

Food Economic Accessibility and Affordability in the Mediterranean Region: an Exploratory Assessment at Micro and Macro Levels

Roberto Capone*, Hamid El Bilali, Philipp Debs, Gianluigi Cardone, Nouredin Driouech

International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), Mediterranean Agronomic Institute of Bari, Italy

*Corresponding author: capone@iamb.it

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Abstract Food access is one of the food security pillars. Food security encompasses physical and economic access to food. For most Mediterranean people affordability is a key factor determining access to food. Food affordability is dependent not only on food cost but also on the disposable income that can be spent on food. The paper aims at analysing food accessibility and affordability at household and country levels in the Mediterranean region. The paper uses secondary data from different sources (e.g. FAO, World Bank, the Economist, LABORSTA) to analyse the trends of different indicators: food affordability; food consumer price index; household food expenditure; cereals imports dependency; and Values of food imports over total merchandise exports. In March 2013, food affordability score of the Global Food Security Index ranged from 34.8 in Syria to 86.5 in France. The share of food consumption expenditure in total household expenditure is high e.g. 67.3% in Albania and 43.9% in Algeria. During the period 2005-2011, the highest increase of the FAO food consumer price index was recorded in Egypt followed by Turkey and Algeria. FAO consumer cereal price index increased more than meat price index in the period 2004-2012. Cereals import dependency is high in all Mediterranean Arab countries; up to 80% in drought years in Algeria. In the Palestinian Territories and Montenegro more than four-fifths of merchandise exports are dedicated to food imports. In the period 1990-92/2008-10, the coverage of food imports with total exports deteriorated especially in the Palestinian Territories, Cyprus and Croatia. Adequate and consistent economic access to safe, nutritious and high quality food, even in times of crisis, is a prerequisite for achieving sustainable food and nutrition security in the Mediterranean. However, accessible and affordable diets should not be taken for granted in the Mediterranean region.

Keywords: *food accessibility, food affordability, food security, household expenditure, price index, Mediterranean region*

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1. Introduction

Recent debates on food security, nutrition and health have contributed to moving these topics higher up in the list of development programme priorities. Recent events around the globe in general and in the Middle East and North Africa (MENA) region in particular (cf. the Arab Spring) have put more attention and pressure onto food security [1].

The 1996 World Food Summit (WFS) definition of food security was reaffirmed and amended officially in the 2009 Declaration of the World Summit on Food Security: "Food security exists when all people at all times have physical, social and economic access to sufficient, safe and nutritious food to meet their dietary needs and food preferences for an active and healthy life." [2]. Food and nutrition security is another way to combine elements of

both food security and nutrition security. It is a term that has been used more frequently during the past number of years to emphasise the need for greater integration of nutrition into food security policies and programmes [2].

Food security is built on four pillars [2,3]: (i) food availability: sufficient quantities of food available on a consistent basis; (ii) food access: having sufficient resources to obtain appropriate foods for a nutritious diet; (iii) food use: appropriate use based on knowledge of basic nutrition and care; and (iv) stability in food availability, access and utilization. Although food access, availability and utilization are very influenced by food system activities, other drivers determine these outcomes as well. Three elements contribute to food availability: production, distribution, and exchange. Accessibility of food can be described by three elements: affordability, allocation, and preference. The three elements of food utilization are nutritional value, social value, and food safety [4].

FAO's most recent estimates indicate that globally, a total of 842 million people in 2011–13 (around one in eight people in the world or 12 percent of the global population), were estimated to be suffering from chronic hunger, regularly not meeting their dietary energy requirements to conduct an active life. The vast majority of hungry people – 827 million – live in developing regions, where the prevalence of undernourishment is now estimated at 14.3 percent [5]. This figure is lower than the 868 million reported with reference to 2010–12 [6]. The total number of undernourished has fallen by 17 percent since 1990–92 [5].

Hunger – defined as the lack of sufficient calories – goes hand-in-hand with other forms of malnutrition such as protein, vitamin and mineral deficiencies [7]. Micronutrient malnutrition, often referred to as “hidden hunger”, affects approximately 2 billion people worldwide, more than one third of the global population [8].

Globally, the number of overweight people has reached more than 1.4 billion adults [9]. The highest rates are observed also in North Africa and the Near East [6]. The emerging dietary habits are on a disastrous trajectory for human health and for ecosystem health [10].

Variables that are the mainspring of food security in the Mediterranean region are numerous and their prioritisation depends very much on context. While purchasing power, lifestyles and eating habits are recurrent problems throughout the region and ones which must be overcome if food safety is to be ensured, industrialisation models, production and logistic conditions are problems more specific to the northern Mediterranean, whereas cultural models and consumer and producer education are the main difficulties in the South. The main food security variables identified by Padilla [11] are population pressure, poverty, structural inadequacies in the production sector, distribution systems, government policy, ability to compensate for inadequate food supplies, and civil security and political stability.

One of the most important challenges faced especially by southern and eastern Mediterranean countries is food and nutrition security [12]. The Middle East and North Africa (MENA) region faces a number of very distinct food security challenges. The region is the most food import dependent region in the world, the population is projected to double by 2050, poverty and malnutrition levels are high [13]. The food imbalance in Southern and Eastern Mediterranean Countries (SEMC) is obvious and all foresight analyses converge towards a worsening of food shortages. According to Agrimonde, the MENA region is at risk of experiencing a critical situation in 2050. In 2003, the gap between local resources and consumption reached 35%. In 2050, this gap would be reaching nearly 60%, which would make the region the most vulnerable in the world in terms of food security [14].

Food and nutrition security in the MENA region today is not so much a problem of calories, but of lacking vitamins and other micronutrients [15]. In most Mediterranean countries, food security seems assured for now in quantitative terms although this apparent security relies on imports. According to FAO's criteria, based mainly on a serving's calorie content, Mediterranean countries are not in critical condition nowadays. Indeed, less than 5% of the population in these countries is below 2400 kcal/day/person [14]. According to FAO [16], in

2009 dietary energy in the Mediterranean ranged between 2130 (Palestine) and 3666 kcal/day/person (Turkey). FAO Food Balance Sheets show that dietary energy increased in the period 1990–2009 in all the Southern and Eastern Mediterranean countries except in Libya, Palestinian territories and Turkey. However, food security – including food availability, food affordability and food quality and safety – is still a challenge in many Mediterranean countries especially southern and eastern ones [17].

The ability to access food rests on two pillars: economic and physical access [5]. Economic and physical access to food is an important component of food and nutrition security. Food accessibility and food availability are strongly linked. Food availability is fundamentally dependent on food production, but this can be local or distant. If distant, local food availability also depends on trade systems, and on packaging, transport and storage. This adds to the cost to the consumer, unless the cost of production at distance is so much less than locally so as to off-set these additional costs [18].

For most people a key factor determining access to food is its affordability [18]. The accessibility dimension embraces Sen's core thesis that food availability does not guarantee that everyone is free from hunger [19]. The fact that the undernourished population has increased by 9% despite the 12% increase of global food production since 1990 [20] implies that food insecurity occurred at a time of abundance [21]. Food insecurity was little affected by the increase in global food production [22]. Supplying enough food to a given population is a necessary, albeit not a sufficient, condition to ensure that people have adequate access to food [5].

Food affordability and economic accessibility are dependent not only on food cost but also on the disposable income that can be spent on food [5,18]. Access is also determined by the way society allocates food to its members and food preferences [18]. Access to food is primarily determined by incomes, food prices and the ability of households and individuals to obtain access to social support. Individuals' access to food is also heavily influenced by social variables, including gender positioning and power hierarchies within households [5,23].

For many Mediterranean consumers, income is a major barrier to freedom of nutritious and sustainable food choice. The present food economy does not deliver enough food to major parts of the population while market prices do not remunerate the costs that farmers should support to implement sustainable practices [24].

The problem of hunger has been accentuated by high food prices. In low income countries, food consumption expenditures typically account for 50% or more of households' budgets. In lower middle income countries the figure is about 40%. The principal cause of food insecurity remains poverty and inadequate incomes [25]. The share of food expenditure on total income in Southern Mediterranean Countries (SMCs) is high. People in the South Mediterranean countries spend a relatively large share of their income on food: 35% to 55%, entailing a major exposure to shocks, such as food crisis and high food prices [26].

A number of complex factors drive food prices including competition for natural resources especially land [27,28]; population growth [27,28]; rising affluence [27];

urbanization [28]; biofuels production [15,27,29]; and shifting dietary demand for livestock products [10]. Food prices are also influenced by diets shifting. Economic analyses have shown that diets with a lower energy density - i.e. calories provided by whole grains and fresh produce - tend to be associated with higher food costs than calories from refined grains, added sugars, and added fats [30].

Different driver and process indicators have been used to assess food economic accessibility at macro and micro levels. The driver indicators present the current conditions that hinder or facilitate the access to food. At the macro level, indicators of macro-economic profiles such as agricultural import tariffs, inflation rate, exchange rate, and food price index are considered as important food and nutrition security access indicators. The economic indicators of accessibility aim to capture the effects of food prices, especially their evolution/variability and other economic shocks, as well as the mechanisms behind food price formation. Among the process indicators, the presence of price regulation in a country is important to prevent the adverse consequence of food price changes [22]. The price controls to manage price instability include marketing services through a sound market information system as well as crop forecasting and trade policies. The combination of food, fuel, and financial crisis has reminded about the need to build resilience over the longer term, setting up the price regulation and effective social protection systems that ensure people's food and nutrition security [31,32].

Price volatility has a strong impact on the poor and on food importing countries. It also risks modifying diets, especially of the poorest as they tend to shift to cheaper, less preferred, and poorer quality foods [33]. Pressures on food prices are exacerbated by volatile market dynamics and inadequate global coordination [10,34]. The recent rise in international food prices has had diverse consequences for consumers at the country level because of several factors. These include the less than complete price transmission from international to domestic markets, which has several causes including policies; and the extent to which vulnerable population groups are net food buyers or sellers. The result is that consumers have suffered a serious decline of purchasing power in some countries, while remaining largely unaffected by higher prices in others [23].

At the household and individual level, access to health care centers, social protection, safety nets and transfer programs are all important interventions in the context of food and nutrition security (FNS) and particularly access to food issues in times of crisis. Better access to health care is positively associated with better health status [35,36]. Process indicators of structural FNS are dealing with the institutional change which ensures broader access to land and financial institution [22].

Two indicators throw light on the ability of developing countries to finance food imports. The first is the share of food import expenditure in total merchandise imports. A rising share might suggest increasing difficulty in acquiring the desired level of imports. For the world as a whole, the importance of food imports in merchandise imports is falling, from around 15% in 1961 to around 5% today. A second indicator of affordability is the coverage ratio, defined as the share of food import expenditure in a

country's foreign exchange earnings. Import expenditure can be financed by aid inflows and by borrowing, but in the longer run a country will find it easier to rely on food imports if it can finance these imports from its own foreign earnings. Foreign earnings include not only merchandise trade but also service export earnings and migrants' remittances. For the shorter period 1995-2011, a downward trend in the coverage ratio is evident. Nonetheless, for many developing countries food import bills are becoming unsustainable [25].

According to Saravia-Matus et al. [37], food security concerns also macroeconomic issues, such as commodity price volatility, international trade and market stability. The authors quote previous studies [19,38,39] to recall that the emphasis in the economic literature dealing with food security has lately shifted from income earning and purchasing power, to food access, as the main constraint to food security. Many other specific factors strongly affect the food security conditions of the Southern Mediterranean Countries (SMCs) such as their structural dependency from imports to satisfy domestic demand [40].

2. Material and Mmethods

Secondary data from different sources (e.g. FAO, World Bank, International Labour Organisation, the Economist Intelligence Unit of the Economist) were used to analyse the trends of different food accessibility-related indicators.

The geographical coverage of this study is similar to that of the Mediterranean Strategy for Sustainable Development [41] including 11 Northern Mediterranean Countries (Albania, Bosnia and Herzegovina, Cyprus, Spain, France, Greece, Croatia, Italy, Montenegro, Malta and Slovenia) and 10 Southern and Eastern Mediterranean Countries (Algeria, Egypt, Israel, Lebanon, Libya, Morocco, Palestinian territories, Syria, Tunisia and Turkey). In addition to these countries data were collected as well for Portugal, Jordan, Serbia and Macedonia (Former Yugoslav Republic of Macedonia, FYROM).

For a comprehensive and accurate assessment of food affordability and economic accessibility both micro (household) and macro levels (country) should be considered. At the macro-level some useful insights about food affordability are provided by cereals imports dependency ratio and the values of food imports over total merchandise exports while food affordability score, food consumer price index, household food expenditure share and food price level index allow a good appraisal of economic accessibility to food at household level.

The consumer price index is a current social and economic indicator that is constructed to measure changes over time in the general level of prices of consumer goods and services that households acquire, use or pay for consumption. The food consumer price index (FCPI) aims to measure the change in food and non-alcoholic beverages consumer prices over time (during a year or other specified period) [42]. In general, the index base is 2000 = 100. Data are available from LABORSTA database (Consumer prices - Food indices including non-alcoholic beverages) of the International Labour Organisation (ILO) starting from 1976 (except for Bosnia

from 2005; Lebanon from 2008; Albania from 1992) and are updated monthly and yearly.

Food affordability score is one of the three scores used to calculate the Global Food Security Index elaborated by The Economist; the other two scores considers the issues of food availability, and food quality and safety. It is calculated across a set of 105 countries. Affordability category measures the ability of consumers to purchase food, their vulnerability to price shocks, and the presence of programmes and policies to support consumers when shocks occur. Affordability and financial access score is measured across six indicators: food consumption as a share of household expenditure; proportion of population under global poverty line; gross domestic product per capita; agricultural import tariffs; access to financing for farmers; and presence of food safety net programs. Food affordability score ranges between 0 and 100, where 100 = most favourable. Data are available only from June 2013 and only for 13 countries (Algeria, Egypt, France, Greece, Israel, Italy, Jordan, Morocco, Portugal, Spain, Syria, Tunisia and Turkey). Beginning in October 2012, the Economist Intelligence Unit (EIU) began updating the index on a quarterly basis to adjust for the impact of fluctuating food prices. Countries are grouped in quartiles so that the best scoring 25% are placed into the first group ("Best Environment"), the next 25% are placed into the second group, the next 25% are placed into the third group and the worst scoring 25% are placed in the fourth group ("Needs improvement") [17].

The cereals imports dependency ratio (CIDR) allows knowing how much of the available domestic cereal supply has been imported and how much comes from the country's own production. It import dependency ratio is defined as: $IDR = [\text{Imports}/(\text{production} + \text{imports} - \text{exports})] \times 100$. The complement of this ratio to 100 would represent that part of the domestic food supply that has been produced in the country itself [43]. The indicator is calculated on 3 year averages. Data are available from FAOSTAT for all target Mediterranean countries starting from the triennium 1990-92 (except for Bosnia from 1993-95; Montenegro from 2007-09; and Slovenia from 1993-95). They are updated yearly.

The value of food imports over total merchandise exports is the simple sum of the value of food imports (excluding fish) and total merchandise exports and then the sum of food imports divided by sum of total merchandise exports and multiplied by hundred [44]. This macro-level indicator captures the ability of a country to finance food imports through exports of goods and services. The indicator is calculated on 3 year averages. Data available from FAOSTAT for all the Mediterranean target countries starting from 1990; except for Montenegro and Serbia for which data are available from the triennium 2006-08.

Food consumption expenditure was analysed using two sources:

- Food security indicators [45] based on elaboration of original data from ILO, LABORSTA internet - Household Income and Expenditure Statistics.

- Global Food security Index, based on elaboration from the Economist Intelligence Unit of the Economist.

The distribution of household expenditure refers to the average monthly or annually total household expenditure and its percentage distribution by household consumption

and household non-consumption expenditures. It is the value of consumer goods and services acquired, used or paid for by a household. Household expenditure dedicated to food assesses the percentage of household annual income that is spent for buying food and non-alcoholic beverages [46]. When applied at the national level, this indicator reflects the living standard of a country, as well as the vulnerability of a country to food price increases. Due to the lack/unreliability of income data, this indicator has been built as the ratio between food consumption and total consumption, hence using total consumption as a proxy income [45].

Data based on FAO elaboration of ILO LABORSTA data are sparsely available for the following target Mediterranean countries: Albania, Algeria, Bosnia and Herzegovina, Croatia, Cyprus, Egypt, France, Greece, Israel, Italy, Jordan, Lebanon, Libya, Malta, Montenegro, Morocco, the Palestinian Territories (West Bank and Gaza), Portugal, Slovenia, Spain, Syria, Tunisia, and Turkey. In addition to these countries data are also available for Serbia and Montenegro (2000 and 2002), Serbia and the Former Yugoslav Republic of Macedonia. Data are not available for Libya. For some countries, apart from national food consumption expenditure, data are available separately for urban and rural areas: Albania, Bosnia Herzegovina, Cyprus, France, Greece, Jordan, Montenegro, Morocco, Palestinian Territories, Portugal, Serbia, Syria, Tunisia and Turkey. Data are not regularly updated [45].

Food consumption as a share of household expenditure measures the average percent of household expenditure that is spent on food [17]. Data from the Global Food security Index is available for the following target Mediterranean countries: Algeria, Egypt, France, Greece, Israel, Italy, Jordan, Morocco, Portugal, Spain, Syria, Tunisia and Turkey. Data are available starting from June 2012. Beginning in October 2012, the Economist Intelligence Unit (EIU) began updating the index on a quarterly basis to adjust for the impact of fluctuating food prices.

The food price level index (or Domestic Food Price Level Index) captures the degree of exposure to real income swings. The Food Price Level Index is calculated by dividing the Food Purchasing Power Parity (FPPP) by the General PPP. This indicator captures the importance of food in the overall consumption basket in each country and is comparable across countries and over time [43,47]. Data are available for 2005 from the International Comparison Project (ICP) Program (World Bank). It is then extended to other years taking into account the food and general inflation rates for each country by adjusting both numerator and denominator using the relative changes in Food Consumer Price Index (FCPI) and General Consumer Price Index (GCPI) as provided by ILO (International Labour Organisation) [47]. In general, the index base is 1991 (2005 for Bosnia and Herzegovina). Data available from the FAO elaboration of data provided by ILO and the World Bank ICP (International Comparison Project) for all Mediterranean target countries: except Algeria, Libya, Lebanon, the Palestinian Territories and Montenegro.

3. Results and Discussion

Cereals imports dependency ratios give an idea about the level of exposure to global food price changes, which is strongly linked to food affordability and accessibility. Cereals imports dependency ratios are high especially in southern and eastern Mediterranean countries. As a matter of fact, the average cereals imports dependency ratio in the target Mediterranean countries was 61% in the period

2007-09; that is much higher than the world average in the same period (15.7%). In the period 1990-92/ 2007-09 the ratio ranged between 1.6 recorded in Croatia (1990-92) and 107.7 recorded in Malta (2007-09). Cereals imports dependency ratios are particularly high in North Africa (49.9%); with respect to a developing countries average of 15.5% in the period 2007-09 (Table 1).

Table 1. Cereals imports dependency ratios in target Mediterranean countries. PT: Palestinian Territories. Source: Authors' elaboration based on data from the FAOSTAT. NA: No available data

Region/country	1990-92	1992-94	1994-96	1996-98	1999-01	2001-03	2004-06	2007-09
Albania	35.2	45.5	35.1	42.1	45.7	49.2	51.1	45.4
Algeria	62.4	76.1	68.5	63.7	79.7	71.5	66.4	70.7
Bosnia	NA	NA	24.1	26.0	33.6	33.0	36.0	37.1
Croatia	1.6	4.0	4.4	5.0	7.4	8.3	8.4	9.0
Cyprus	81.9	73.4	79.4	88.4	86.7	81.5	88.1	93.7
Egypt	37.9	37.0	37.9	36.9	35.6	35.0	32.8	35.5
France	6.4	7.7	7.3	6.7	8.8	8.6	7.6	9.1
Greece	15.3	16.7	21.3	24.4	25.6	33.0	32.7	31.6
Israel	87.7	91.5	92.7	93.1	95.2	93.1	93.5	94.3
Italy	36.2	32.8	32.5	35.8	36.8	40.4	38.3	40.6
Jordan	93.7	92.4	93.3	95.5	98.1	96.4	97.7	100.1
Lebanon	89.4	90.9	89.7	90.3	88.2	87.9	85.3	88.5
Libya	89.9	91.9	91.4	90.5	91.3	90.2	91.5	91.8
Malta	97.5	98.0	96.7	96.5	95.7	95.8	93.6	107.7
Montenegro	NA	NA	NA	NA	NA	NA	NA	94.7
Morocco	27.2	35.6	27.8	32.2	59.5	44.0	36.8	53.6
PT	103.1	103.1	99.1	95.8	96.1	92.1	93.9	96.1
Portugal	55.6	61.9	62.6	67.0	70.6	76.3	83.2	82.6
Slovenia	NA	NA	52.0	50.4	60.0	50.6	51.6	56.1
Spain	19.6	26.5	32.0	25.8	29.2	36.7	42.0	40.8
Syria	30.3	16.5	10.2	12.5	21.7	16.8	33.1	49.1
Tunisia	35.0	44.5	58.8	49.6	66.9	70.8	56.9	60.2
Turkey	5.3	4.5	7.7	10.7	7.6	8.5	4.0	13.8
World	14.6	14.3	14.2	13.8	15.2	15.7	15.3	15.7
Developing countries	13.2	13.5	13.9	13.7	15.2	15.5	15.4	15.5
North Africa	43.2	47.7	44.9	43.6	52.8	48.8	44.7	49.9

The MENA region is the most food import-dependent region in the world, and net food imports are projected to rise even further in the future [48]. The food bill in foreign currency (imports) of SEMC (Turkey excluded) doubled between 2006 and 2008, reaching \$25 billion. With less than 5% of world population, the region accounts for more of 12% of cereal global trade [14]. This high reliance on imported food can be attributed to both demand- and supply-side factors. Demand-side factors include rising population and changing consumption patterns due to higher income, whereas supply-side factors include limited natural resources such as land and water [48]. What is more alarming is the fact that cereals imports

dependency ratios are increasing in the majority of Mediterranean countries. The ratio increased 10.4% in the target Mediterranean countries in the period 1990-92/2007-09. The only exceptions are the Palestinian Territories, Egypt and Lebanon; where the ratios slightly decreased in the same period.

Nevertheless, these results should be taken with caution as the cereals import dependency ratios remain high to very high in these three countries (35.5% in Egypt, 88.5% in Lebanon, and 96.1% in the Palestinian Territories in the triennium 2007-09). Cereals imports dependency ratios increases were higher than 20% in Spain, Tunisia, Morocco and Portugal (Figure 1).

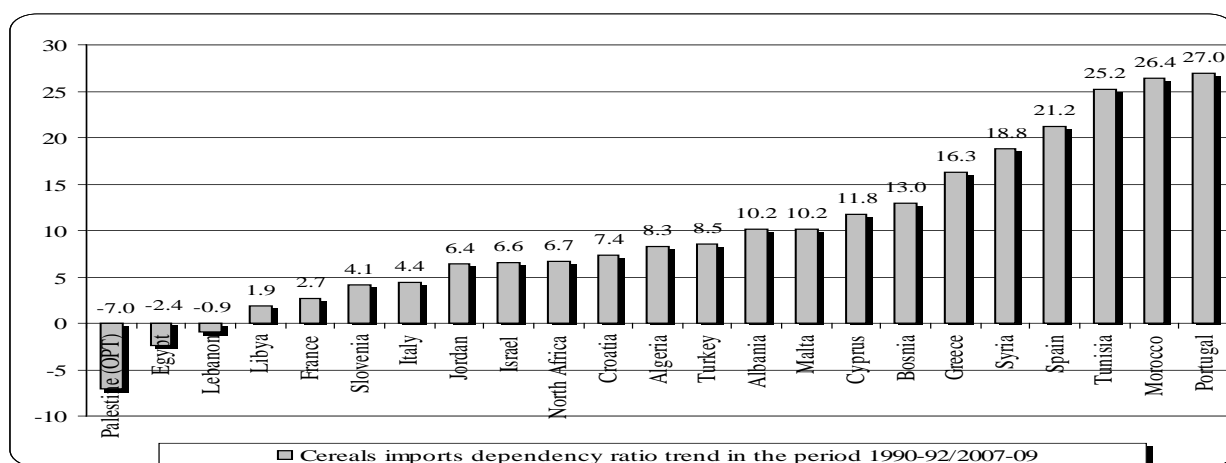


Figure 1. Cereals imports dependency ratios trend in the period 1990-92/2007-09. Trend in Bosnia and Slovenia refers to the period 1994-96/2007-09 (Source: Authors' elaboration based on data from the FAOSTAT)

High cereals imports mean that cereals, especially wheat, prices increase can have dramatic impacts on southern and eastern Mediterranean consumers. In North Africa and Middle East, cereals per capita consumption is significant (265 kg/year in Egypt; 246 in Morocco; 238 in Libya; 230 in Algeria; 228 in Tunisia) [49]. Cereal imports and high prices are calling the socio-economic and environmental sustainability of the Mediterranean diet in question (e.g. in terms of purchasing power and food miles), particularly in certain southern and eastern Mediterranean countries [50].

Considering the values of food imports over total merchandise exports in Mediterranean countries for the

triennium 2008-10, the most critical situation is recorded in the Palestinian Territories and Montenegro where more than four-fifths of merchandise exports are dedicated to food imports. However, macro-level food economic accessibility is at risk also in Cyprus, Albania, Lebanon and Egypt where food imports absorb from a third to slightly more than a half of total exports. Macro-level food affordability is good in some Northern Mediterranean countries and some oil exporters such as Libya. The values recorded in Mediterranean countries, except in Libya and Turkey, are higher than the world average (5%) (Table 2).

Table 2. Trend of the values of food imports over total merchandise exports in Mediterranean countries in the period 1990-92/2008-10. Values are expressed as percentages. PT: Palestinian Territories. Source: Authors' elaboration based on FAOSTAT data. NA: No available data

Country/Region	1990-92	1994-96	1998-00	2004-06	2006-08	2008-10	Trend 1990-92/ 2008-10
Libya	9	11	9	3	3	4	55.6
Turkey	7	8	5	3	4	5	28.6
Israel	8	8	6	5	5	6	25.0
Italy	10	7	6	6	6	6	40.0
Slovenia	6	7	6	5	5	6	0.0
France	7	6	5	5	6	7	0.0
Serbia	NA	NA	NA	NA	8	8	
Spain	9	9	7	7	7	8	11.1
Algeria	16	26	15	8	8	10	37.5
Tunisia	11	12	10	8	10	10	9.1
Croatia	9	13	10	12	13	14	-55.6
Malta	12	12	10	13	14	14	-16.7
Portugal	11	12	11	12	12	14	-27.3
Macedonia (FYROM)	11	21	18	16	16	19	-72.7
Morocco	15	25	16	15	19	20	-33.3
Syria	16	17	17	13	13	21	-31.3
Bosnia	32	1004	55	32	26	26	18.8
Greece	27	26	23	25	25	27	0.0
Jordan	56	41	38	26	28	29	48.2
Egypt	69	63	53	23	27	33	52.2
Lebanon	114	97	129	57	41	41	64.0
Albania	81	107	91	53	47	43	46.9
Cyprus	21	23	25	37	48	55	-161.9
Montenegro	NA	NA	NA	NA	40	85	
PT	11	64	113	128	95	93	-745.5
North Africa	18	24	18	9	10	13	27.8
World	7	6	5	5	5	5	28.6

Taking into consideration the period 1990-92/2008-10, the coverage of food imports with total exports deteriorated especially in the Palestinian Territories,

Cyprus, Macedonia (FYROM) and Croatia while it improved in many countries such as Italy, Albania, Jordan, Egypt, Libya and Lebanon (Table 2).

Table 3. Food consumer price indices (FCPI) in selected Mediterranean countries, period 1990-2011. Data are not available for Libya, Montenegro and Palestinian territories. Source: Authors' elaboration based on LABORSTA data. NA: No available data

Country	1990	1995	2000	2005	2010	2011
Albania	100 (1992)	228.5	100.0	114.3	136.7	143.2
Algeria	21.7	74.3	100.0	116.6	157.1	166.5
Bosnia	NA	NA	NA	100.0	122.8	130.2
Croatia	0.16	86.05	100.00	110.40	128.7	133.2
Cyprus	100.0	127.90	100.00	120.90	149.5	155.6
Egypt	48.0	78.6	100.0	105.0	225.3	260.2
France	88.0	93.1	100.0	111.0	121.4	123.7
Greece	46.3	82.3	100.0	117.4	135.1	139.3
Israel	44.8	72.2	100.0	109.9	138.6	NA
Italy	74.1	93.0	100.0	113.7	127.9	131.1
Jordan	67.8	85.6	100.0	113.4	167.7	174.6
Lebanon	NA	NA	NA	100.0 (2008)	107.0	114.1
Macedonia	0.3	98.2	100.0	102.7	125.0	NA
Malta	79.5	91.0	100.0	112.0	138.3	143.7
Morocco	100.0	142.5	147.3	156.9	114.7	116.3
Portugal	68.2	89.9	100.0	111.3	116.7	119.1
Slovenia	6.1	70.9	100.0	124.3	153.1	159.9
Spain	100.0	93.2	100.0	117.5	119.1	121.6
Syria	62.9	97.5	100.0	122.5	190.8	NA
Tunisia	63.8	84.2	100.0	115.2	147.2	152.6
Turkey	100.0	1938.2	100.0	112.1	186.2	197.8

Changes in food consumer price indices are significant among Mediterranean countries. According to LABORSTA data, taking 2000 as indices base, the increase of the consumer price indices for food was higher in North African countries (i.e. Algeria and Tunisia) and Turkey with respect to North Mediterranean and Balkan ones. That can mean that food is becoming less affordable and accessible in North Africa (Table 3).

Comparing the trend of FCPI in relative terms during the period 2005-2011, it can be noticed that the highest increase was recorded in Egypt followed by Turkey and Algeria. The lowest increase was recorded in North Mediterranean countries especially Spain and Portugal. This can be due also to the effect of the financial and economic crisis on food prices in these countries (Figure 2).

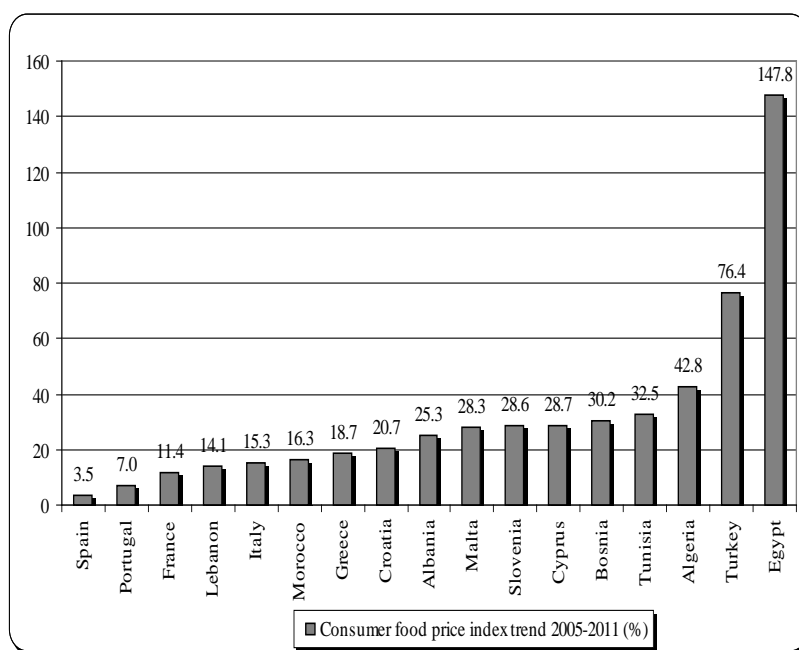


Figure 2. Trend of Consumer food price indices in selected Mediterranean countries in the period 2005-2011. Source: Authors' elaboration based on LABORSTA data

Table 4. Food affordability scores in selected Mediterranean countries. Data are not available, so far, for the following target countries: Albania, Bosnia and Herzegovina, Croatia, Cyprus, Lebanon, Libya, Malta, Montenegro, Palestinian territories and Slovenia. Source: Global Food Security Index, The Economist Intelligence Unit, The Economist; update of March 2013

Country	June 2012	September 2012	December 2012	March 2013	Affordability change: June 2012-March 2013	Countries groups (March 2013)	Rank/105 (March 2013)
Syria	36.8	33.9	34.8	34.8	-2.0	Needs improvement	81
Algeria	38.7	37.8	38.5	38.8	0.1	Moderate environment	72
Egypt	39.3	36.5	37.7	37.6	-1.7	Moderate environment	75
Morocco	50.9	50.3	51.1	51.5	0.6	Moderate environment	57
Tunisia	54.3	54.0	54.1	54.5	0.2	Good environment	51
Turkey	60.1	56.1	58.4	58.6	-1.5	Good environment	48
Jordan	55.8	53.7	54.9	54.7	-1.1	Good environment	50
Israel	81.2	79.8	81.1	81.4	0.2	Best environment	21
Greece	81.7	79.0	78.6	77.7	-4.0	Best environment	26
Spain	85.7	83.6	84.3	84.0	-1.7	Best environment	19
Italy	85.6	84.1	84.5	84.3	-1.3	Best environment	17
Portugal	82.0	80.7	80.9	80.5	-1.5	Best environment	23
France	86.7	85.7	86.4	86.5	-0.2	Best environment	15

As of March 2013, all northern Mediterranean countries plus Israel have a "Best environment" in terms of food affordability. France is also one of the most food-secure countries in the world (with the US, Denmark, Norway). That's due to a combination of ample food supplies, high incomes, low spending on food relative to other outlays,

among others. The other Eastern and Southern Mediterranean countries are divided between two groups: "Good environment" and "Moderate environment". The only exception is Syria where an urgent improvement is needed in order to ensure an adequate economic access to

food. That is certainly due to the civil war and unrest situation in the country (Table 4).

Considering June 2012-March 2012 period, food affordability deteriorated in most of the target Mediterranean countries especially in the PIGS countries (Portugal, Italy, Greece and Spain), that were severely affected by the global financial and economic crisis, as well as in Egypt, that was affected by the economic effects of the Arab Spring. A very low improvement was recorded in Tunisia, Israel and Algeria as well as Morocco, where the highest improvement was recorded (Table 4). Many of those consumers classed as being in extreme poverty spend nearly 70% of their incomes on food [51].

For them, there is little latitude to offset the price rise simply by spending more [52]. The highest shares of food

expenditure in total household consumption expenditure are recorded in Balkan and southern and eastern Mediterranean countries while the lowest ones are recorded in northern Mediterranean countries and Israel. As a matter of fact, Albanian consumers spend more than a half of the household budget for buying agro-food products while French and Spanish consumers dedicate less than a quarter of the budget to food consumption expenditure (Figure 3).

According to Engel's law, the share of food expenditure in disposable income is expected to decline as income levels rise. This means that poor households spend a relatively high share of their disposable incomes on food, making them vulnerable to sudden increases in food prices or losses of income [23].

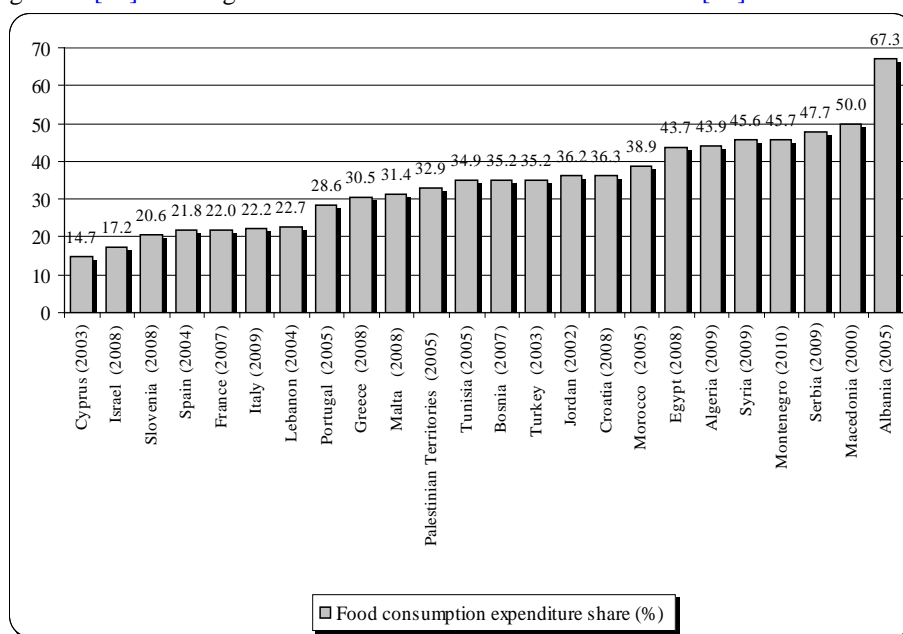


Figure 3. Food consumption expenditure in selected Mediterranean countries (%). In case data were available for different years the latest figure was considered. Source: FAO elaboration based on ILO, LABORSTA data. Greece, Portugal Serbia and Turkey: includes tobacco and hotel expenses; Malta: Includes tobacco; Cyprus and Spain: excludes alcoholic beverages

Table 5. Food consumption expenditure trend in selected Mediterranean countries. Source: FAO elaboration based on ILO, LABORSTA data

Country	Year	food consumption expenditure (%)	Food expenditure change
Lebanon	1997	34	-11.3
	2004	22.7	
Algeria	1998	53	-9.1
	2009	43.9	
Slovenia	1995	28.4	-7.8
	2009	20.6	
Tunisia	1990	42	-7.1
	2005	34.9	
Malta	1994	37.3	-5.9
	2008	31.4	
Italy	1990	28	-5.8
	2009	22.2	
Portugal	1994	32.9	-4.3
	2005	28.6	
Turkey	1994	38.5	-3.3
	2003	35.2	
Morocco	2000	41.3	-2.4
	2005	38.9	
Croatia	1998	37.1	-0.8
	2008	36.3	
Israel	1998	18	-0.8
	2008	17.2	
Bosnia	2004	34.6	0.6
	2007	35.2	
France	1995	18	4
	2007	22	

In countries for which data are available for many years, a decrease of the share of food consumption expenditure in total household consumption expenditure is obvious. The highest decrease in food consumption expenditure was recorded in Balkan and southern and eastern Mediterranean countries. However, a high decrease was recorded also in Spain after joining the EU. That is probably due to the increase of income and the improvement of living conditions in the country after accession to the European Economic Community. However, there some few exceptions especially in

northern Mediterranean and Balkan countries such as France, Bosnia and Greece. In the case of Greece results should be taken with caution as the increase may be due at least in part to methodology change. The figure referring to 2008 includes tobacco and hotel expenses while that referring to 1993 does not (Table 5).

Taking into consideration the latest data of the Economist Intelligence Unit, food consumption expenditure share in the Mediterranean countries ranges from 17.2% in Israel to 47.7% in Serbia (Table 6).

Table 6. Food consumption as a share of household expenditure in some Mediterranean and Balkan countries. Source: Global Food Security Index, The Economist Intelligence Unit, The Economist; update of March 2013

Country	Food consumption expenditure share (%), March 2013
Israel	17.2
Spain	21.8
France	22.0
Italy	22.2
Portugal	28.6
Greece	30.5
Tunisia	34.9
Turkey	35.2
Jordan	36.2
Morocco	38.9
Egypt	43.7
Algeria	43.9
Syria	45.6
Serbia	47.7

Table 7. Share of food consumption expenditure in total household consumption expenditure in urban and rural areas of selected Mediterranean countries (%). In case data were available for different years the latest figure was considered. Source: FAO elaboration based on ILO, LABORSTA data. Data for Serbia includes tobacco and hotel expenses

Country	Year	National	Rural	Urban
Albania	2005	67.3	71.0	64.1
Bosnia and Herzegovina	2007	35.2	37.1	33.1
Cyprus	1990	26.2	30.3	24.7
France	2001	20.7	18.8	18.4
Greece	1998	38.3	41.9	37.7
Jordan	2002	36.2	43.1	34.8
Montenegro	2010	45.7	54.6	41.9
Morocco	2000	41.3	49.9	37.9
Palestinian Territories	2005	32.9	35.7	31.6
Portugal	2005	28.6	32.0	27.9
Serbia	2009	47.7	50.4	46.0
Syria	2009	45.6	51.3	42.2
Tunisia	2005	34.9	42.8	32.6
Turkey	1994	38.5	47.6	33.9

The share of food consumption expenditure in total household consumption expenditure is higher in rural areas with respect to urban ones in all Mediterranean countries (Table 7). That may be simply due to the fact that in general wages are lower in rural areas so that even if rural and urban household food expenditures are similar in absolute terms the share is higher in rural areas. Another factor may be that households are larger in rural areas.

According to FAOSTAT data, FAO food price index increase was higher than food consumer price index increase in the period 2000-2011. FAO consumer cereal price index increased more than meat price index in the period 2004-2012. The domestic food price level index is highest in least developed countries, and showed a pronounced spike during the 2007/2008 rise in food prices. More recently, the index has normalized overall, but is still on a rising trend in developing countries [44].

Countries in the Middle East and North Africa region rely on food imports, particularly wheat, for at least 50% of domestic consumption. Thus, higher international prices can put considerable pressure on government and

household budgets, depending on the level of domestic consumption subsidies and the pass-through from international prices [53]. In Egypt, more than 40% of a rise in international food prices is reflected quickly in domestic food prices, while in Jordan - with weak fiscal positions and a large dependence on food imports - the pass-through is 20-40% [54]. Higher domestic food production insulates Algeria and Tunisia from international price shocks [53].

Taking into account 1991-2012 period, food price level indices (FPLI) values ranged between 1.02 and 2.47. Egypt had the highest food price level index in 1991 and 2003 (2.00); Portugal in 1991 (1.25); Croatia, Italy and Slovenia in 1992 (1.93, 1.26 and 1.44, respectively); Albania in 1993 (1.80); Morocco and Spain in 1994 (1.69 and 1.17, respectively); France in 2002 (1.11); Cyprus in 2006 (1.33); Syria, Bosnia and Herzegovina, and Israel in 2008 (1.54, 1.72 and 1.31, respectively); Jordan and Turkey in 2010 (respectively 1.32 and 2.01); Tunisia, Greece and Malta in 2012 (1.72, 2.47 and 1.39). The highest absolute value was recorded in Greece in 2012 where the FPLI was 2.47. After the world food prices

crisis in 2007-2008, the FPLI decreased in almost all the countries (in 2009). After 2009 it has continued decreasing mainly in France, Italy, Spain and Greece but it reached its maximum value (2.47) in Greece in 2012 (Table 8).

The aggregate impacts of high food prices vary by region. Large net importers of food - such as those in the MENA region - face higher import bills, reduced fiscal space, and greater transmission of world prices to local prices for imported goods such as rice and wheat. Higher prices particularly hurt consumers with high shares of household expenditure on food [53].

High and volatile international food prices continue to be a big concern in the Mediterranean in general and the MENA, which is the largest wheat-importing region in the world [53]. Some have even cited the food price developments since 2007 as a contributing factor in the Arab Spring [55].

High and volatile international food prices continue to be a big concern in the Mediterranean in general and the MENA, which is the largest wheat-importing region in the world [53]. Some have even cited the food price developments since 2007 as a contributing factor in the Arab Spring [55].

Table 8. Food price level indices in selected Mediterranean countries, period: 1991-2012. Data are not available for Algeria, Lebanon, Libya, the Palestinian Territories and Montenegro. Source: FAO elaboration of data provided by ILO and the World Bank ICP (International Comparison Project). NA: No available data

Country	1991	1995	2000	2005	2010	2011	2012
Egypt	2.00	1.94	1.96	1.82	1.51	1.58	1.59
Morocco	1.56	1.69	1.59	1.57	NA	NA	NA
Tunisia	1.61	1.65	1.67	1.68	1.71	1.70	1.72
Jordan	1.16	1.19	1.21	1.21	1.32	1.31	1.30
Syria	1.52	1.46	1.39	1.40	1.48	1.52	1.54
Turkey	1.38	1.43	1.41	1.48	2.01	1.99	1.97
Albania	1.70	1.67	1.76	1.70	1.66	1.67	1.65
Bosnia	NA	NA	NA	1.62	1.64	1.67	1.65
Croatia	1.70	1.69	1.55	1.49	1.45	1.46	1.45
Cyprus	1.18	1.21	1.30	1.31	1.26	1.27	1.23
France	1.08	1.06	1.07	1.08	1.06	1.05	1.05
Greece	2.13	1.71	1.44	1.27	1.09	1.08	2.47
Israel	1.21	1.15	1.17	1.18	1.27	1.29	1.25
Italy	1.24	1.25	1.19	1.20	1.20	1.18	1.16
Malta	1.31	1.32	1.29	1.28	1.36	1.37	1.39
Portugal	1.25	1.21	1.18	1.13	1.05	1.03	1.02
Slovenia	1.43	1.43	1.36	1.29	1.34	1.36	1.37
Spain	1.15	1.17	1.10	1.12	1.09	1.07	1.06

4. Conclusions

Food affordability is still a challenge in all southern and eastern Mediterranean countries. Paradoxically, these are also the countries where there was some improvement during the last months while the situation is getting worse in most northern Mediterranean countries where consumers were badly affected by the economic crisis. Income growth and exposure to global food price changes drive changes in affordability.

One of the persistent and strategic economic challenges facing the Mediterranean food system is rooted in the difficulty of finding price points that work for farmers while ensuring that low-income consumers have access to healthy food and food system workers have decent wages and benefits. This challenge resists simple solutions but progress can be made if researchers and practitioners join forces.

With the current food price indices trends food accessibility is at risk in the Mediterranean area in general and North Africa in particular. This is particularly true for those households dedicating a large share of their consumption expenditure to food.

The lowest shares of food consumption expenditure in total household consumption expenditure are recorded in northern Mediterranean while the highest ones are recorded in Balkan countries. Consumers in some Mediterranean countries still dedicate about a half of their household budget to food consumption expenditure especially in the Balkans and southern and eastern Mediterranean countries. Moreover, the share of food consumption expenditure in total household consumption expenditure is higher in rural areas with respect to urban ones in all Mediterranean countries. The high share of food consumption expenditure shows clearly that food

economic accessibility still represents a challenge in Balkan, southern and eastern Mediterranean countries.

High values of food imports over total merchandise exports affects negatively the food accessibility of many Mediterranean countries especially southern and eastern ones and increase their vulnerability vis-à-vis the global food market.

High cereals imports dependency ratios and values of food imports over total merchandise exports, especially in the MENA region, undermine the foundations of food affordability and accessibility as they make these countries more exposed to global food price changes and volatility. Cereals imports dependency ratios are increasing in most of the Mediterranean countries, including northern ones.

Sustainable diets should be accessible, economically fair and affordable [56] but the presented data show that that should not be taken for granted in the Mediterranean. Adequate and consistent economic access to safe, nutritious and high quality food, even in times of crisis, is a prerequisite for achieving sustainable food and nutrition security in the Mediterranean region.

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