of GDP in most cases. Most programs use categorical targeting approaches. Households and individuals are entitled to benefits if they fall into eligible categories, such as single mother, widow, unemployed, elderly, or disabled. These categories are not limited to the poor, and do not necessarily cover the poorest sectors of the population.

Strategic wheat reserves require sound management in order to mitigate import supply and price risks effectively.

Mismanagement of strategic reserves may outweigh the benefits of maintaining wheat stocks, ultimately weakening a country's food security (Murphy 2009). To ensure a well managed reserve, each country must establish a set of guiding principles regarding when to draw down stocks and when to replenish, assuming the first-in-first-out (FIFO) principle. These guidelines must be clear and must be designed with the objective of mitigating supply and price risks, and the purchasing and selling of the wheat reserves must be done in a competitive and transparent market. In addition, to ensure that wheat is accessible when needed, it is important to make sure that all stakeholders are well informed about the guidelines and that staff located both at the site of the reserves and in back offices are properly trained. Lastly, the management of wheat reserves must be adequately financed (Murphy, 2009).

Three factors must be considered in establishing the guidelines for the reserves: the threshold domestic price that will trigger the draw-down of wheat reserves, the target reserve level, and the rate of reserves replenishment. A recent analysis (Larson et al. 2011) argues that selecting a higher threshold domestic price turns the reserve into more of a safety net to be used in emergency situations rather than as a tool for price stabilization; with a high threshold price, strategic reserves may not have much of an impact on domestic price volatility as long as prices remain below the threshold. The larger the targeted size of the reserve, the more costly it will be to maintain, but the more food-security coverage the reserve will provide. Lastly, a more aggressive rate of building up and replenishing the reserves is more likely to smooth domestic price volatility, as there is less chance of there being insufficient reserves. However, replenishing reserves increases demand from international markets, which may aggravate international price volatility.

The appropriate management structure of the reserve is specific to each country and should be designed to minimize costs, ensure food safety, and reduce distortive impacts of stock poli-

cies on grain markets (Rashid and Lemma, 2011). Once the strategic reserve policy is established, there may be opportunities to create public-private partnerships (PPPs) for management.

The government could pay private operators to manage logistics and storage operations for strategic stocks, or it could play a more limited role, getting involved only during severe price and supply shocks.

Improving the design of safety nets dampens the effects of food-price shocks and prevents them from doing permanent harm.

Strengthening program coordination and enhancing payment mechanisms improves resource efficiency. At the policy level, program coordination needs to be improved to reduce overlapping beneficiaries and mandates that waste resources, implementing safety nets that are flexible enough to be scaled up when shocks strike and scaled down when they recede.

This is important because scalability enables relief for the vulnerable when prices are high and a reduction in the fiscal burden when prices are low. If possible, existing targeted cash-transfer programs should be the prime candidates to be scaled up. These include poverty-focused social assistance, as well as social pensions, unemployment assistance, and disability pensions. Where public workfare is already part of the safety net, it may be useful to expand program reach. The next most desirable candidate would be food stamps or other near-cash assistance that could be targeted and scaled up or down. Direct subsidies and food distribution would be the least desirable option, only advisable when food markets are functioning poorly or when subsidies are the only available safety net.

Agricultural markets in MPCs nowadays still appear organizationally and structurally weak: the role of the policy maker is therefore one of a great responsibility.

International coordination of measures is required to prevent unilateral actions (such as export bans) aimed at promoting food security within particular areas that end up destabilizing the global food supply and increasing the size of those populations at risk from hunger and malnutrition. As recently pointed out by leading scholars in agricultural economics, trade policy initiatives aimed at reducing the impacts of price increases have been a major stimulus to the increases that immediately followed. In particular, the adoption of restrictive measures exacerbated the price increase trend.

A further important topic to be taken into account is the management of risks. The large exposure of the agricultural sector to risks related to natural events and the instability of the market still require a significant public intervention. As pointed out by our field research on poverty, food security and risk management in MPCs, there is a lack of a solid structure to help farmers in managing risks. This in turn exposes MPCs to risks of disasters, reduction in productive potential, vulnerability and food insecurity.

An appropriate intervention strategy would be to ensure a fair functioning of markets. The incentives must drive the adoption of practices and technologies to increase yields and have less impact, as well as compensating farmers for the environmental benefits they produce. In other words, support

policies should be directed towards the stabilization of incomes rather than the market, using intelligent, flexible measures. Among them a special role needs to be played by the tools of risk management. Access to the opportunities offered by traditional devices for risk transfer to third parties, such as insurance, should also play a part.

The presentation in the previous pages has stressed the questions of how to assess the impact of economic shocks, of which price volatility may be a symptom, on food security.

Two main conclusions can be drawn at this point. The first is that data availability, in terms of both quality and coverage, is still an important limitation for our collective ability to conduct a meaningful and timely analysis of relevant socio-economic phenomena such as food security. If not properly recognized, mistaken inferences can be drawn. The question is that the role of theory as a guiding principle is of fundamental importance. By making extended reference to the debate on the practice of food insecurity assessment, we hope to have demonstrated how the risk of slipping away from proper inference is always waiting for us just around the corner.

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