

WP 5 - Economic integration, trade, investment and sectoral analyses

Scenarios for the Agricultural Sector in the Southern and Eastern Mediterranean

Saad Belghazi

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Abstract

The paper builds predictive scenarios for the agricultural sector of eleven southern and eastern Mediterranean countries (SEMCs), namely Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia and Turkey. First, it assesses the performance trends of the SEMCs' agricultural sector, with a focus on production, consumption and trade patterns, incentives, trade protection policies and trade relations with the EU, productivity dynamics and their determinants. Second, it presents four scenarios based on the main value chains of the SEMCs' agriculture sector: animal products, fruit and vegetables, sugar and edible oils, cereals, fish and other sea products. The four scenarios are: business as usual, Mediterranean – one global player, the EU-Mediterranean area under threat and the EU and SEMCs as regional players on the global stage.

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Scenarios for the Agricultural Sector in the Southern and Eastern Mediterranean

Saad Belghazi*

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Executive summary

This paper builds predictive scenarios for the agricultural sector of eleven southern and eastern Mediterranean countries, namely Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia and Turkey – hereafter known as SEMCs. For some countries, such as Palestine, Libya and sometimes Syria, statistics and data related to trade and incentive policies for the agricultural sector are missing.

First, the paper assesses the performance trends of the SEMCs' agricultural sector with a focus on production, consumption and trade patterns, incentives, trade protection policies and trade relations with the EU, productivity dynamics and their determinants. Second, it presents four scenarios based on the main value chains of the SEMCs' agriculture sector: animal products, fruit and vegetables, sugar and edible oils, cereals, fish and other sea products. The four scenarios are: business as usual, Mediterranean one global player, the Euro-Mediterranean area under threat and the EU and SEMCs as regional player.

The agricultural GDP of the SEMCs, minus Libya and Palestine, amounted to \$73.5 billion at constant 2000 prices in 2007. Its share in world agricultural production has remained constant at 5.5% from 1994 to 2007.

Five countries: Turkey, Egypt, Morocco, Algeria and Syria, make up more than 91% of the total agricultural production in the SEMCs (minus Palestine and Libya), with Turkey alone accounting for about 39 % of production. The SEMCs' production of cereal, roots and tubers exceed their respective consumption. Their animal production is on a par with their consumption. SEMCs experience a huge shortage of vegetable oils and sugar. The exporting agricultural activities are mainly vegetables and fruit. Turkey is the sole SEMC exporting significant amounts of cereals.

The EU is the most important origin and destination for SEMCs' trade, particularly for Palestine, Israel, and North African countries. EU exports to SEMCs, mainly cereals, face fierce competition from other exporting nations. The bulk of the EU's exports towards SEMCs (minus Libya) is oriented towards the Egyptian, Algerian and Moroccan markets.

Policies geared towards the agricultural sectors are conservative in all of the SEMCs (minus Palestine and Libya). Domestic markets are heavily protected by tariffs. Governments support the agricultural sector with subsidies and the organisation of domestic markets. The agricultural sectors were largely marginalised in the association agreements between the EU and the Mediterranean region. The EU applied a selective protection depending on the countries and the risks to the EU common market from individual SEMCs' producers.

During the last decade, these countries average productivity per agricultural worker rose from 2.3 thousand US dollars per year to 3 thousand US dollars, at constant 2000 prices. Productivity rose in all the countries. With the exception of Lebanon and Egypt, agricultural productivity is highly sensitive to climate fluctuations, in particular rainfall, which can vary greatly from year to year. But the rising

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trend of investment in irrigation and equipment, observed during the 2000s, limits the impact of climate change on agricultural productivity.

In recent decades, the SEMCs' active population in agriculture decreased at the slow pace of 0.2% per year.

The prospective scenario projections are based on the trends observed over the 1994-2007 period in five groups of product value chains: animal products, vegetables and fruit, sugar and edible oils, cereals, fish and other sea products.

Scenario I, business as usual (BAU), continues the trend observed over the last two decades. The comparison between observed data for the period 1994-2007 and the BAU projections shows a rise in the SEMCs (minus Palestine, Syria and Libya) per capita production for all value chains, except for cereal, which decreased slightly. Exports decreased for fruit, vegetables and sea products and rose for animal products, sugar, edible oils and cereals. Absorption rose for all products, mainly for fruit, vegetables and sea products. The SEMCs' (minus Palestine and Libya) imports increased in cereals, fruit and vegetables, sugar and edible oils and sea products, while they decreased for animal products.

The scenario "Mediterranean – one global player" induces increases in production and imports and a bigger rise in exports and absorption. Production, imports and exports increase for all value chains. Imports of animal products increase markedly as do exports for fruit, vegetables and sea products. Domestic absorption of fruit and vegetables decreases, and rises for animal products and sea products. The consumption of sugar and edible oils remain constant, with a very slight decrease. The rise in cereal consumption is mainly due to an increase in the demand for animal feed. The "EU and Med as regional players" scenario is very close to the "Mediterranean as one global player" scenario. One observes that the magnitude of the changes in the BAU scenario is lesser in all southern and eastern Mediterranean countries.

The worst effects come with the "Euro-Mediterranean area under threat" scenario. In this scenario the agricultural sectors become inward-looking. This scenario is the least favourable to revenue generation. Deficits are higher: production, absorption and exports decrease, while imports continue to increase. Productivity grows at a lower rate than in the BAU scenario. In this last scenario, agricultural employment shows a small increase, while it decreases in all other scenarios.

1. Introduction

The analysis of agricultural trends and scenarios targets a set of eleven southern and eastern Mediterranean countries (SEMCs), namely Morocco, Algeria, Tunisia, Libya, Egypt, Palestine, Israel, Jordan, Lebanon, Syria and Turkey. Where data was not readily available, such as for Palestine and Libya, the study applies only to the other nine countries (SEMCs-9).

In preparing the predictive analysis for the period up to 2030, we start by analysing the observed trends in the economic characteristics of the SEMCs' agricultural sector since 1994. We then proceed by providing an overview of the agricultural policies in the SEMCs' region; for this we build our analysis on the review published by the Food and Agriculture Organization (FAO) as well as on the trade policy review reports of the World Trade Organization (WTO). This review covers the period 2003-2010, but varies slightly amongst countries due to data availability. Consequently, all countries are not covered in the same detail. For instance, no data was available on Syria's agricultural policies, so this country was largely excluded from the analysis.

2. Assessing Economic Trends in the SEMCs' Agricultural Sector

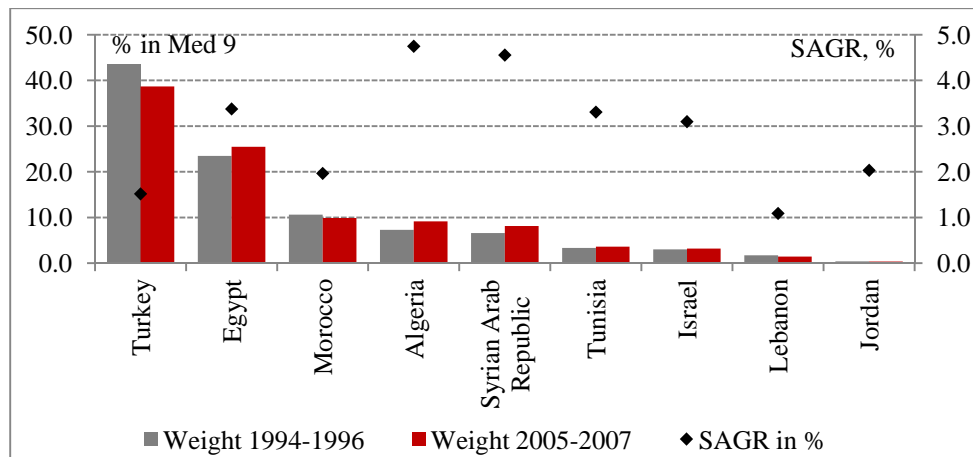
2.1 Growth performance of the agricultural sector

The agricultural GDP of the SEMCs (minus Palestine and Libya) amounted to \$73.5 billion at constant 2000 prices in 2007. Its share in world agricultural production remained constant at 5.5% in 1994-2007.



In 2005-2007, five countries, Turkey, Egypt, Morocco, Algeria and Syria, made up more than 91% of the total agricultural production of the SEMCs (minus Palestine and Libya) (Figure 1). During the same period, Turkey accounted for about 39% of the SEMCs-9 agricultural GDP, Egypt for 25.5%, Morocco for nearly 10%, and Algeria for slightly more than 9%. The average growth of agricultural output between 1994-1995 and 2005-2007 was the highest for Algeria and Syria, slower for Egypt, Israel and Tunisia and the slowest for Morocco, Jordan, Turkey and Lebanon.

Figure 1. Agricultural GDP in SEMCs-9: % of weights in SEMCs-9 and average annual growth rate of gross domestic products



Note. SAGR: Average Annual growth rate.

Source: FAO Statistical Yearbook 2009 (<http://www.fao.org/economic/ess/ess-publications/ess-yearbook/en/>).

2.2 Demand patterns, food security and SEMCs' comparative advantage

The food demand structure in the SEMCs depends on the average per capita income, its distribution, and dietary habits of the societies (Table 1).

Table 1. Consumption of 10 major vegetal foods (2003-2005)

Countries	Dietary energy consumption (kcal/person/day)					2007 GDP per capita (US\$ constant 2000 prices)
	Cereals and pulses	Sugar raw eq.	Potatoes	Soybean oil	Animal foods	
SEMCs	1,774	286	76	86	303	
Israel	1,243	273	86	386	728	21,994
Libyan Arab Jamahiriya	1,255	355	65	43	320	7,360
Lebanon	1,140	324	187	219	505	5,273
Turkey	1,721	243	102	56	360	5,114
Tunisia	1,651	328	60	292	301	2,693
Jordan	1,338	413	48	118	295	2,233
Algeria	1,680	286	106	85	287	2,159
Egypt	2,164	263	45	41	225	1,697
Morocco	1,740	356	77	153	183	1,673
Syrian Arab Republic	1,441	350	51	38	430	1,269
OPT	1,025	213	23	82	283	
World	1,996	196	62	84	429	5,924

Source: FAO Statistical Yearbook 2009.



The share of animal food in the total intake increases with per capita revenue. The consumption structure reflects quantitative as well as qualitative shifts. The shift in budget constraints leads to a shift in the food preferences function. The future demand structure of food products will depend on the relaxation of this constraint.

Although the availability of food is sufficient (2,700 to 3,500 calories per person per day), the primary energy content of food intake is low (only 20% is composed of animal products). Most of the meals consist of vegetables; fish – in coastal zones – and little meat, which is usually used to add flavour or kept for festive occasions. Vegetables are also used to accompany cereals, such as couscous or pasta, and constitute the basic ingredients of sauces enriched with olive oil and condiments. Salads (seasoned with olive oil) and fruit are part of all main meals. Cheeses are frequently combined with vegetable dishes. Fresh milk is barely consumed as such, yet fresh sheep or goat's milk cheeses, cultured milk (labneh, rayeb, ayran, etc.) and yoghurt are staples of all Mediterranean diets. Culinary herbs and spices are widely used, as is acid flavouring, vinegar or lemon juice.

There is still a contrast in the food intake structure between the countries on the northern shores and those on the southern shore. The diet in the latter countries is mainly vegetarian (10% or fewer calories are of animal origin); cereals are the basic ingredient and are complemented by pulses, which have a high protein content. Food intake in the riparian countries in the north is high in animal product content and is twice as high as that of the southern diet.

In the southern Mediterranean countries, the available food supply has grown considerably over the past 40 years with an average increase of 800 kilocalories per person per day in 2005, compared with the kilocalories observed in 1965. The food model of these populations departs from the northern Mediterranean model; a slow westernisation of dietary habits is noticeable. Greater emphasis on the major components (cereals and pulses) is observed, as is a comparatively high level of consumption of simple sugars. Calories from cereal products are the cheapest.¹ For this reason, the share of cereals is greater in the consumption panel of the poorest households, and the share of fruit, vegetables and fish (foods recommended for health) is lower than in the consumption panel of the richest households.

2.3 Agro-industry, agricultural trade deficits and SEMCs' comparative advantages

Aside from fruit and vegetables, almost all the agricultural products consumed in the SEMCs went through agro-industrial processing. Agro-industry -commercial circuits rapidly replaced the informal circuits where independent workers were the main intermediates and manufacturers.

The development of logistics and transport means and the opportunities of economies of scale, as well as economies in packing and preserving the food products quality, imposed the industrial plant as a necessary intermediate phase between the agricultural producer and the urban consumers. As a result of shortages and subsidies granted to basic food products such as cereals, oil, sugar and powdered milk, rural consumers progressively left auto-consumption and traditional products and increasingly met their household needs with manufactured food purchased on the market.

Between the 1960s and 1980s, the competitiveness of the manufactured food products relied firstly on imports, made cheaper by subsidies granted by the big exporting countries, the US and European countries. In the following decades, government policies in SEMCs were driven by food self-sufficiency objectives.

Four SEMCs have an excess in cereal production, while seven have deficits. All have excess in roots and tubers (Table 2). Animal production is almost balanced with consumption needs. SEMCs have a huge shortage of vegetable oils and sugar.

¹ The lower cost of cereals explains not only SEMCs' households enhanced demand for cereals, but also their governments' choice to subsidise wheat flour and barley grains as a tool to fight the effects of poverty.



Table 2. Ratio of production to food supply (2003-2005)

Countries	Cereals	Vegetable oils	Sugar and sweeteners	Roots and tubers	Meats	Milk
SEMCs	1.28	0.64	0.57	1.27	0.94	1.01
Algeria	0.54	0.16	0.00	1.12	0.87	0.43
Egypt	1.13	0.45	0.86	1.45	0.91	1.21
Israel	0.29	0.67	0.02	1.81	0.90	0.98
Jordan	0.10	0.31	0.00	1.16	0.77	0.61
Lebanon	0.32	0.44	0.02	1.32	1.00	0.57
Libyan Arab Jamahiriya	0.23	0.13	0.00	1.07	0.85	0.39
Morocco	0.89	0.60	0.47	1.20	1.00	1.24
OPT	0.13	0.49	0.00	1.12	0.88	0.89
Syrian Arab Republic	1.84	0.86	0.16	1.20	1.00	1.15
Tunisia	1.09	1.02	0.01	1.09	0.98	0.95
Turkey	2.18	0.82	1.16	1.25	1.02	1.22
World	2.15	1.66	1.15	1.74	1.02	1.21

Source: FAO Statistical Yearbook 2009.

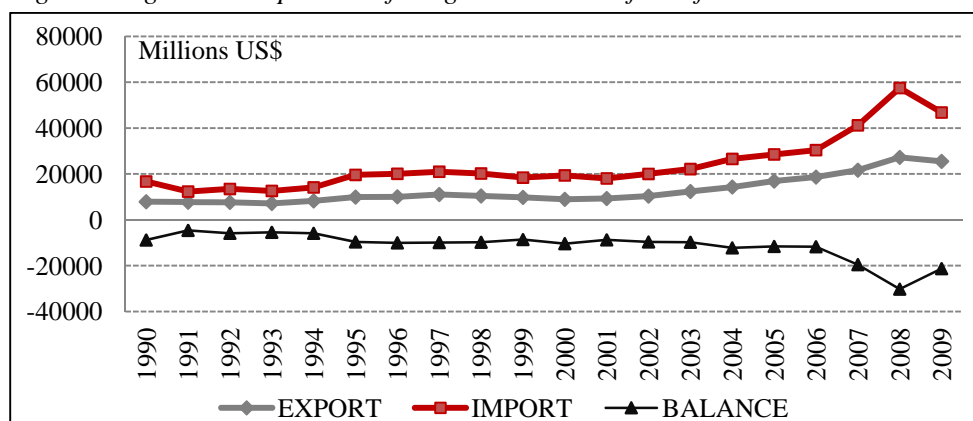
The situation differs across countries, however. While some countries achieved food self-sufficiency, like Turkey, which largely covers its consumption needs, others, like Syria and Egypt, achieved this objective only partially; progress in cereals independence was mitigated by deficits in sugar or in vegetable oils. Some countries, like Algeria and Morocco, were cereal exporters in the 1950s and at the beginning of 1960s became structural cereal importers.²

2.4 External trade

2.4.1 The global agricultural trade of the SEMCs

The south-eastern Mediterranean is a net importer of agricultural products (see Figure 2).

Figure 2. Agricultural products foreign trade and deficit of the SEMCs-10



Source: Food and Agriculture Organization of the UN (www.faostat.org).

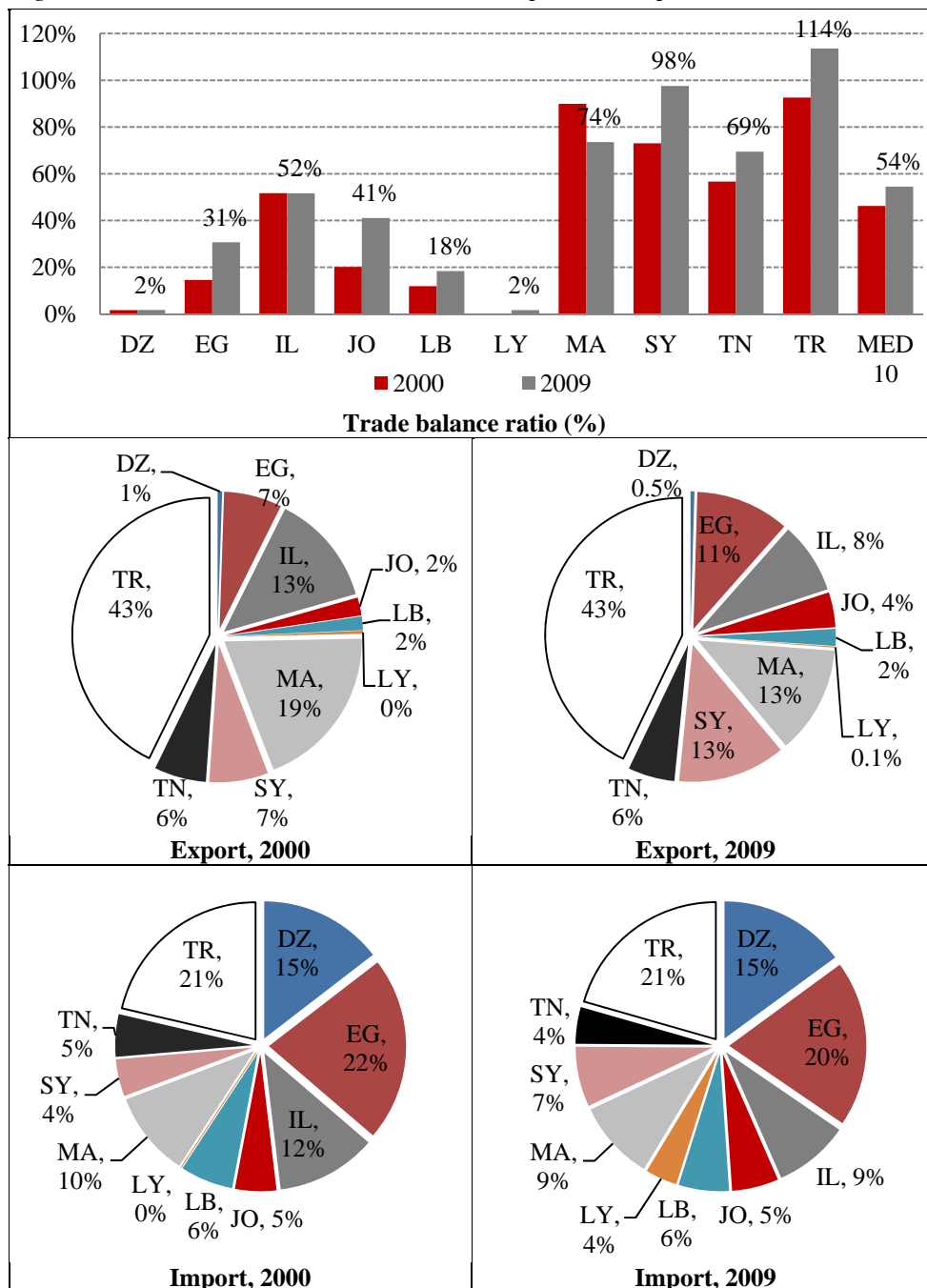
The trade balance in agricultural products improved for Turkey, Syria, Tunisia, Jordan, Lebanon and Egypt (Figure 3) and thus for the Mediterranean as a whole, given that Turkey represents the largest

² Algeria and Morocco became structural importers, due to several factors. The main factor is productivity stagnation due to changes in farm ownership and management and to domestic price policies giving negative incentives to producers. Governments were not aware of the risk and relied on low-cost cereal imports. The same mechanisms worked for sugar and edible oils value chains.

part of Mediterranean trade in agricultural products. The trade balance only became positive between 2000 and 2009 for Turkey, reaching 114%. It also improved greatly for Syria, achieving nearly 98%. For Morocco, the balance deteriorated from 85% to 74%. No improvement was observed for Israel, which had a balance of 52%.

An analysis of individual countries' shares in agricultural exports and imports of the SEMCs-9 group reveals the considerable weight of Turkey, which represents 43% of total SEMCs' exports in both 2000 and 2009 (Figure 3). Egypt's share rose from 7% in 2000 to 11% in 2009, while Morocco's share decreased from 19% to 13%. The import shares of some countries did not change: Turkey (21%), Algeria (15%), Lebanon (6%) and Jordan (5%). Slight decreases are noted for Israel (12% to 9%), Egypt (22% to 20%), Tunisia (5% to 4%) and Morocco (10% to 9%). Increases were recorded for Libya (0% to 4%) and Syria (4% to 7%).

Figure 3. SEMCs' trade balance ratios and import and export shares, 2000 and 2009



Source: Food and Agriculture Organization of the UN (www.faostat.org).

2.4.2 Agricultural trade between the SEMCs and the EU

SEMCs-10 (SEMCs-11 minus Libya) accounted for 6.8% of total EU agricultural products imports in 2009 (Table 3). The share of the main exporters, Turkey (3.2%), Morocco (1.7%) is increasing. Israel's exports share to EU is hovering around 1%, at about €1 million, while Egypt's agricultural exports were increasing from €512 million in 2006 to €603 million in 2010. Exports from Tunisia to EU fell from €745 million (constant 2006) to €438 million in 2010; a decrease of more than 41% in four years. The amounts imported from Jordan, Syria, Lebanon and Palestinian Territories are very small.

Table 3. EU agricultural products imports from SEMCs-10, 2006-2010

Countries	2006		2008		2010		Share of total EU Agro imports in 2008, %
	Millions euro	% (*)	Millions euro	%	Millions euro	%	
Algeria	56.7	0.2	48.0	0.2	34.6	0.2	0.0
Egypt	512.5	6.7	551.1	6.7	602.9	8.5	0.5
Israel	1,086.7	10.9	1,024.3	9.1	1,009.2	9.1	0.9
Jordan	16.7	7.2	17.0	5.6	18.6	7.8	0.0
Lebanon	40.0	17.8	54.1	15.2	54.4	16.5	0.0
Morocco	1,792.8	24.8	1,961.5	23.3	1,912.0	24.8	1.7
OPT	6.9	54.0	4.5	62.1	5.5	59.6	0.0
Syria	174.7	5.0	72.8	2.0	80.0	2.3	0.1
Tunisia	745.4	9.8	644.4	6.8	438.2	4.6	0.4
Turkey	3,430.6	8.2	3,350.7	7.3	3,519.4	8.4	3.2
Total	7,863.0		7,728.4		7,674.8		6.8

* % of agricultural products in the total of EU imports from the country.

Note: SEMCs-10 stands for SEMCS-11 without Libya.

Sources: Eurostat, Comext, DG Trade, March 2011.

The share of agricultural products in the total countries' exports to the EU are important for Palestinian Territories (59.6% in 2010, even if the amounts considered are small, with less than €6 million) and for Morocco (24.8% in 2010). In 2010, these shares stood at close to 8.4% for Turkey, 9.1% for Israel, 8.5% for Egypt and 7.8% for Jordan.

SEMCs-10 imports from the EU amount to 13% of total EU agricultural product exports in 2008 (Table 4). Turkey is the main importer from the EU. The share of agricultural products in the region's total imports from the EU is increasing.

Table 4. EU agricultural products exports to SEMCs, 2006-2010

	2006		2008		2010		Share of total EU Agro exports in 2008, %
	Millions euro	%	Millions euro	%	Millions euro	%	
Algeria	1,502.1	15.1	2,581.5	16.8	2,333.1	2.5	2.5
Egypt	947.3	10.4	1,283.2	10.1	2,057.2	13.9	2.2
Israel	868.2	6.2	962.7	6.8	1,037.0	7.2	1.1
Jordan	285.7	10.7	308.9	10.5	440.6	15.8	0.5
Lebanon	404.7	12.7	437.7	11.2	671.2	14.2	0.7
Morocco	842.5	8.0	1,505.5	10.4	1,330.8	9.8	1.5
Palestinian territories	4.3	11.0	6.7	10.9	10.8	13.5	0.0
Syria	428.2	14.3	393.0	11.3	452.4	12.4	0.5
Tunisia	487.8	5.6	695.8	7.0	715.1	6.5	0.8
Turkey	1,849.8	3.7	2,278.2	4.2	2,907.3	4.7	3.2
Total	7,620.6		10,453.2		11,955.5		13.0

Sources: Eurostat, Comext, DG Trade, March 2011.



EU exports to the SEMCs face tough competition from other countries and regions, especially for cereals.³ The bulk of EU exports to SEMCs-10 is destined for Egypt, Algeria and Morocco. But the amounts may vary from year to year, depending on the annual domestic production of these commodities and on the importers' strategies and trade policy arrangements. For instance, access to the Moroccan internal market is restricted by various customs duties, which increase when the cereal harvest is good so as to reserve a set share of the domestic market for domestic suppliers.

Table 5. EU agricultural products trade balance with SEMCs, 2006-2010, millions euro

Countries	2006	2008	2010
Algeria	1,445	2,534	2,299
Egypt	435	732	1,454
Israel	-219	-62	28
Jordan	269	292	422
Lebanon	365	384	617
Morocco	-950	-456	-581
Syria	254	320	372
Tunisia	-258	51	277
Turkey	-1,581	-1,073	-612
Total	-240	2,723	4,275

Sources: Eurostat, Comext, DG Trade, March 2011.

The EU agricultural trade balance varies from year to year. In 2006 it was negative but was substantially positive in 2008 and 2010 (Table 5). In these latter years, the EU's bilateral trade balance was only negative with Turkey and Morocco. But in any event, this agricultural trade balance is very dependent on the trade between the EU and Algeria, which is a large importer of EU cereals, with imports greatly dependent on the climatic conditions that affect local cereal production. The total trade balance with SEMCs-10 is unstable due to large variations in cereal production in SEMCs.

3. Agricultural Policies: Public Support, Trade Protection and Export Agreements

This review is based on WTO reviews. It is limited to six countries: Egypt, Israel, Jordan, Morocco, Tunisia and Turkey. It describes the main features of the long-term strategies in agricultural policies, domestic market protection through tariffs and quotas, the characteristics of agricultural support policies and the market control and regulatory institutions.

The common features of the reforms are related to the WTO commitments of individual countries, which, however, try to control the access of imports to their markets, mainly through tariffs and quotas. Countries use incentives and transfers to producers with the aim of affecting structural changes. The objectives of this policy are rather contradictory: modernising production tools and producers' units, while preserving small farmers' income and limiting rural poverty. The majority of the SEMCs provide subsidies to consumers, which generates distortions as the reductions in consumer prices push up the demand for food while blunting the impact of the producer support measures. The export sector is supported through direct subsidies and administrative support. But the main export incentives come from the EU market access advantages obtained from uneven and complex negotiations with the European Commission. Under WTO rules WTO members⁴ from SEMCs are committed to keep their import tariffs below the bounded tariffs, to renounce non-tariff barriers and to reduce the level of protection of their agricultural production, even if the bounded tariffs applied to key products stands at high levels. Applied tariffs are often lower than the bounded rates.

³ The US and Canada, Argentina, Russia and Ukraine and Australia.

⁴ Non-members are Syria, Libya, Algeria and Lebanon.



3.1 Long-term trends in agricultural policies

The SEMCs have long-term strategies for their agricultural sector. The agriculture sector has a key role in the growth model of Morocco, Turkey, Egypt, Syria and Tunisia. The government measures support productivity and technical upgrading. Even though the trend of overall economic policies in the Mediterranean includes privatisation, increased competition in local markets and the development of competitiveness, SEMCs' governments still resort to the selective protection of some key agricultural products on the domestic market and support prioritised products on export markets.

In **Egypt**, the strategy for agriculture development 1997/98-2016/17 aims at increasing the annual growth rate of agricultural production, at encouraging domestic and foreign investment in the agriculture sector, especially in the newly reclaimed areas, to develop animal production, particularly small ruminants, poultry and fisheries and to intensify agricultural research. To encourage the recognised value of local crops, the government provides financial assistance to the agricultural sector in the form of subsidised electricity and water, the latter being provided almost free of charge to farmers.

In **Israel**, historically, agriculture has been regulated by strict production and water quotas for each crop. The government supports and supervises the sector through, inter alia, price support, direct support for investments, R&D, Sanitary and Phytosanitary Measures (SPS) measures, planning, and marketing.

In **Jordan**, the government adopted a National Strategy for Agricultural Development for 2002-2010. Its objectives are to create a suitable environment for private-sector investment in agriculture; improving the processing and marketing of agricultural products and conserving Jordan's natural resources, to contribute to improved employment and income opportunities and reduce the deficit in the agricultural trade balance. The main instruments of domestic support notified were government services, price support (for wheat and barley), and input subsidies. Subsidies were provided for irrigation water and feed for livestock. Export subsidies for agricultural products were bound at zero and, according to the authorities, no export subsidies have been provided since Jordan's accession to the WTO. Income earned in agriculture is exempt from income tax. Relief from natural disasters affecting agriculture is provided on an ad hoc basis.

In **Morocco**, the main agricultural policy objectives are food security, the improvement of farmers' incomes and the conservation of natural resources. The new *Plan Maroc Vert* adopted in 2008 aims to make agriculture the engine of economic growth in the next decade, through two pillars: the first is support for the high value added activities that include a strong export performance, the second is the "Agriculture Solidaire" oriented towards the small farmers sector.

The evolution of **Tunisian** agriculture reflects a sustained commitment by the government, involving public investment in infrastructure, subsidies for private investment, price stabilisation, training and extension, and import protection in the interests of rural development, food security and self-sufficiency, and social stability. With the exception of wheat, agricultural production activities have been substantially liberalised; input and interest rates subsidies have been practically eliminated, the price of water continues to be adjusted towards cost recovery, and the marketing boards have partially lost their monopolies.

Turkey's key policy objectives for agriculture are increasing producers' welfare; promoting rural development; ensuring food security and safety and improving efficiency, productivity, quality, and competitiveness. The Turkish agricultural strategy has four objectives: i) phasing out price support and credit subsidies and replacing them with a less distortionary direct income support (DIS) system to farmers; ii) withdrawing the government from direct involvement in crop production, processing, and marketing; iii) reducing output intervention purchases financed from the budget leading to price cuts; and iv) facilitate the transition from the diverse crops value chain to efficient production patterns.



3.2 Foreign trade protection and subsidies to the agricultural sector

Only six countries of the SEMCs-9 are WTO members. Algeria, Lebanon and Syria are non-members, while Algeria and Lebanon have observer status. These six have generally high *bound tariffs* (Table 6). These are higher for agricultural products than for manufactured products. The range for agricultural products is from 23% (Jordan) to 116% (Tunisia) while it is from 11.2 (Israel) to 40.5% (Tunisia) for non-agricultural products. The bounded tariffs for agricultural products reach, respectively for Tunisia, Egypt and Israel, 116.1 %, 96.1% and 73.3%. For Turkey and Morocco, these bounded tariffs are 60.1% and 54.5% respectively.

Table 6. Foreign trade protection indicators for SEMCs-9 countries in 2010

	DZ	EG	IS	JO	LB	MA	SY	TN	TR
WTO accession date	Ob-server	30 June 1995	21 April 1995	11 April 2000	Ob-server	1 January 1995	Non member	29 March 1995	26 March 1995
<i>MFN tariffs (Final bound): Simple average of import duties</i>									
All goods		36.8	22.0	16.3		41.3		57.9	28.3
Agricultural goods (AOA)		96.1	73.3	23.7		54.5		116.1	60.1
Non-agricultural goods		27.7	11.2	15.2		39.2		40.5	16.9
Non <i>ad-valorem</i> duties (% total tariff lines)		0.2	5.9	0.1		0.0		0.0	0.1
<i>MFN tariffs (applied 2008): Simple average of import duties</i>									
All goods	18.6	16.7	6.8	10.8	6.8	21.4		21.5	9.7
Agricultural goods (AOA)	23.3	66.4	17.9	18.1	19.5	42.4		40.9	42.2
Non-agricultural goods	17.8	9.2	5.1	9.8	4.9	18.3		18.6	4.8
Non <i>ad-valorem</i> duties (% total tariff lines)	0.0	0.2	4.7	0.1	6.0	0.0		0.0	0.6
<i>MFN duty free imports (% of imports)</i>									
in agricultural goods (AOA)	0.0	.	67.3	51.6	.	27.4		13.3	30.6
in non-agricultural goods	0.6	.	76.7	45.6	.	1.2		35.2	38.4

Source: WTO Trade Profiles and Tariff Profiles, October 2010 (www.wto.org).

In all countries, the *applied tariffs* for agricultural imports are higher than the tariffs applied for non-agricultural products tariffs. The highest average tariff is observed in Egypt with more than 60%.⁵ For Morocco, Turkey and Tunisia, this rate is about 42% to 40%. For Israel, Lebanon and Jordan, it is less than 20%, while in Algeria it stands at 23%.

The 'Most-Favoured Nation'⁶ MFN duty-free imports amounts are high for Israel (67.3%), Jordan (51.6%), Turkey (30.6%) and Morocco (27.4 %). The government allows duty-free import to the agricultural products that are deemed not to compete with local production.

⁵ This is still 50% less than the average bounded tariff.

⁶ Under the WTO agreements, countries cannot normally discriminate between their trading partners. If one is granted a special 'favour' (such as a lower customs duty rate for a certain product) other WTO members are entitled to the same treatment. This is the first article of the General Agreement on Tariffs and Trade (GATT), which

3.2.1 Egypt

The simple average tariff⁷ on agricultural goods (ISIC Rev.2 definition) and the applied weighted average tariff on agricultural good were respectively 66.4% and 5.8% in January 2005. Applied tariffs are relatively high on meat and edible meat offal (21.2%), and edible fruits and nuts (14.4%). The highest agricultural tariff of 40% is charged on various fruits (apples, apricots, bananas, and pears). Lower tariffs are charged on oilseeds and oleaginous fruits, at an average rate of 2.9%, and on cereals at 3.3%. Egypt does not maintain tariff quotas (TQ).

The government has been actively encouraging private sector participation in agriculture. Investment in the sector is eligible for benefits provided by the Investment Guarantees and Incentives Law (8/1997). A programme to encourage the use of local cotton was terminated in 2003. Financial assistance to the agriculture sector is provided in the form of subsidised electricity and water, the latter being provided almost free of charge to farmers. The government subsidises a number of food products for low-income groups, most notably bread, sugar, and oil. Outlays amounted to LE 8.2 billion in 2004, up from LE 4.1 billion in 2003. In May 2004, the government reintroduced vouchers for basic foodstuffs following strong price increases over the previous two years. Subsidies for fertilizers and pesticides were removed in the mid-1990s.

3.2.2 Israel

Israeli farmers benefit from relatively high tariff protection. In 2005, the average MFN applied tariff (including the *ad valorem* equivalents of specific, compound, and alternate duties) on agricultural products was 41%.⁸

Around 40% of agricultural goods enter Israel duty free compared with around 51% of non-agricultural products. MFN-applied tariffs are higher than the overall average rate in six subsectors: live animals (with an average tariff of 29.0%), meat products (64.6%), dairy products (120.6%), edible vegetables (63%), edible fruit (87.1%), and preparations of cereals, flour, starch or milk products (42.3%). The average MFN applied tariffs on these products, and on vegetable planting materials, sugars and sugar confectionery and edible preparations has increased since the previous trade policy review (TPR) for Israel. Imports of some products are also submitted to tariff peaks of up to 560% on some edible fruit and nuts.

Tariff quotas apply to 12 product groups. However, for most of these products the in-quota tariff rate is above the MFN applied rate, thus rendering the quota redundant. As a result, these TQ are in general overfilled. All of Israel's trade agreements, except for the agreement with EFTA, provide for preferential TQ on agricultural goods. Seasonal tariffs are applied to 21 fruit and vegetable products during their harvest seasons.

governs trade in goods. MFN is also a priority in the General Agreement on Trade in Services (GATS) (Article 2) and the Agreement on Trade-Related Aspects of Intellectual Property Rights (TRIPS) (Article 4), although in each agreement the principle is handled slightly differently. Together, these three agreements cover all three main areas of trade handled by the WTO. Some exceptions are allowed. For example, countries can set up a free trade agreement that applies only to goods traded within the group – discriminating against goods from outside. Or they can give developing countries special access to their markets, or a country can raise barriers against products that are considered to be traded unfairly from specific countries. In services, countries are allowed, in limited circumstances, to discriminate, but only under strict conditions. In general, MFN means that every time a country lowers a trade barrier or opens up a market, it has to do so for the same goods or services from all its trading partners, whether rich or poor, weak or strong. The MFN clause might special treatment, but actually means non-discrimination; treating virtually everyone equally.

⁷ This average is high because of the very high tariffs applied to beverages and other products (Table 7).

⁸ WTO secretariat estimates based on data provided by the Israelis authorities.



Domestic support for agriculture, as measured by the current Total Aggregate Measure of Support (AMS), amounted to US\$282 million in 2003. In 2003, around 76% of product-specific AMS (plus 'de minimis' support)⁹ was for milk production, while around 19% was for eggs. Price support constitutes the main instrument of income support, accounting for 88.1% of total product-specific AMS in 2003.

3.2.3 Jordan

The simple average applied MFN tariff on agricultural products is 17.1% (2008). Applied MFN tariffs average 16.7% on agricultural products. The applied MFN import duties for vegetables are in the range of 0-30% with a simple average of 16.7%. The MFN tariff for tomatoes and cucumbers, at 30%, is at the high end, although the self-sufficiency ratios of these products are far in excess of 100%. Import tariffs for fruit are in the range of 10-35% with a simple average of 25.6%. Imports of oranges carry an MFN tariff of 35% from May to the end of February. Imports of bananas, grapes and apples are subject to even higher compound duties. Applied MFN tariffs in the livestock subsector are in the range of 0-30% with a simple average of 5% for live animals and 12.9% for meat (incl. edible offal). Import tariffs are: 5% on beef, lamb, and goat meat (product numbers: HS 0201/0202/0204), with the exception of ground meat for hamburgers (21%),¹⁰ 22% on pork (HS 0203); and 0-30% for poultry meat (HS 0207). Live bovine animals, sheep and goats are subject to compound duties.

As part of its WTO accession commitments in agriculture, Jordan agreed to reduce its trade-distorting domestic support, measured in terms of the total AMS,¹¹ by 13.3% over a six-year implementation period starting in 2000. The final bound total AMS, effective from 2006, is JD 1.33 million.

3.2.4 Morocco

Agriculture is the most heavily protected sector with a simple average tariff of 29.0%, and rates that vary from 2.5% (for most agricultural equipment) to 304% (on live sheep and goats and their meat). Variable duties are applied to sugar and cereals. In the case of sugar, the *ad valorem* equivalent of the duty (inversely proportional to the import price) may vary from a constant (minimum) rate to infinity. On numerous agricultural tariff lines the applied rates exceed the bound rates.

Tariff preferences and preferential tariff-rate quotas are granted to imports of certain agricultural products. Tariff preferences amounting to as much as 100% are granted to imports of certain products from the US under the Free Trade Agreement (FTA) in force since 1 January 2006. Preferential tariff-rate quotas are available for imports of certain products from the US, such as red meat and poultry meat, apples, almonds, and wheat and wheat products. Preferential tariff-rate quotas are also provided for by the Association Agreement with the EC, in particular with respect to cereals. With the exception of common wheat, for which the annual quota volume varies with domestic production, the import quantities for other cereals are fixed.

Numerous subsidies are granted to the agricultural sector (Table in annex AIV.2) for, among other things, improvements, the purchase of agricultural equipment, and providing value added for agricultural products. State financial aid (in the form of subsidies or premiums) is provided under the Fonds de Développement Agricole - FDA (Agricultural Development Fund) through Crédit Agricole du Maroc (CAM). In 2009, the funds allocated to the FDA in the State budget amounted to DH 1.5 billion (€33.4 million).

⁹ For developing countries, de minimis support under the AMS encompasses product-specific support that does not exceed 10% of the value of production of the product concerned, and non-product-specific support which does not exceed 10% of the value of total agricultural production.

¹⁰ Frozen boneless beef (HS 020230900) carries the rate of zero.

¹¹ Total Aggregate Measure of Support.



3.2.5 Tunisia

Customs duties are very high on most agricultural goods that compete with domestic production. In general, TQ imports fluctuate enormously from year to year, except for cheese, soft wheat and sugar, whose quotas are completely filled every year. According to the authorities, the underutilisation reflects the level of demand for the products concerned among Tunisian consumers. However, cereals, under TQ, are imported exclusively by the *Office Tunisien des Céréales* (Tunisian Grain Board) and sugar by the *Office du commerce de Tunisie* (Tunisian Trade Board).

To import products subject to TQ it is necessary to obtain a 'special TQ authorisation' issued by the Minister for Trade, at the proposal of the TQ management committee. The minister publishes an opening notice establishing the quantities, the TQ allocation procedure, the conditions of admissibility of applications, and the time-limits for submitting them. TQs may be allocated according to: traditional trade flows; the chronological order in which applications are filed; or in proportion to the quantities requested under the TQ. TQs for cereals are allocated through the Grain Board (see below) and those for sugar through the Trade Board.

Tunisia applies preferential TQ to several agri-food products originating in the EU in accordance with the Association Agreement. With respect to meat, dairy produce, cereals and sugar, which are also covered by WTO TQ, exports from the EC may draw either on the WTO quota or on the preferential quota. However, EC exports under preferential TQ are zero-rated; moreover, these quotas also cover other agricultural products such as eggs, poultry, potatoes, hazelnuts, maize (corn), groats and meals, malt, starch, certain flours, fats, oils, glucose, and dog and cat food. Tunisia also intends to open additional preferential TQ under its bilateral agricultural trade agreements with each of the EFTA countries. The products concerned are milk powder (100 tonnes), cheese (50 tonnes), sugar and sugar confectionery (50 tonnes), and animal feed (50 tonnes).

Tunisia's last notification to the WTO concerning domestic support relates to the year 2002.¹² It indicates a zero current total AMS, as compared with a maximum commitment of 61.12 million dinars (€45.55 million) on the following products: durum and soft wheat, barley, milk, olive oil, and sugar beet. The support declared for 2002 was 'de minimis'; it consisted of fixed producer buying prices for wheat and intervention prices for other products. Tunisia reported expenditure of 61 million dinars (€45.46 million) on measures exempt from the reduction commitment ('green box'), mainly under water and soil conservation and forestation programmes. In 2002, under its development programmes, which are also exempt from the reduction commitment by virtue of the special and preferential treatment in favour of developing countries, Tunisia spent 91 million dinars on encouraging investment in agriculture.

3.2.6 Turkey

Tariff protection for agriculture remains relatively high. The simple average MFN tariff in agriculture is 28.3% (up from 25% in 2003, partly due to the increase in the tariffs on grains and vegetable oils). Imports of agricultural products, such as live animals for breeding purposes are duty free. Tariff rates on some processed meat products range up to 225%, while some dairy products (e.g. buttermilk, and cream) carry duties up to 170%.

Under the Uruguay Round, Turkey agreed to reduce its budgetary outlays for export subsidies for 44 products by 24%, and the volume of subsidised exports by 14% in equal instalments over a ten-year period starting in 1995. Turkey did not make any commitments to cut financial support to agricultural producers because the authorities estimated that support – as measured by the AMS – was below the de minimis level of 10%, for which no reduction commitments were required.

Turkey and the EU have agreed to work towards bilateral free trade in agricultural goods to complement its Customs Union that largely affects trade in industrial products. Processed agricultural products imported into Turkey from the EU are subject to customs duties comprising an industrial and an

¹² WTO document G/AG/N/TUN/32, 4 May 2005.

agricultural component: all industrial components enjoy duty-free treatment and customs duties applicable to agricultural components are below MFN rates. Some processed agricultural products are subject to zero duty but are under quota. The limited coverage of agricultural products under the preferential regime with the EU and under Turkey's other bilateral agreements delays their exposure to greater competition: the products are generally subject to preferential tariff quotas.

3.3 The recent bilateral agricultural trade negotiations of the EU with SEMCs¹³

In 2007, **Jordan** negotiated a supplementary liberalisation agreement followed by Egypt and Israel in 2009. For Jordan, the number and volumes of agricultural products involved was small and the negotiations were quickly achieved. With **Israel**, considered as a developed country, the asymmetry principle was not applied. The implementation of the agreement with **Egypt** began in January 2011. It provides the EU agricultural exports with a freer and immediate access to the Egyptian market for about 90% of the agricultural and fish products. The tariffs of tobacco, wine and alcohol, pork meat, confectionary, chocolates, food pastas and bakery products will be halved. The EU grants Egyptian exporters a free entry for all its agricultural and food products to the European market, excepted for tomatoes, cucumbers, artichokes and strawberries, for which the current arrangements will continue to apply. However, SPS norms continue to apply to the Egyptian agricultural and agro-food exports. Without an internal upgrading of Egyptian producers, these measures will work as strict Non Tariff Barriers (NTB).¹⁴

For the **Occupied Palestinian Territories'** agricultural and fisheries products, in April 2011 the EU granted ten years free access except for fruit and vegetables, which represent the bulk of the very small amount actually exported to the EU.

With **Algeria** a policy dialogue committee was instituted and was to meet in June 2011, with the aim to assess a liberalisation schedule for manufactured and agricultural products. Algeria asked for a postponement of the implementation of a EU-Algeria Free Trade Agreement from 2017 to 2020. Actually, only 252 agriculture, fisheries and food manufactured products benefit from EU market access preferential tariffs. The list of products to liberalise is still under discussion.

Discussion on agricultural liberalisation between EU and **Lebanon** are still at a preliminary stage.

With **Tunisia**, the discussion with the EU was very close to reaching an agreement when the January 14th Revolution began. The main negotiation point concerns the free access of Tunisia's olive oil to the European market while the EU would prefer to keep restrictions on this product.

With **Morocco**, the conclusion of negotiations was delayed during the Spanish Presidency of the European Union, because the Spanish government faced strong domestic resistance. The negotiations resumed with the Belgian Presidency in 2010. The agreement granted a better access for European food products, especially manufactured, to the Moroccan market, for which total free access was expected in 2012.¹⁵ Free access for agricultural products will immediately concern 45% of the EU export value and reach the level of 70% by 2020. The vegetable and fruit sector will benefit from a complete

¹³ Sébastien Abis and Fatima Tamlilti, "Les dynamiques agricoles euro-méditerranéennes", les Notes d'Analyse du CIHEAM, No. 63, May 2011.

¹⁴ Depending on the type of product, compliance with SPS regulations is verified by the Food Control Agency, the Agriculture Quarantine Body, and the Animal Quarantine Body. In addition to SPS regulations, a number of agricultural goods must fulfil quality controls upon importation. Agricultural goods subject to mandatory quality control include live animals, meat, dairy products, vegetables, grains, and edible oils. Furthermore, radiation inspection is mandatory for foodstuffs, edible oils, live animals, seeds, animal fodders, milk substitutes, and tobacco. A number of raw or processed agricultural products, such as juices, citrus fruit, and various types of vegetable are also subject to quality control when being exported.

¹⁵ At the time of writing this paper, i.e. June 2011.



liberalisation. The exceptions concern only six products, of which tomatoes, cucumbers, mandarins and strawberries. New quotas higher than the past quotas would be adopted.

But the European Parliament refused to ratify the preferences offered to Morocco by the European Commission negotiators during its plenary session of the 7th June 2011. The European producers association has demonstrated their capacity to impact the European Parliament decisions.

Nevertheless, the European Commission and Morocco launched a discussion about the Protection of the Geographical Indications.¹⁶ Six Moroccan products, of which argan oil, are registered in this category. Additionally, the EC agrees to support the second *Plan Maroc Vert* Pillar supporting small Moroccan farmers with €70 million.

The European Union is encouraging south-south trade, from financial and technical assistance to the Agadir Agreement where Jordan, Egypt, Tunisia and Morocco are involved.

4. Productivity Growth and Employment in the Context of Climate Change

The growth of productivity depends on the modernisation of traditional production structures. Climate instability, drought and extreme climatic events cause huge losses to agricultural production. In the fishing sector, productivity is decreasing compared to the extraction pressures on sea resources. SEMCs' governments have programmes to ease the pressures on water and on biomass resources. These programmes carry governance solutions and innovations, mainly equipment, at the microeconomic levels enabling a more efficient use of land, water and sea. They also rely on price policies and incentives provided through tariff protection, domestic market organisation and subsidies. The performance of these programmes depends on the cognitive capacities of farmers and fishermen to adopt innovative solutions to face, collectively and individually, natural shortages. The social impacts of these shortages lead to a crisis among small producers, to poverty and increased rural-urban and international migration. Meanwhile, the average size of the production units rise, thus generating scale economies and freeing new capacities for innovation investments.

4.1 Productivity trends per agricultural worker

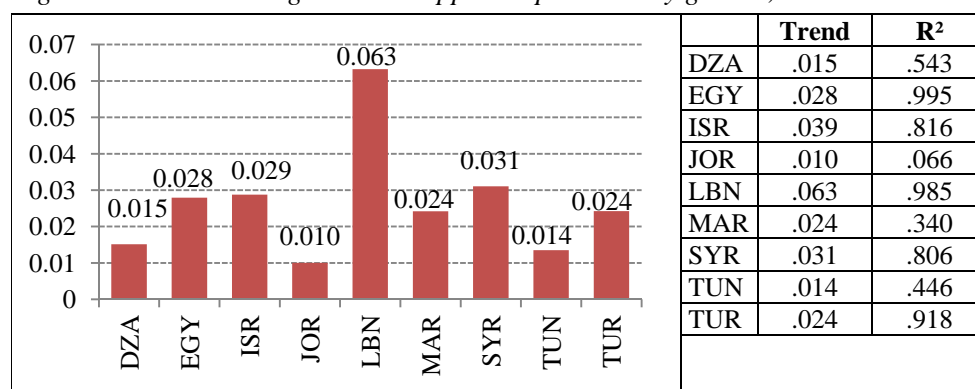
Apparent agricultural productivity can be measured as the value added per active worker at constant prices. Figure 4 shows the average annual rate of growth of apparent productivity of SEMCs-9, based on series from 1990 to 2008 in the World Bank data base.¹⁷

¹⁶ “A geographical indication is a sign used on goods that have a specific geographical origin and possess qualities, reputation or characteristics that are essentially attributable to that place of origin. Most commonly, a geographical indication includes the name of the place of origin of the goods. Agricultural products typically have qualities that derive from their place of production and are influenced by specific local factors, such as climate and soil. Whether a sign is recognised as a geographical indication is a matter of national law. Geographical indications may be used for a wide variety of products, whether natural, agricultural or manufactured. An appellation of origin is a special kind of geographical indication. It generally consists of a geographical name or a traditional designation used on products which have a specific quality or characteristics that are essentially due to the geographical environment in which they are produced. The concept of a geographical indication encompasses appellations of origin” (see http://www.wipo.int/geo_indications/en/about.html).

¹⁷ The trend was estimated through the OLS regression of the following equation: $V = bT + C + u$, where V stands for the logarithm of the agricultural value added per worker at constant dollars of 2000, T for the time, C for the constant and u for the estimation error.



Figure 4. SEMCs-9 – Agricultural apparent productivity growth, 1990-2008



Note. The estimated productivity trend numbers are annual increases for the entire period 1990-2008.

Source: Own estimates based on the World Bank data base (www.worldbank.org).

Productivity rose in all the countries. The highest increase is observed for Lebanon, Israel and Syria (6.3% to 3.1%), the slower increase (2.8% to 2.4%) is observed for Egypt, Turkey and Morocco and the slowest one - for Tunisia, Jordan and Algeria.

From 1994 to 2007, the SEMCs-9 average productivity increased from US\$2,300 per year to US\$3,000 in constant 2000 prices (Table 7).

Table 7. Agricultural output per active worker, thousands US\$ constant 2000 prices

	1994-96	1999-2001	2005	2006	2007
Algeria	1.8	1.8	2.2	2.2	2.3
Egypt	2.0	2.4	2.7	2.8	2.8
Israel	25.9	30.4	42.7	42.9	42.6
Jordan	1.7	1.4	2.2	2.3	2.2
Lebanon	15.9	21.8	30.3	29.7	31.7
Morocco	1.8	1.6	2.1	2.6	2.1
Syrian Arab Republic	3.2	3.9	4.4	4.7	4.4
Tunisia	2.6	3.2	3.3	3.4	3.5
Turkey	2.3	2.6	3.2	3.3	3.1
SEMCs-9	2.3	2.5	3.0	3.1	3.0
World	0.8	0.9	1.0	1.0	1.0

Source: FAO Statistical Yearbook 2009 (<http://www.fao.org/economic/ess/ess-publications/ess-yearbook/ess-yearbook2010/en/>).

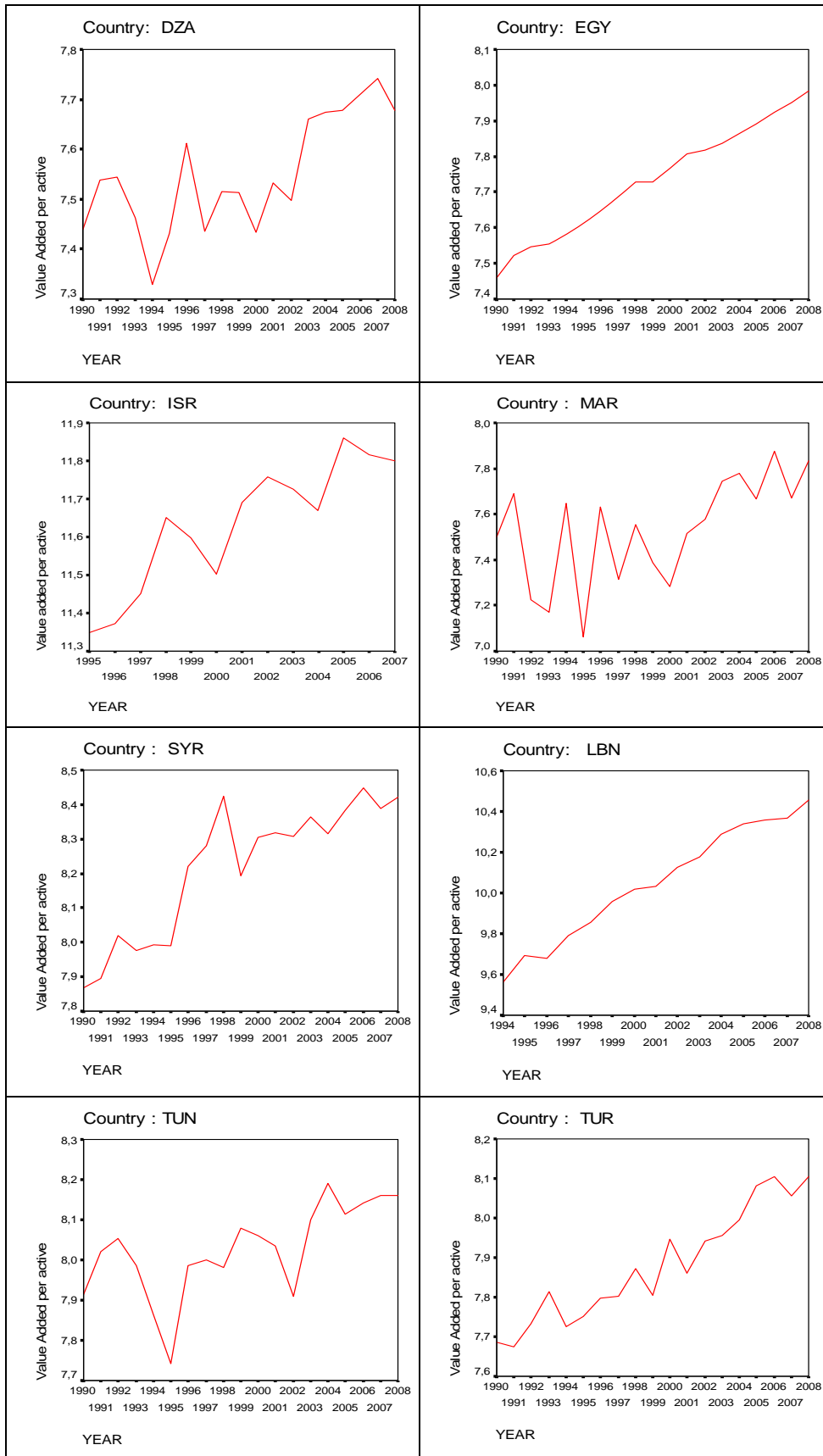
These numbers reflect large disparities; from 42.6 thousand for the agricultural Israel workers to 2.1 thousand dollars per Moroccan worker in 2007. Productivity improved for all the SEMCs-9.

The pace of apparent productivity growth in the agricultural sector in the SEMCs-9 was higher than in the world (2%) during the period 1994-2007. The highest growth of apparent productivity was in Lebanon and Israel, which achieved 30.6 and 42.6 thousand dollars respectively per worker (at 2000 prices) for 2005-2007 period. For the same period, the apparent agricultural productivity in Syria, Tunisia and Turkey was respectively 4.5, 3.4 and 3.2 thousand dollars (at 2000 prices). Apparent agricultural productivity in Egypt, Morocco, Jordan and Algeria stayed between 2.8 and 2.2 thousand dollars per worker.

Figure 5 shows that apparent productivity (value added per active worker at constant prices) is highly unstable for the countries where the share of irrigated land is low (Algeria, Morocco, Turkey and Tunisia). But, in all SEMCs the apparent productivity rose, even for Morocco and Tunisia after 2002. This change is related to technical changes and growth of irrigated land shares.



Figure 5. SEMCs-9 apparent productivity growth: value added per active worker, thousands US\$ constant 2000 prices in logarithms scale



Source: Author's estimates based on World Bank Data base (<http://data.worldbank.org/indicator>).



4.2 Productivity growth determinants: land, water and capital

The main productivity growth factors in agriculture are irrigation and equipment. These factors compensate structural rain scarcity in the region and climate change effects. The capital intensification is the main solution to limit the decreasing returns of land exploitation. This also applies for fishing activities and others based on sea exploitation.

The share of irrigated land in arable permanent crops rose slowly from 17.3% in 1994-1996 to 18.5 % in 2007. The highest relative increases were observed in Israel, Morocco, Turkey and Syria; the countries with the biggest arable land areas.

Table 8. Irrigated lands and share in arable land and permanent crops

Countries	Irrigated land, thousand ha					Share in arable land & permanent crops, %				
	1994-96	1999-01	2005	2006	2007	1994-96	1999-01	2005	2006	2007
Algeria	558	568	569	570	570	7.0	6.9	6.8	6.8	6.8
Egypt	3,276	3,310	3,422	3,530	3,530	100.1	98.2	97.1	99.9	99.8
Israel	195	198	220	225	225	45.6	46.8	57.8	60.0	59.8
Jordan	74	75	80	84	81	25.8	27.0	29.5	30.4	36.6
Lebanon	105	104	104	104	104	33.7	39.1	36.7	36.0	36.2
Libyan Arab Jamahiriya	470	470	470	470	470	20.9	21.9	22.5	22.9	22.9
Morocco	1,258	1,397	1,484	1,484	1,484	12.7	14.6	16.5	16.6	16.6
OPT	17	16	16	17	17	7.5	7.3	7.1	7.6	7.6
Syrian Arab Republic	1,099	1,221	1,428	1,402	1,396	20.0	22.5	25.7	25.1	24.6
Tunisia	364	393	418	418	418	7.5	7.9	8.5	8.4	8.5
Turkey	4,191	4,743	5,215	5,215	5,215	15.4	17.9	19.6	20.2	21.0
SEMCs	11,607	12,495	13,426	13,519	13,510	18.6	20.4	21.9	22.3	22.7
World	263,831	277,629	283,798	285,662	286,794	17.3	18.1	18.3	18.4	18.5

Source: FAO Statistical Yearbook 2009 (www.faostat.fao.org).

Table 9. Agricultural capital stock per active worker and structure of the capital stocks

Countries/ areas	Agricultural capital Stock per agricultural worker, US\$ thousands constant 1995 prices			Share in capital stocks, %			
	1979-81	1989-91	2003	Machinery	Land	Livestock	Other
				2003	2003	2003	2003
Algeria	3,158	3,389	3,999	16.1	69.6	13.2	1.1
Egypt	3,723	3,966	5,308	2.7	76.3	20.6	0.4
Israel	37,143	45,365	42,142	17.0	64.4	14.7	3.8
Jordan	5,262	7,738	8,642	9.9	65.3	23.3	1.6
Lebanon	21,477	40,100	40,910	5.8	83.5	10.2	0.5
Libyan Arab Jamahiriya	44,406	91,763	84,429	8.1	77.6	13.8	0.5
Morocco	6,161	7,096	7,420	4.1	71.1	24.1	0.6
OPT	4,042	4,471	5,725	18.3	61.2	19.3	1.2
Syrian Arab Republic	11,729	11,010	16,867	8.3	77.8	13.5	0.4
Tunisia	11,524	13,222	14,945	3.3	85.9	10.3	0.6
Turkey	6,716	8,472	8,710	32.6	52.2	14.8	0.4
SEMCs	6,099	7,020	8,029	16.6	66.4	16.5	0.5
World	3,522	3,321	3,171	16.0	54.7	24.2	5.1

Source: FAO Statistical Yearbook 2009 (www.faostat.fao.org).



The change in the weight of irrigated land share is correlated with the change of the agricultural capital stock per active worker. The available data show that for all the SEMCs the capital stock per worker rose from 6,099 dollars (at constant 1995 prices) in 1979-1981 to 8.029 in 2003, an average annual increase of 3.5%. Some countries, like Egypt, Algeria and OPT remain below the SEMCs' average. During the analysed period, Morocco and Jordan hovered at an agricultural capital stock close to the SEMCs' average. Turkey stood at a level of capital per worker slightly higher. Syria and Tunisia had a level near twice the average and Israel and Lebanon from five to six times the average level.

4.3 Social factors: demography, poverty and rural employment

The development agricultural productivity is challenged by social factors. Demography and illiteracy are two determinant factors because they induce a very small reservation wage, limit incentive and capacities to innovate. They lead to crisis in rural households and to labour force migration. The mechanism induces at least productivity growth because only stronger units stay on the scene, with higher scale economies and investment capacities.

4.3.1 Demography and illiteracy

In the SEMCs-9, because of strong demographic growth in recent years, the working age population has shown a marked increase. However, economic growth is not keeping up with the pace of demography. The number of net entries into the labour market in the Arab Mediterranean countries between 1995 and 2025 can be estimated between 80 and 85 million, with some 45 million for the period 2005-2020, i.e. an average of 3 million entries annually over these 15 years. A huge number of jobs would therefore have to be created in these countries to prevent unemployment from increasing further above its already high level. But tension in the labour market is mainly felt by urban youth and graduates. The active population in rural areas has a very low reservation wage so they accept low wages, thus dampening rural unemployment. In urban areas, on the other hand, reservation wages are high, particularly for educated youth, and unemployment is high.

According to FAO database¹⁸ illiteracy in 2005 remained steady at the level of 48% in Morocco, 30% in Algeria,¹⁹ 29% in Egypt, 10% in Jordan, 26% in Tunisia and 13% in Turkey. Yet, in absolute terms, the number of illiterates among the population has remained stable. Poor access to education and illiteracy mainly affects rural areas, especially agricultural and female workers. Illiteracy is responsible for the marginalisation of the active rural population as it leads to low productivity growth in a large segment of the agricultural sector, mainly small and poor households that are the first to migrate to urban areas.

4.3.2 Poverty, migration and decrease of the rural active population

Permanent social crisis in the small farm agricultural sub-sector is the cause of the unstoppable expansion of towns with all its corollaries such as over-population, uncontrolled urban sprawl cutting into agricultural land, destruction of the coasts, the growth of unregulated spontaneous housing, development of squalid marginal districts, environmental pollution, land speculation, unplanned urbanism, rising crime, inadequate or inappropriate infrastructure. This phenomenon is illustrated by the decreasing trend of the share of agricultural workers in the total active population from 1961 to 2000 (Figure 6).

The active population in agriculture in SEMCs was near 25 million in 1994-96 and 24.5 in 2007 (Table 10). In recent decades, the SEMCs-9 and SEMCs-11 active population in agriculture was decreas-

¹⁸ See (<http://faostat.fao.org/site/291/default.aspx>).

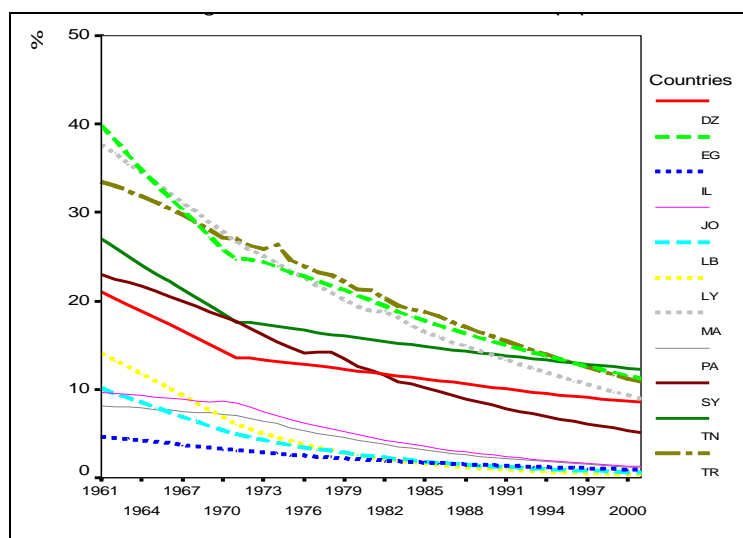
¹⁹ The World Bank database reports that the literacy rate for adults in Algeria in 1995 (the most recent available year) was 73%. Following the same source, this rate in Egypt was 66% in 2006, in Morocco - 56% in 2009, in Libya - 89% in 2009, in Turkey - 91% in 2009, in Tunisia - 78% in 2008, in Jordan - 92% in 2007, in Lebanon - 90% in 2007. See (<http://data.worldbank.org/indicator/SE.ADT.LITR.ZS>).



ing at a slow pace, 0.2% per year, compared to the annual growth of 0.7% in the rural population worldwide.

The countries with a significant reduction in the agricultural population are Lebanon, Libya, Israel and Turkey. Morocco, Palestine and Jordan experienced a small decrease while in Algeria and Egypt the growth rate of the active agricultural population (aged between 15 and 60) is positive, and very high in Algeria (2.6% per year, this may be explained by the improvement of the political situation and the return of the bulk of the farmers to their lands) and very small in Egypt (0.6% per year).

Figure 6. Share of agricultural workers in the total active population



Source: (<http://faostat.fao.org/site/291/default.aspx>).

Table 10. Economically active population in agriculture

Countries	Economically active population in agriculture, thousand					Share in total economically active population, %				
	1994-96	1999-2001	2005	2006	2007	1994-96	1999-2001	2005	2006	2007
SEMCs	24,955	24,827	24,593	24 597	24,461	34	30	27	26	26
SEMCs-9	24,711	24,596	24,382	24 390	24,257	35	31	27	27	26
Algeria	2,336	2,717	2,996	3 039	3,092	26	25	23	23	22
Egypt	6,483	6,573	6,839	6 847	6,900	35	31	28	28	27
Israel	66	62	57	56	54	3	3	2	2	2
Jordan	130	120	120	121	120	11	9	8	7	7
Lebanon	61	48	37	36	34	5	4	3	2	2
Libyan Arab Jamahiriya	116	105	88	84	82	8	6	4	4	4
Morocco	3,351	3,339	3,218	3 215	3,135	37	33	29	29	28
Palestine	128	125	123	123	122	15	12	10	9	9
Syrian Arab Republic	1,157	1,184	1,308	1 349	1,389	28	24	22	21	21
Tunisia	718	757	779	785	787	25	24	22	22	22
Turkey	10,411	9,796	9,028	8 942	8,746	46	41	36	36	35
World, million	1,186.8	1,228.7	1,272.0	1 279.6	1,287.2	46	44	42	41	41

Source: FAO Statistical Yearbook 2009 (www.fao.org).

5. Scenarios for Agriculture in the SEMCs-9

5.1 The drivers of SEMCs' agricultural structural change

The preceding observations suggest that the main drivers in the agricultural structures and productivity are:

- population growth and living standards – consumption side;
- climate change – natural resources and the environment;
- cooperation – as technical and financial support and foreign trade – economic policy;
- labour shortages, education and innovation, and investment – production.

The SEMCs, with the exception of Turkey, are all cereal, sugar and edible oil importers. They are relatively self-sufficient in terms of animal products and all export vegetables and fruit. The bulk of the exports are fresh, non-processed products.

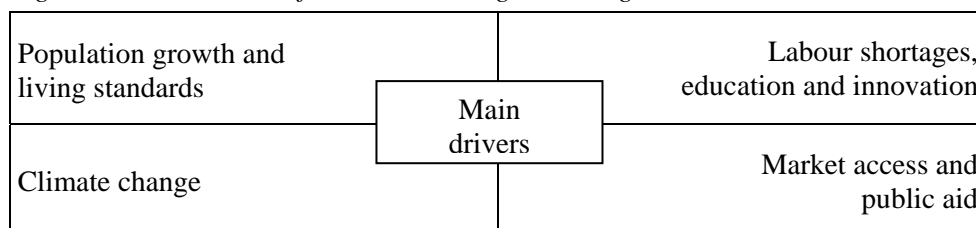
The agricultural transformation in these countries, except Israel, occurred after the demographic transition. The population grew at a pace greater than the production per capita. While revenue per capita and individual consumption improved, absorption and import growth exceeded production and export growth. Hence, in the next 20 years there should be a catching-up of the demographic transition by agricultural expansion. This implies that production per capita of the agriculture sector would grow at a higher rate than consumption per capita. Such a catching-up would allow SEMCs to develop balanced food and agricultural trade with the rest of the world. This capacity will depend on the pace of the agricultural sector's productivity growth.

Several factors can contribute to productivity growth:

- changing patterns in food consumption toward a bigger share of animal products, the growth of food-processing industries, and rising demand for food quality – this implies greater pressure on agricultural producers to comply with quality norms;
- climate change, which leads to water scarcity and extreme climatic events, requires preventive actions leading to more investments, modern equipment, technical and organisational innovations, and contributes to higher capital intensity in the agricultural sector;
- Quantity and quality of labour force is the main factor behind productivity growth. But the education and vocational training system requires long-run investment and financial resources;

The agricultural policies that enable market access, protect their revenue through price policy stabilisation and afford structural support to marginalised areas, support extension and technical innovation adoption by the agricultural producers.

Figure 7. Main drivers of structural change in the agricultural sector



Source: author's elaboration.

5.2 The rationale behind the scenarios

Figure 8 summarises four scenarios regarding the EU-Med region and the international cooperation environment of SEMCs.

The first scenario, called business as usual (BAU) continues the actual cooperation framework between SEMCs and the European Union. The second suggests deep EU-Mediterranean integration. The

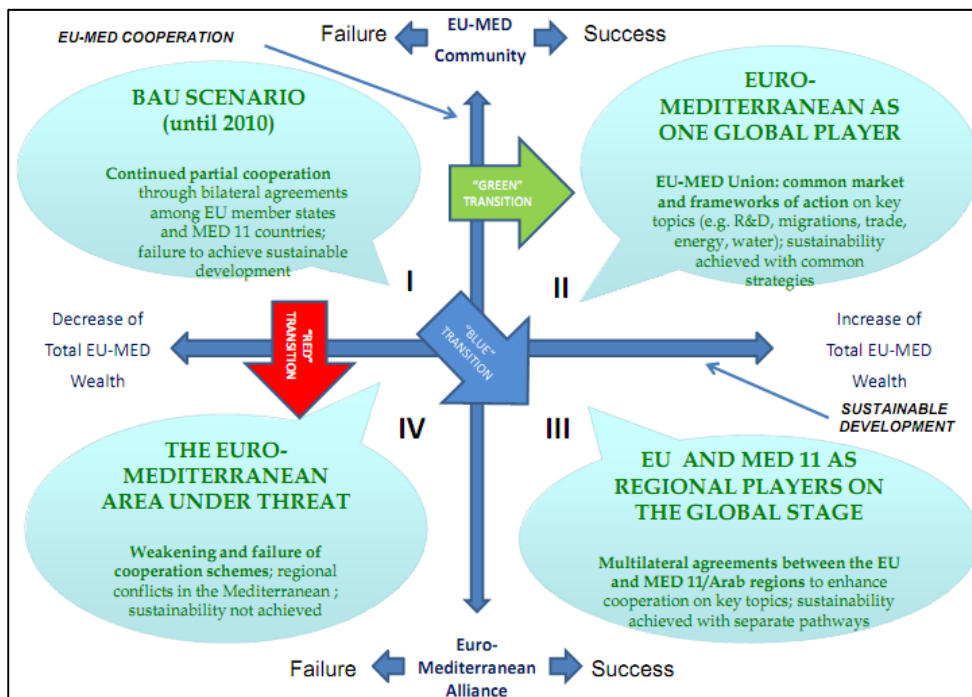


third considers limited cooperation between the two regionally integrated sides, the eastern and southern Mediterranean countries, and the northern Mediterranean countries. The fourth scenario is pessimistic, with a general decrease of Mediterranean cooperation and trade.

The mechanisms underlying these scenarios suppose that international cooperation and foreign trade contributes to the acceleration of the agricultural structural changes with a positive impact on factor productivity.

Opening access to the EU market will change the pattern of food demand and create additional opportunities for exporters. This will generate more revenues and help investment, innovation, and a better adaptation to climate change. Labour market pressure will be reduced with higher labour force mobility. With more trade opportunities, Mediterranean countries would have more room to support specific value chains and push their agricultural sectors toward an enhanced EU-Mediterranean trade specialisation.

Figure 8. EU-Med scenarios



Source: Ayadi and Sessa, 2011.

5.3 The scenario results

The projection was based on data by value chains in the SEMCs-9, and the results are presented as aggregated for these countries. Table 11 summarises the international and EU-Med impacts on production, imports, absorption and imports. The behaviour of the actors depends on the EU-Med cooperation framework.²⁰

²⁰ The projected behaviours for the four scenarios are very close to those built in the *Centre International des Hautes Etudes Agronomiques Méditerranéennes* (CIHEAM)- *Mediterra* 2008 report: “The future of agriculture and food in the “Mediterranean countries” (2008). It produces annual studies on the agricultural sectors of the Mediterranean countries and a transversal thematic report and a regular publication under the title “Mediterra”. For the year 2008, the *Mediterra* report developed projection scenarios for 2030. Its approach is very similar to the one developed by Ricardo Sessa in the MEDPRO study.

Table 11. Scenarios hypothesis

Scenarios	Production	Imports	Absorption	Exports
BAU scenario	++	++	+++	+
Mediterranean one global player	+++	+++	++++	++++
EU and SEMCs as regional players	+++	++	+++	++
The EU-Mediterranean area under threat	+	++	++	-

Note. The sign “+” indicates change levels: - for a small decrease; + for a small increase; ++ for a middle increase; +++ for a high increase; ++++ a very high increase.

Source: Author’s assumptions.

The scenarios summarised in Table 11 are detailed by value chains in Table 12 and translated into illustrative growth rates.

Table 12. SEMCs-9 value chains scenarios (growth rates in percent)

Value chains	SEMCs - BAU			Mediterranean one global player			The Euro-Mediterranean area under threat			EU and SEMCs as regional player		
	Pro-duction	Im-port	Ex-port	Pro-duction	Im-port	Ex-port	Pro-duction	Im-port	Ex-port	Pro-duction	Im-port	Ex-port
Animals products	1.2	-1.1	6.3	1.5	1.4	7.9	0.9	-1.3	5.4	1.4	1.3	7.0
Fruit & vegetables	0.6	0.9	-3.6	0.7	1.2	4.5	0.4	1.0	-4.2	0.7	1.1	4.0
Sugar and edible oils	1.2	1.4	10.1	1.5	1.7	12.7	0.8	1.5	8.6	1.3	1.5	11.1
Cereals	-0.1	1.4	5.7	0.1	1.8	7.2	-0.8	1.6	4.9	0.1	1.6	6.3
Fish & crustacean, mollusks & other	3.8	1.9	-6.5	4.7	2.4	4.9	2.6	2.1	-7.7	4.3	2.2	5.9

Source: author’s estimates.

The growth rates in Table 12 are based on the BAU Scenario, which continues the trends observed during the 1997-2007 period. Production and imports would grow at an average pace following the observed trend; export growth would be very small while absorption would grow at a fast pace. Following the BAU scenario, the producers in the southern and eastern Mediterranean countries continue to specialise in a limited number of products. Even with limited access to the EU market, agricultural policy will primarily target foreign markets to the detriment of local markets, encouraging a limited number of advanced producers, while the bulk of producers compete for the domestic market. They will adopt technical innovations without controlling for their impact on exhaustible resources, loss of biodiversity and chemical residuals in food products. The remuneration of producers in the upstream sector will remain low. Supply remains fragmented (fruit, vegetables, cereals) and controlled by intermediaries and the downstream industries.²¹ This scenario results from exogenous variables: no further improvement in EU-Mediterranean agricultural trade relations, price instability of food procurement and vulnerabilities in agricultural trade, environmental degradation and regional divides enhancement, limited and low controlled technological innovation.

Scenario II “Mediterranean – one global player” will stimulate increase in production and imports, and a bigger rise in exports and absorption. Access to the EU market will be improved and much better than in the BAU. A bigger number of producers will receive targeted help and improve their capacities to comply with quality norms. They will obtain better prices and involve a virtuous investment and productivity circle. Agriculture and food are the key issues in EU-Mediterranean cooperation that is built on new foundations of strategic priorities: responsible resource management, measures to ensure the security of food supply and to promote food that is good, clean and fair, integrated regional devel-

²¹ CIHEAM, “Mediterra 2008”, p. 272.

opment, measures to combat climate change, emergence of a farm-to-table agro-food system and devising of a new Common Agricultural Policy that is open to the Euro-Mediterranean region.²²

The scenario, “EU and Med 11 as regional players on the global stage”, relies on the hypothesis that SEMCs compensate the difficult access of their agricultural exports to the EU market through the increase of trade among the SEMCs. A virtuous mechanism is at work: better prices – enabling more investment – leading to higher productivity growth. This mechanism is analogous to the one observed in the “Mediterranean – one global player” scenario. But, the purchasing power in the SEMCs is lower than in the case of improved access to the EU market, and their products are more similar, the benefits of the enhancement of the eastern and southern trade are therefore lower than in scenario II. The effects of scenario III are similar but less marked than scenario II effects.

Less favourable effects come with the scenario “The EU-Mediterranean area under threat”: exports decrease, production remains in quasi stagnation, imports continue to increase, as in the BAU scenario. Absorption increases slowly because of the reduction of national revenue. The main external cause is declining EU-Mediterranean cooperation, resulting in the development of social inequalities and growing migratory flows.

Table 13 presents the observed agricultural value chains’ balances of the SEMCs-9 for the 1994-2007 period and the BAU scenario projections for 2030.

Table 13. Business as usual scenario (BAU) – SEMCs-9 agricultural value chains projection

Value chains	Observed in 2007, kg per capita per year				Scenario business as usual at 2030, kg per capita per year			
	Production	Import	Absorption	Export	Production	Import	Absorption	Export
Animals products	33.4	8.2	40.1	1.5	38.7	7.1	42.8	3.0
Fruit & vegetables	159.8	11.9	149.2	22.5	171.1	13.3	169.9	14.5
Sugar and edible oils	32.8	10.1	40.9	1.9	37.6	11.9	43.4	6.1
Cereals	152.4	234.4	375.2	11.6	150.5	277.9	405.7	22.7
Fish & other	15.9	4.2	19.8	0.3	24.8	5.3	29.9	0.1

Source: Author’s estimates based on Faostat data (<http://faostat.fao.org/site/291/default.aspx>). Source tables are given in annexes A3 to A6.

The projections are based on quantities (kg) per capita and fixed prices (in millions constant US\$ of 2000). The six tables in the annex present the global amounts for the individual scenarios. Our scenarios use the United Nations population data and projections for 2030 (see annex 3).

The BAU scenario for 2030 continues the present trade relations pattern. The NTB limiting the SEMCs-9 fruit and vegetables access to the EU common market, without other export opportunities, mean a higher offer of vegetables and fruits to the SEMCs-9 domestic markets. The relative prices of vegetables and fruit would decrease while their absorption would increase. The fruit and vegetables

²² The scenario II “Mediterranean as one global player” is very close to the Mediterranean integration scenario in the Medterra 2008 projections. “In this scenario world trends are resisted and a regional Euro-Mediterranean market is built up and regulated. The focus is on the quality and typicality of Mediterranean products, a model based on the Mediterranean diet and way of life is promoted, and the natural and cultural resources which are the region’s assets are developed. It is basically the result of a process where domestic and foreign markets are recovered, and the primary aim is to improve the food security and food safety of the local populations. And finally, it contributes to the balanced development of rural areas and promotes environmental protection and biodiversity. In this scenario the aim is to re-localize production taking account of the natural vocations and economic potential of each of the Mediterranean countries, to encourage socially and ecologically responsible consumer behavior, to regulate trade policies as an imperative, to promote regional co-operation based on the complementarity of production systems and markets and to defend common positions in international negotiations (WTO)” Idem, p. 270.



are substitutable by animal products, but not by cereals. The cereal lands cannot be used for other activities without additional investments, but they can be downgraded to pasture land.

The comparison between observed data for the period 1994-2007 and the BAU projections shows a rise in the SEMCs-9 per capita production for all value chains, exception for cereal, which decreases slightly. Exports decrease for fruit and vegetables and sea food and increase for animal products, sugar and edible oils and cereals. Absorption rises for all products, mainly for fruit and vegetables and sea food. SEMCs-9 imports increase in cereals, fruit and vegetables, sugar and edible oils and sea food, while they decrease for animal products.

Table 14 presents the Mediterranean one global player scenario results, followed by the differences with the BAU scenario.

Table 14. 'Mediterranean – one global player' scenario – SEMCs-9 value chains projection for 2030

Value chains	Mediterranean one global player							
	Quantities, kg per capita per year				Difference, percentage with the BAU scenario			
	Production	Import	Absorption	Export	Production	Import	Absorption	Export
Animals products	40.1	9.7	46.1	3.6	3.7	35.2	7.9	19.4
Fruit & vegetables	174.1	13.7	149.6	38.2	1.7	2.8	-12.0	163.3
Sugar and edible oils	38.9	12.4	43.3	8.0	3.5	4.1	-0.3	31.4
Cereals	154.9	289.9	418.1	26.6	2.9	4.3	3.1	17.5
Fish & other	27.6	5.6	32.6	0.6	11.5	5.8	9.1	298.2

Source: author's estimates.

Production improves for all value chains. Imports and exports also increase for all value chains. Imports increase strongly for animal products and exports for fruits and vegetables and sea food. SEMCs-9 domestic absorption decreases for fruit and vegetables. It rises for animal products and sea food. The consumption of sugar and edible oils is stagnant, with a very slight decrease. The rise in cereal consumption is mainly due to an animal feed increase.

Table 15 presents the EU-Mediterranean 'under threat' scenario. For this scenario, the SEMCs-9 agricultural sectors became inward-oriented. Priority is given to food security. The agricultural sector serves as labour force reservoir. It especially retains poor workers because there are fewer job opportunities in urban areas. Productivity grows, but at a lower rate than in the BAU scenario.

Table 15. 'The EU-Mediterranean area under threat' scenario – SEMCs-9 value chains projection for 2030

Value chains	The Euro-Mediterranean area under threat							
	Quantities, kg per capita per year				Difference, in percentage with the BAU scenario			
	Production	Import	Absorption	Export	Production	Import	Absorption	Export
Animals products	37.0	7.0	41.3	2.7	-4.3	-1.6	-3.4	-10.2
Fruit & vegetables	167.6	13.5	167.8	13.4	-2.0	1.3	-1.3	-7.6
Sugar and edible oils	36.1	12.1	43.0	5.2	-4.1	2.0	-0.8	-15.4
Cereals	138.4	283.6	401.5	20.6	-8.0	2.0	-1.0	-9.3
Fish & other	21.7	5.4	27.0	0.1	-12.4	2.7	-9.7	-13.8

Source: author's estimates.

Table 16. 'The EU-Med as regional players' scenario – value chains projection for 2030

Value chains	EU and SEMCs as regional player							
	Quantities in kg per capita per year				Difference in percentage with the BAU scenario			
	Production	Import	Absorption	Export	Production	Import	Absorption	Export
Animals products	39.5	9.5	45.8	3.3	2.2	33.0	7.0	7.4
Fruit & vegetables	172.9	13.5	150.5	35.9	1.0	1.4	-11.4	147.4
Sugar and edible oils	38.4	12.1	43.7	6.8	2.1	2.0	0.7	11.6
Cereals	154.7	283.8	414.4	24.2	2.8	2.1	2.1	6.7
Fish & other	26.5	5.4	31.2	0.6	6.8	2.8	4.5	345.1
Total	39.5	9.5	45.8	3.3	1.6	4.9	-7.1	121.1

Source: author's estimates.

The reduction of production, export and absorption occurs in all value chains. Changes in food consumption patterns prevents a significant decrease in animal products' absorption.

Table 16 shows that the 'EU and Med as regional players' scenario is very close to the 'EU-Med as one global player'. Changes relative to the BAU scenario are somewhat smaller, in production, absorption and trade.

Table 17. SEMCs-9 value chains projection for 2030: value added, value added per worker and workers' numbers following the observed and BAU scenarios

	Observed - 1996-2007	Business as usual	Mediterranean one global player	The Euro-Mediterranean area under threat	EU and SEMCs as regional player
Agricultural Gross Domestic Product (Millions Constant US\$ of 2000)	68,124	111,738	114,646	108,202	113,514
Annual rate of change - 2007-2030		2.17%	2.29%	2.03%	2.24%
Value added per agricultural worker (Constant thousands US\$ of 2000)	3,000	5,400	6,200	4,653	5,700
Annual rate of change - 2007-2030		2.59%	3.21%	1.93%	2.83%
Agriculture and fish active population (Numbers in million)	22,473	20,855	18,599	23,255	19,750
Annual rate of change - 2007-2030		-0.32%	-0.82%	0.15%	-0.56%

Source: author's estimates.

Between the four scenarios, the EU-Mediterranean under threat is the least favourable to revenue generation as it provides the agriculture sector fewer opportunities than the BAU scenario and very much fewer than the outward-oriented scenarios – the Mediterranean as one global player and EU and SEMCs as regional players. Productivity improves for the four scenarios, but more with outward orientation scenarios than in the BAU, and very much more than in the Mediterranean under threat scenario. The EU-Med area under threat scenario would retain a more active labour force in the agricultural sector, with lower revenue per worker and more poverty.



6. Concluding remarks

This paper assesses past trends in agricultural performance in the Mediterranean region and offers a number of prospective scenarios. It used the statistics of production and trade from the agriculture sector for five groups of value chains. The behaviour of the value chains agents relies on price and incentives. Unfortunately, the available data do not enable us to elaborate a coherent series of domestic and international prices and quantities for the main value chains.

The elaboration of the projection scenarios relies on the trends observed. For each scenario, the rate of growth has been adjusted to comply with elasticities that ensure the agricultural and food value chain's dynamic equilibrium.

The agricultural sector is important for the southern and eastern Mediterranean countries because it employs a large share of the active population. It is the main source of income for the poorer segment of the population. It generates a large share of foreign revenues.

Agriculture is the least open sector to foreign trade in the Mediterranean economies. Agricultural policy and trade policy in the SEMCs try to reduce the social impact of its development and show a firm bias towards food security and self-sufficiency. Productivity growth in the agricultural sector leads to a reduction of demand for labour in the sector and contributes to rural-urban migration factors. The migration of small and poor households enables land concentration, which generates economies of scale.

The prospective scenarios exercise reveals that free trade helps to increase production and generate revenues. An inward orientation would lead to a lower productivity growth, a lower migration of agricultural workers to other sectors and a lower decrease of poverty in rural areas.

The European Union is the main partner of the SEMCs in agricultural trade. The agricultural trade policy of the European Union is therefore the key variable in the future evolution of the SEMCs' agricultural performance. The worst performance in terms of revenue and employment generation is the EU-Mediterranean under threat scenario. The BAU scenario is not much better. It puts SEMCs' agricultural export activities in a vulnerable situation, lured by the promise of free access to the EU market and threatened by the implementation of selective protection measures.

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Annex

Table A1. Agricultural GDP and its share in total GDP – Country weights

Countries	Average agricultural GDP				
	(Million US\$ at constant 2000 prices)		Weight in %		SAGR in %
	1994-96	2005-07	1994-96	2005-07	1994-2007
SEMCs-9	55,986	74,323	100.0	100.0	2.6
Turkey	24,362	28,758	43.5	38.7	1.5
Egypt	13,135	18,929	23.5	25.5	3.4
Morocco	5,940	7,359	10.6	9.9	2.0
Algeria	4,090	6,814	7.3	9.2	4.7
Syrian Arab Republic	3,700	6,041	6.6	8.1	4.6
Tunisia	1,876	2,684	3.4	3.6	3.3
Israel	1,701	2,380	3.0	3.2	3.1
Lebanon	967	1,090	1.7	1.5	1.1
Jordan	215	268	0.4	0.4	2.0
World	987,675	1,298,472	1,764.1	1,747.1	2.5

Source: FAO Statistical Yearbook 2009.

Table A2. Agricultural GDP and its share in total GDP

Countries	Agricultural GDP, Million US\$ constant 2000 prices					Share in total GDP, %				
	1994-96	1999-2001	2005	2006	2007	1994-96	1999-2001	2005	2006	2007
SEMCs-9	55,986	61,669	72,974	76,462	73,532	10.7	9.8	9.3	9.2	8.4
Algeria	4,090	4,884	6,469	6,786	7,187	8.7	8.9	9.3	9.6	9.8
Egypt	13,135	15,535	18,301	18,895	19,591	16.9	15.6	15.4	14.9	14.4
Israel	1,701	1,886	2,434	2,405	2,300	1.8	1.6	1.8	1.7	1.5
Jordan	215	169	270	272	263	3.0	2.0	2.4	2.2	2.0
Lebanon	967	1,044	1,121	1,069	1,079	6.5	6.1	5.5	5.2	4.9
Morocco	5,940	5,450	6,882	8,462	6,734	18.0	14.4	14.6	16.6	12.9
Syrian Arab Republic	3,700	4,649	5,715	6,303	6,104	21.5	23.8	24.1	25.2	23.5
Tunisia	1,876	2,391	2,604	2,695	2,752	12.5	12.3	10.8	10.6	10.1
Turkey	24,362	25,661	29,177	29,574	27,522	11.1	10.0	8.7	8.3	7.4
World	987,675	1,125,094	1,270,313	1,296,153	1,328,951	3.6	3.5	3.5	3.4	3.4

Source: FAO Statistical Yearbook 2009.

Table A3. Population: observations and projections for 2030

Countries	1980-95	1996-2007	2030 projection
Algeria	23,656	31,271	44,726
Egypt	53,661	69,738	110,907
Israel	4,373	6,189	9,219
Jordan	3,188	5,008	8,616
Lebanon	2,986	3,842	4,858
Libya	4,035	5,406	8,519
Morocco	23,442	29,241	39,259
Syrian Arab Republic	11,477	16,815	30,560
Tunisia	7,750	9,590	12,127
Turkey	51,666	64,953	90,375
OPA	1,961	3,275	7,320
Total	188,195	245,328	366,486

Source: <http://faostat.fao.org/site/291/default.aspx>.



Table A4. Agricultural value chains balances in kg per head – averages 1980-1995 and 1996-2007

		DZ	EG	IL	JO	LB	LY	MA	SY	TN	TR	PA	Total
1980-1995													
Population		23,656	53,661	4,373	3,188	2,986	4,035	23,442	11,477	7,750	51,666	1,961	188,194
Product per capita	Animals products	19.4	19.0	80.4	19.1	20.1	15.6	14.5	43.8	18.9	72.5	1.5	29.5
	Fruit & vegetables	57.8	118.8	323.5	132.2	277.8	114.5	88.2	164.7	128.0	245.6	9.4	150.9
	Sugar and edible oils	1.3	70.5	7.9	1.6	14.0	19.6	63.9	27.3	17.4	83.3	1.8	29.2
	Cereals	86.2	185.3	68.6	34.1	19.7	65.3	223.0	301.5	173.0	537.3	1.0	154.1
	Fish & other	3.5	4.7	53.4	0.1	28.5	0.5	1.2	0.5	17.8	10.3	0.0	11.0
Import per capita	Animals products	21.9	3.6	5.9	20.7	26.7	4.9	0.2	4.1	9.2	0.5	0.1	9.2
	Fruit & vegetables	3.0	0.7	11.3	36.1	19.9	32.2	0.1	4.5	2.0	0.6	8.8	10.9
	Sugar and edible oils	6.2	4.8	15.4	8.1	5.5	31.2	7.1	2.8	8.7	3.2	0.6	8.8
	Cereals	205.3	146.6	487.0	300.1	209.2	461.8	96.0	102.4	166.2	22.1	40.8	203.4
	Fish & other	3.6	4.3	9.1	3.9	9.3	2.2	1.6	1.4	1.5	1.3	0.0	3.5
Absorption per capita	Animals products	41.4	22.6	84.5	38.1	45.8	20.4	11.5	47.8	27.9	72.6	1.6	37.9
	Fruit & vegetables	60.4	116.8	179.2	93.7	256.8	145.7	71.1	163.4	125.0	227.9	-17.7	129.3
	Sugar and edible oils	7.6	75.3	22.5	9.3	19.4	50.8	70.9	30.1	20.4	85.5	1.1	37.3
	Cereals	291.6	330.1	553.7	319.8	223.4	527.1	317.8	390.9	335.7	527.4	41.7	350.8
	Fish & other	7.1	9.0	60.0	3.9	37.7	2.8	2.7	1.9	19.3	11.1	-3.6	13.8
Export per capita	Animals products	0.0	0.0	1.8	1.7	0.9	0.1	3.2	0.2	0.1	0.4	0.0	0.8
	Fruit & vegetables	0.3	2.7	155.7	74.6	40.9	1.0	17.2	5.8	5.0	18.4	35.9	32.5
	Sugar and edible oils	0.0	0.0	0.8	0.3	0.1	0.1	0.1	0.0	5.7	1.1	1.2	0.7
	Cereals	0.0	1.8	2.0	14.4	5.5	0.0	1.2	12.9	3.6	31.9	0.1	6.7
	Fish & other	0.0	0.0	2.4	0.1	0.0	0.0	0.2	0.0	0.0	0.5	3.7	0.6

		DZ	EG	IL	JO	LB	LY	MA	SY	TN	TR	PA	Total
1996-2007													
Population		31,271	69,738	6,189	5,008	3,842	5,406	29,241	16,815	9,590	64,953	3,275	245,327
Product per capita	Animals products	24.0	27.2	71.1	27.4	23.3	15.6	19.6	47.9	33.9	64.7	12.5	33.4
	Fruit & vegetables	78.8	160.4	241.5	124.7	244.0	113.4	115.3	122.9	161.0	274.0	121.8	159.8
	Sugar and edible oils	0.7	89.1	7.9	2.6	16.3	19.7	61.9	30.4	12.6	87.4	17.4	32.8
	Cereals	94.9	257.1	39.4	14.5	35.0	39.3	197.3	316.6	181.5	484.4	16.9	152.4
	Fish & other	3.8	10.6	79.6	0.2	43.8	0.2	1.6	0.9	24.9	8.9	0.2	15.9
Import per capita	Animals products	21.3	2.4	7.5	18.2	27.4	2.0	0.5	2.5	3.5	0.6	2.1	8.2
	Fruit & vegetables	3.5	0.8	20.4	13.0	21.2	37.2	1.4	5.6	3.3	1.9	22.7	11.9
	Sugar and edible oils	5.6	3.8	15.0	13.3	10.1	21.7	9.5	4.0	13.8	5.4	9.7	10.1
	Cereals	221.1	134.3	531.2	368.7	227.3	392.1	147.6	82.8	250.5	40.9	182.0	234.4
	Fish & other	0.5	5.2	11.8	9.0	9.3	1.5	1.5	2.8	0.5	3.6	0.5	4.2
Absorption per capita	Animals products	45.3	29.3	77.7	39.4	50.1	17.4	15.1	49.4	36.5	64.9	14.5	40.1
	Fruit & vegetables	82.0	156.4	197.8	88.5	228.6	149.8	100.4	103.5	154.1	246.9	133.1	149.2
	Sugar and edible oils	5.9	92.7	22.7	9.4	25.8	41.1	70.4	33.8	17.0	91.3	25.9	40.9
	Cereals	315.9	382.5	567.2	379.7	257.9	431.3	341.5	353.8	414.9	490.3	192.6	375.2
	Fish & other	4.2	15.8	90.3	8.9	52.4	1.7	2.6	3.7	25.3	11.7	0.7	19.8
Export per capita	Animals products	0.1	0.2	1.0	6.1	0.6	0.1	5.0	1.0	0.9	0.4	0.2	1.5
	Fruit & vegetables	0.3	4.8	64.0	49.2	36.5	0.9	16.3	25.0	10.2	29.0	11.3	22.5
	Sugar and edible oils	0.4	0.1	0.2	6.5	0.6	0.3	1.0	0.6	9.3	1.5	1.2	1.9
	Cereals	0.1	8.9	3.4	3.5	4.5	0.1	3.4	45.6	17.2	35.0	6.3	11.6
	Fish & other	0.1	0.1	1.2	0.3	0.6	0.0	0.5	0.0	0.1	0.7	0.0	0.3

Abbreviations: Algeria: DZ ; Egypt: EG ; Israel: IL; Jordan: JO ; Lebanon: LB ; Libyan Arab Jamahiriya: LY ; Morocco: MA; Syrian Arab Republic: SY ; Tunisia: TN ; Turkey: TR ; Palestine: PA/

Source: <http://faostat.fao.org/site/291/default.aspx>.



Table A5. Agricultural value chains balances in kg per head – average annual rate of growth between the two periods – 1980-1995 and 1996-2007

		DZ	EG	IL	JO	LB	LY	MA	SY	TN	TR	OPT	Total
Population		2.8	2.7	3.5	4.6	2.6	3.0	2.2	3.9	2.2	2.3	5.3	2.7
Product per capita	Animals products	2.1	3.6	-1.2	3.7	1.5	0.0	3.0	0.9	6.0	-1.1	23.5	1.2
	Fruit & vegetables	3.2	3.0	-2.9	-0.6	-1.3	-0.1	2.7	-2.9	2.3	1.1	29.2	0.6
	Sugar and edible oils	-5.9	2.4	-0.1	4.8	1.5	0.0	-0.3	1.1	-3.2	0.5	25.7	1.2
	Cereals	1.0	3.3	-5.4	-8.2	5.9	-5.0	-1.2	0.5	0.5	-1.0	33.3	-0.1
	Fish & crustacean, mollusc & other	0.8	8.5	4.1	8.7	4.4	-7.7	3.3	5.0	3.4	-1.5	22.6	3.8
Import per capita	Animals products	-0.3	-4.1	2.5	-1.3	0.3	-8.7	9.7	-4.7	-9.2	2.0	37.7	-1.1
	Fruit & vegetables	1.8	0.8	6.0	-9.7	0.6	1.5	26.9	2.3	5.1	11.1	9.9	0.9
	Sugar and edible oils	-1.0	-2.5	-0.2	5.2	6.3	-3.6	2.9	3.8	4.7	5.3	32.4	1.4
	Cereals	0.7	-0.9	0.9	2.1	0.8	-1.6	4.4	-2.1	4.2	6.4	16.1	1.4
	Fish & crustacean, mollusc & other	-17.7	2.0	2.7	8.7	0.0	-3.9	-1.1	7.0	-10.4	10.9	36.4	1.9
Absorption per capita	Animals products	0.9	2.6	-0.8	0.3	0.9	-1.6	2.7	0.3	2.7	-1.1	24.7	0.6
	Fruit & vegetables	3.1	3.0	1.0	-0.6	-1.2	0.3	3.5	-4.5	2.1	0.8	NA	1.4
	Sugar and edible oils	-2.4	2.1	0.1	0.1	2.9	-2.1	-0.1	1.2	-1.8	0.7	36.9	0.9
	Cereals	0.8	1.5	0.2	1.7	1.4	-2.0	0.7	-1.0	2.1	-0.7	16.5	0.7
	Fish & crustacean, mollusc & other	-5.0	5.8	4.2	8.7	3.4	-4.5	-0.2	6.5	2.8	0.5	NA	3.7
Export per capita	Animals products	23.4	15.6	-5.8	13.5	-3.2	2.5	4.5	20.4	20.0	1.9	24.8	6.3
	Fruit & vegetables	0.5	5.9	-8.5	-4.1	-1.1	-1.0	-0.5	15.8	7.3	4.7	-10.9	-3.6
	Sugar and edible oils	69.1	24.2	-13.0	34.5	21.4	15.6	27.1	47.9	5.1	3.0	-0.6	10.1
	Cereals	19.6	17.5	5.3	-13.1	-2.1		11.1	13.4	17.1	0.9	51.7	5.7
	Fish & crustacean, mollusc & other	13.9	7.1	-6.9	9.0	86.5		12.1	-1.5	8.6	4.3	-46.0	-6.5

Source: author's estimations.



Table A6. Scenarios projection at 2030 in quantities and values

	SEMCs - BAU				Mediterranean one global player				The Euro-Mediterranean area under threat				EU and SEMCs as regional player			
	Pro-duction	Import	Absorp-tion	Export	Pro-duction	Import	Absorp-tion	Export	Pro-duction	Import	Absorp-tion	Export	Pro-duction	Import	Absorp-tion	Export
<i>Quantities in thousand tons</i>																
Animals products	14,175	2,619	15,678	1,116	14,702	3,543	16,912	1,332	13,566	2,577	15,140	1,002	14,489	3,485	16,775	1,198
Fruit & vege-tables	62,712	4,884	62,281	5,315	63,790	5,022	54,818	13,994	61,441	4,950	61,481	4,910	63,357	4,952	55,159	13,151
Sugar and edible oils	13,790	4,356	15,903	2,243	14,273	4,536	15,861	2,947	13,230	4,442	15,774	1,898	14,078	4,445	16,019	2,504
Cereals	55,150	101,848	148,690	8,308	56,772	106,235	153,245	9,762	50,732	103,932	147,131	7,533	56,699	104,020	151,856	8,864
Fish, crus-tacean, mol-lusc, other	9,087	1,929	10,963	53	10,131	2,040	11,963	209	7,964	1,982	9,900	45	9,701	1,984	11,451	234
<i>Values at million constant US\$ of 2000</i>																
Animals products	17,377	3,211	19,220	1,368	18,023	4,343	20,733	1,634	16,630	3,159	18,561	1,229	17,762	4,272	20,565	1,469
Fruit & vege-tables	156,001	12,149	154,929	13,222	158,683	12,492	136,364	34,811	152,838	12,313	152,937	12,214	157,605	12,320	137,212	32,713
Sugar and edible oils	4,103	1,296	4,732	667	4,247	1,350	4,719	877	3,936	1,322	4,693	565	4,189	1,323	4,766	745
Cereals	7,835	14,469	21,124	1,180	8,065	15,093	21,771	1,387	7,207	14,765	20,903	1,070	8,055	14,778	21,574	1,259
Fish, crus-tacean, mol-lusc, other	12,619	2,679	15,225	73	14,070	2,834	16,613	290	11,060	2,752	13,749	63	13,472	2,755	15,903	325
Total	197,936	33,805	215,230	16,511	203,088	36,111	200,201	38,999	191,672	34,311	210,843	15,140	201,083	35,447	200,020	36,511

Sources: author's estimation.





About MEDPRO

MEDPRO – Mediterranean Prospects – is a consortium of 17 highly reputed institutions from throughout the Mediterranean funded under the EU’s 7th Framework Programme and coordinated by the Centre for European Policy Studies based in Brussels. At its core, MEDPRO explores the key challenges facing the countries in the Southern Mediterranean region in the coming decades. Towards this end, MEDPRO will undertake a prospective analysis, building on scenarios for regional integration and cooperation with the EU up to 2030 and on various impact assessments. A multi-disciplinary approach is taken to the research, which is organised into seven fields of study: geopolitics and governance; demography, health and ageing; management of environment and natural resources; energy and climate change mitigation; economic integration, trade, investment and sectoral analyses; financial services and capital markets; human capital, social protection, inequality and migration. By carrying out this work, MEDPRO aims to deliver a sound scientific underpinning for future policy decisions at both domestic and EU levels.

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Description	MEDPRO explores the challenges facing the countries in the South Mediterranean region in the coming decades. The project will undertake a comprehensive foresight analysis to provide a sound scientific underpinning for future policy decisions at both domestic and EU levels.
Mediterranean countries covered	Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia and Turkey
Coordinator	Dr. Rym Ayadi, Centre for European Policy Studies (CEPS), rym.ayadi@ceps.eu
Consortium	Centre for European Policy Studies, CEPS , Belgium; Center for Social and Economic Research, CASE , Poland; Cyprus Center for European and International Affairs, CCEIA , Cyprus; Fondazione Eni Enrico Mattei, FEEM , Italy; Forum Euro-Méditerranéen des Instituts de Sciences Economiques, FEMISE , France; Faculty of Economics and Political Sciences, FEPS , Egypt; Istituto Affari Internazionali, IAI , Italy; Institute of Communication and Computer Systems, ICCS/NTUA , Greece; Institut Europeu de la Mediterrania, IEMed , Spain; Institut Marocain des Relations Internationales, IMRI , Morocco; Istituto di Studi per l’Integrazione dei Sistemi, ISIS , Italy; Institut Tunisien de la Compétitivité et des Etudes Quantitatives, ITCEQ , Tunisia; Mediterranean Agronomic Institute of Bari, MAIB , Italy; Palestine Economic Policy Research Institute, MAS , Palestine; Netherlands Interdisciplinary Demographic Institute, NIDI , Netherlands; Universidad Politecnica de Madrid, UPM , Spain; Centre for European Economic Research, ZEW , Germany
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