# Chapter 7
# Agriculture

**Saad Belghazi**

## 7.1 Introduction

This chapter analyzes agriculture trends and policies in the SEMC since 1994 based on reviews published by the FAO and the WTO. Section 7.2 contains basic economic characteristic of the agriculture sector in the SEMC. Section 7.3 analyzes agriculture trade. Section 7.4 offers and overview of agriculture policies, including public support to agriculture and trade protection. Section 7.5 deals with productivity and employment in the SEMC's agriculture sector and Sect. 7.6 concludes.

## 7.2 Economic Trends in the SEMC Agriculture Sector

### *7.2.1 Share of Individual SEMC in the Region's Agriculture Output*

The agricultural production of the SEMC-9 (all SEMC except Palestine and Libya) amounted to USD73.5 bn at constant 2000 prices in 2007. Its share in the world agricultural production remained constant at 5.5 % between 1994 and 2007.

In 2005–2007, five countries - Turkey, Egypt, Morocco, Algeria and Syria – contributed more than 91 % of the total agricultural output of the SEMC-9, of which Turkey accounted for about 39 %, Egypt for 25.5 %, Morocco for nearly 10 %, and Algeria for slightly more than 9 % of the SEMC-9 total. Average growth of agricultural output between 1994–1995 and 2005–2007 was highest for Algeria

S. Belghazi (✉)
Independent Consultant
e-mail: saad.belghazi@gmail.com



R. Ayadi et al. (eds.), *Economic and Social Development of the Southern and Eastern Mediterranean Countries*, DOI 10.1007/978-3-319-11122-3_7

**Table 7.1** Consumption of ten major vegetal foods, 2003–2005 (From the FAO Statistical Yearbook 2009)

| Regions/ countries | Dietary energy consumption (kcal/person/day) | | | | | 2007 GDP per capita (USD constant 2000 prices) |
|---|---|---|---|---|---|---|
| | Cereals and pulses | Sugar raw eq. | Potatoes | Soybean oil | Animal foods | |
| Israel | 1,243 | 273 | 86 | 386 | 728 | 21,994 |
| Libya | 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 |
| Syria | 1,441 | 350 | 51 | 38 | 430 | 1,269 |
| Palestine | 1,025 | 213 | 23 | 82 | 283 | |
| SEMC | 1,774 | 286 | 76 | 86 | 303 | |
| World | 1,996 | 196 | 62 | 84 | 429 | 5,924 |

and Syria, slower for Egypt, Israel and Tunisia and the slowest for Morocco, Jordan, Turkey and Lebanon.

### *7.2.2 Demand Patterns*

The food demand structure in the SEMC depends on average per capita income, distribution, and the dietary habits of the societies (Table 7.1). Although the availability of food is sufficient (2,700–3,500 cal per person per day), the primary energy content of food intake is low (only 20 % is composed of animal products).

Between 1965 and 2005, food consumption in the SEMC grew considerably: by 800 kcal per person per day. Cereal products represent a greater share in the consumption basket of the poorest households as compared with the better-off population groups, due to their lower prices and the policies of several governments to subsidize wheat flour and barley grains as a tool to fight poverty. However, it comes at expense of the consumption of fruit, vegetables, meat and fish, i.e. food products recommended for health reasons.

### 7.2.3 Production Pattern

Except for fresh fruit and vegetables, almost all agricultural products consumed in the SEMC are subject to agro-industrial processing. Agro-industry production and commercial chains have rapidly replaced family production and the informal sector. The development of logistics and transportation has allowed for economies of scale and the technical opportunity of packing has allowed for preserving the quality of food products. As a result of subsidies granted to basic food products such as cereals, oil, sugar and powdered milk, rural consumers have progressively abandoned self-consumption and traditional products in favor of manufactured food purchased on the market.

Between the 1960s and 1980s, the competitiveness of manufactured food products relied largely on imports, made cheaper by subsidies granted by the big exporting countries such as the US and EU. In subsequent decades, the government policies in the SEMC were driven by food self-sufficiency objectives.

Compared to domestic demand, four SEMC have a surplus in cereal production, while seven have deficits (Table 7.2). All SEMC have a surplus in roots and tubers. Animal production is almost balanced with consumption needs. The SEMC are experiencing a huge shortage in vegetable oils and sugar.

The situation differs across countries, however. While some SEMC like Turkey enjoy food self-sufficiency, others, like Syria and Egypt, have achieved this objective only partially; progress in self-sufficiency in cereals was accompanied by deficits in sugar and vegetable oil. Algeria and Morocco were cereal exporters in the 1950s but in the early 1960s they became structural importers.

**Table 7.2** Ratio of production to food supply, 2003–2005 (From FAO Statistical Yearbook 2009)

| Regions/ countries | Cereals | Vegetable oils | Sugar and sweeteners | Roots and tubers | Meats | Milk |
|---|---|---|---|---|---|---|
| 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 |
| Libya | 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 |
| Palestine | 0.13 | 0.49 | 0.00 | 1.12 | 0.88 | 0.89 |
| Syria | 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 |
| SEMC | 1.28 | 0.64 | 0.57 | 1.27 | 0.94 | 1.01 |
| World | 2.15 | 1.66 | 1.15 | 1.74 | 1.02 | 1.21 |

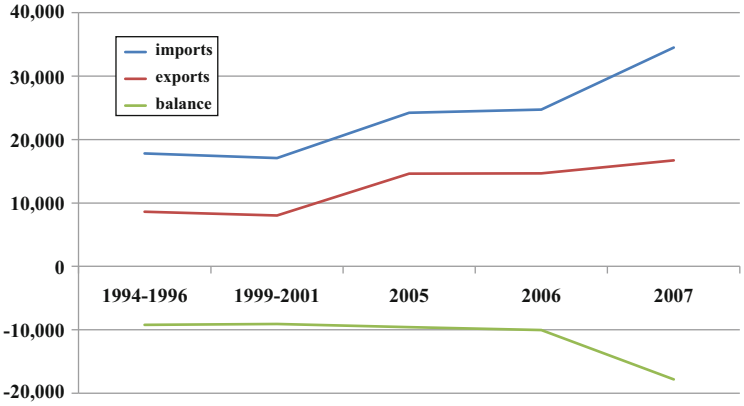


**Fig. 7.1** SEMC's agricultural trade, USD mn, 1990–2009 (From www.faostat.org)

## 7.3 Agriculture Trade

### *7.3.1 Agricultural Trade Balance of SEMC*

The SEMC are net importers of agricultural products (Fig. 7.1).

Between 2000 and 2009, the trade balance in agricultural products improved for Turkey, Syria, Tunisia, Jordan, Lebanon and Egypt and thus for the SEMC as a whole, given Turkey's regional weight. However, the trade balance deteriorated in Morocco.

In terms of individual countries' shares, Turkey represented 43 % of total SEMC exports in both 2000 and 2009. Egypt's share in total exports 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, such as Turkey (21 %), Algeria (15 %), Lebanon (6 %) and Jordan (5 %). Slight decreases were noted for Israel (from 12 % to 9 %), Egypt (from 22 % to 20 %), Tunisia (from 5 % to 4 %) and Morocco (from 10 % to 9 %). Increases were recorded for Libya (from 0 % to 4 %) and Syria (from 4 % to 7 %).

### *7.3.2 Agricultural Trade Between the SEMC and the EU*

The SEMC-10 (all except Libya) accounted for 6.8 % of total EU agricultural product imports in 2008 (Table 7.3). The shares of the largest exporters, Turkey (3.2 %) and Morocco (1.7 %), increased as compared with 2006. Israel's share approached 1 %, at about EUR1 bn, while EU imports from Egypt increased from EUR512 mn in 2006 to EUR603 mn in 2010 (0.5 % of total EU import). Tunisia's

**Table 7.3** Share of SEMC in EU agriculture imports and exports, % of total, 2008 (From Eurostat, Comext, DG Trade, March 2011)

| Country | Imports (%) | Exports (%) |
|---|---|---|
| Algeria | 0.0 | 2.5 |
| Egypt | 0.5 | 2.2 |
| Israel | 0.9 | 1.1 |
| Jordan | 0.0 | 0.5 |
| Lebanon | 0.0 | 0.7 |
| Morocco | 1.7 | 1.5 |
| Palestine | 0.0 | 0.0 |
| Syria | 0.1 | 0.5 |
| Tunisia | 0.4 | 0.8 |
| Turkey | 3.2 | 3.2 |
| SEMC-10 | 6.8 | 13.0 |

agriculture exports to the EU fell from EUR745 mn in 2006 to EUR438 mn in 2010, i.e. by more than 41 %. Exports from Jordan, Syria, Lebanon and Palestine are very small.

Shares of agricultural products in total exports to the EU are high in Palestine (59.6 % in 2010, even if it was less than EUR6 mn) and Morocco (24.8 % in 2010). In 2010, these shares amounted to 8.4 % in Turkey, 9.1 % in Israel, 8.5 % in Egypt and 7.8 % in Jordan.

EU exports to the SEMC-10 amounted to 13 % of total EU agricultural exports in 2008. Turkey was the main food importer from the EU. The share of agricultural products in the region's total imports from the EU increased.

EU exports to the SEMC face tough competition from other countries and regions, especially for cereals (where the US, Canada, Argentina, Russia, Ukraine and Australia are the main competitors). The bulk of EU exports to the SEMC is destined for Egypt, Algeria and Morocco. But the amounts may vary from year to year, depending on the domestic production of these commodities, importers' strategies and trade policy arrangements. For instance, access to the Moroccan internal market is restricted by customs duties, which increase when the domestic cereal harvest is high.

The EU's agricultural trade balance with the SEMC was negative in 2006 but became substantially positive in 2008 and 2010 (Table 7.4). In 2010 it was negative only with Turkey and Morocco. Changes in this balance result, to a large extent, from fluctuations in Algeria's import of cereals from the EU which depends on weather conditions that affect domestic cereal production. The same concerns fluctuation in cereal production in other SEMC.

**Table 7.4** EU agricultural trade with the SEMC, EUR mn, 2010 (From Eurostat, Comext, DG Trade, March 2011)

| Country | Imports | Exports | Balance |
|---|---|---|---|
| Algeria | 34.6 | 2,333.1 | 2,299 |
| Egypt | 602.9 | 2,057.2 | 1,454 |
| Israel | 1,009.2 | 1,037.0 | 28 |
| Jordan | 18.6 | 440.6 | 422 |
| Lebanon | 54.4 | 671.2 | 617 |
| Morocco | 1,912.0 | 1,330.8 | −581 |
| Palestine | 5.5 | 10.8 | 5.3 |
| Syria | 80 | 452.4 | 372 |
| Tunisia | 438.2 | 715.1 | 277 |
| Turkey | 3,519.4 | 2,907.3 | −612 |
| SEMC-10 | 7,674.8 | 11,955.5 | 4,275 |

## 7.4 Agricultural Policies, Trade Protection and Public Support

Six SEMC – Egypt, Israel, Jordan, Morocco, Tunisia and Turkey - are members of the WTO. Algeria, Lebanon, Libya and Syria only have observer status. Based on the WTO country reviews (WTO 2005, 2006, 2008, 2009), this section analyzes long-term strategies in agricultural policies, domestic market protection measures, agricultural support policies and market control and regulatory institutions.

Under the WTO rules, member countries are committed to keeping their import tariffs below the bounded tariffs, renouncing NTM and reducing 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. However, the SEMC frequently use variable import tariffs and quotas as well as producer incentives and subsidies. The majority of SEMC also provide consumer subsidies that lower prices for consumers at the cost of undermining producer incentives. The export sector is supported through direct subsidies and administrative support. But the main export incentives come from selective preferential access to the EU market as a result of complex trade negotiations with the EU.

### *7.4.1 Long-Term Trends in Agricultural Policies*

The SEMC have long-term strategies for their agricultural sector. The agriculture sector plays a key role in the growth model of Morocco, Turkey, Egypt, Syria and Tunisia. Government policies support productivity and technical upgrading. Even if SEMC general economic policies include privatization, increased competition in local markets and the development of competitiveness, governments continue to

resort to the selective protection of some key agricultural products on the domestic market and support their exports.

In **Egypt,** the strategy of agriculture development 1997/1998–2016/2017 aims at increasing the annual growth rate of agricultural production, encouraging domestic and foreign investment in the agriculture sector (especially in the newly reclaimed areas), developing animal production (particularly small ruminants, poultry and fisheries) and intensifying agricultural research. To achieve these objectives, the government provides financial assistance to the agricultural sector in the form of subsidized electricity and water, the latter 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, SPS measures, planning, and marketing.

In **Jordan**, the government adopted the National Strategy for Agricultural Development for 2002–2010. Its objectives were to create a suitable environment for private sector investment in agriculture, improve processing and marketing of agricultural products, conserve Jordan's natural resources, improve employment and income opportunities and reduce the deficit in the agricultural trade.

In **Morocco**, the main agricultural policy objectives are food security, the improvement of farmers' incomes and the conservation of natural resources. The *Plan Maroc Vert* adopted in 2008 aims to make agriculture the engine of economic growth in the next decade through two pillars: (i) support to high value-added activities, including a strong export performance, and (ii) the 'Agriculture Solidaire' oriented towards the small farm sector.

Historically, **Tunisian** agriculture policy has involved public investment in infrastructure, subsidies for private investment, price stabilization, training and extension, import protection in the interests of rural development, food security and self-sufficiency, and social stability. With the exception of wheat, agricultural production has been substantially liberalized; input and interest rate subsidies have been practically eliminated, the price of water continues to be adjusted towards cost recovery, and 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 included four objectives: (i) phasing out price support and credit subsidies and replacing them with a less distortionary 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, and (iv) facilitating the transition from the diverse crops value chain to efficient production patterns.

**Table 7.5** Trade protection in SEMC in 2010, simple average of import duties (From WTO Trade Profiles and Tariff Profiles www.wto.org, October 2010)

| Countries | Algeria | Egypt | Israel | Jordan | Lebanon | Morocco | Tunisia | Turkey |
|---|---|---|---|---|---|---|---|---|
| WTO accession date | Observer | 1995 | 1995 | 2000 | Observer | 1995 | 1995 | 1995 |
| MFN tariffs (final bound) | | | | | | | | |
| 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 ad-valorem duties (% tariff lines) | | 0.2 | 5.9 | 0.1 | | 0.0 | 0.0 | 0.1 |
| MFN tariffs (applied 2008) | | | | | | | | |
| 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 ad-valorem duties (% tariff lines) | 0.0 | 0.2 | 4.7 | 0.1 | 6.0 | 0.0 | 0.0 | 0.6 |
| MFN duty free imports (% of imports) | | | | | | | | |
| 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 |

### 7.4.2 Trade Protection and Subsidies to the Agricultural Sector

The six SEMC that are WTO members have generally high bounded tariffs (Table 7.5). They are higher for agricultural products than for manufactured ones. The agricultural bounded tariffs range from 23 % (Jordan) to 116 % (Tunisia) while those for non-agricultural products range from 11.2 % (Israel) to 40.5 % (Tunisia). Average applied rates are lower than the bounded rates, but still higher than those applied to industrial products.

In **Egypt** the simple average tariff on agricultural goods (ISIC Rev.2 definition) and the applied weighted average tariff on agricultural goods amounted to 66.4 % and 5.8 %, respectively, in January 2005. Applied tariffs were relatively high on meat and edible meat offal (21.2 %), and edible fruits and nuts (14.4 %). The highest agricultural tariff of 40 % is applied to 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 TRQ.

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). The program to encourage the use of local cotton was terminated in 2003. Financial assistance to the agriculture sector is provided in the form of subsidized electricity and water, the latter being provided almost free of charge to farmers. The government subsidizes a number of food products for low-income groups, most notably bread, sugar, and oil. Subsidies for fertilizers and pesticides were removed in the mid-1990s.

Farmers in **Israel** 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 %. Around 40 % of agricultural goods enter Israel duty free compared with around 51 % of non-agricultural products (due to the FTA with the EU). 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 %). Domestic support for agriculture, as measured by the current total AMS, amounted to USD282 mn in 2003. At that time, around 76 % of product-specific AMS (plus *de minimis* support)[1] was for milk production, while around 19 % was for eggs. Price support constitutes the main instrument of income support. It accounted for 88.1 % of total product-specific AMS in 2003.

In **Jordan** the simple average applied MFN tariff on agricultural products was 17.1 % in 2008. Applied MFN tariffs averaged 16.7 % on agricultural products. The

[1] 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.

applied MFN import duties for vegetables were in the range of 0–30 % with a simple average of 16.7 %, but for tomatoes and cucumbers they amounted to 30 %. For fruit they were in the range of 10–35 %, with a simple average of 25.6 %. However, in the case of oranges, they were 35 % from May to the end of February. Imports of bananas, grapes and apples were subject to even higher compound duties. Applied MFN tariffs in the livestock subsector were in the range of 0–30 % with a simple average of 5 % for live animals and 12.9 % for meat (incl. edible offal). They amounted to 5 % on beef, lamb, and goat meat, with the exception of ground meat for hamburgers (21 %), 22 % for pork and 0–30 % for poultry meat. 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, by 13.3 % over a six-year implementation period starting in 2000.

In **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 TRQ are granted to imports of certain agricultural products, such as red meat and poultry meat, apples, almonds, and wheat and wheat products from the US under the FTA (since January 2006) or from the EU under the FTA with the EU. With the exception of common wheat, for which the annual quota volume varies with domestic production, the import quantities for other cereals are fixed.

In **Tunisia** customs duties are very high on most agricultural goods that compete with domestic production. TRQ for imports fluctuate enormously from year to year, except for cheese, soft wheat and sugar, the quotas for which are completely used every year. Tunisia applies preferential TRQ to several agri-food products imported from the EU under the FTA. With respect to meat, dairy produce, cereals and sugar, which are also covered by the WTO TRQ, exports from the EU may draw either on the WTO quota or on the preferential quota. However, imports from the EU under TRQ are zero-rated; moreover, these quotas also cover other agricultural products such as eggs, poultry, potatoes, hazelnuts, maize (corn), goats and goats meats, malt, starch, certain flours, fats, oils, glucose, and dog and cat food. Tunisia also intends to open additional preferential TRQ under its bilateral FTA with EFTA countries. Tunisia's last notification to the WTO concerning domestic support was in 2002.

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

Under the WTO Uruguay Round, Turkey agreed to reduce its budgetary outlays for export subsidies for 44 products by 24 %, and the volume of subsidized exports by 14 % in equal installments over a 10-year period starting in 1995.

Turkey and the EU have agreed to work towards bilateral free trade in agricultural goods to complement their CU that applies to trade in industrial products (see Chap. 3). Processed agricultural products imported from the EU are subject to customs duties comprised of an industrial and an 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 FTA with the EU and other partners delay the exposure of these products to greater competition.

## 7.5 Productivity and Employment in Agriculture

The growth of agriculture productivity depends on the modernization of traditional production structures and the ability to address natural resource, environmental and climate change constraints.

### *7.5.1 Productivity Trends Per Agricultural Worker*

Apparent agricultural productivity can be measured as the value added per active worker at constant prices. Table 7.6 shows the average annual rate of growth of apparent productivity in the SEMC-9 from 1990 to 2008. The trend was estimated using the OLS regression of Eq. 7.1:

**Table 7.6** Agricultural apparent productivity growth in SEMC, 1990–2008 (Own estimates based on the World Bank data base www.worldbank.org)

| Country | Trend | $R^2$ |
|---|---|---|
| Algeria | 0.015 | 0.543 |
| Egypt | 0.028 | 0.995 |
| Israel | 0.039 | 0.816 |
| Jordan | 0.010 | 0.066 |
| Lebanon | 0.063 | 0.985 |
| Morocco | 0.024 | 0.340 |
| Syria | 0.031 | 0.806 |
| Tunisia | 0.014 | 0.446 |
| Turkey | 0.024 | 0.918 |

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

$$V = bT + C + u \tag{7.1}$$

where $V$ stands for the logarithm of the agricultural value added per worker at constant 2000 USD, $T$ for the time, $C$ for the constant and $u$ for the estimation error.

Productivity rose in all SEMC-9. The highest increase was observed in Lebanon, Israel and Syria (6.3 %, 3.9 % and 3.1 %, respectively). A slower increase (between 2.4 % and 2.8 %) was observed in Egypt, Turkey and Morocco and the slowest one was observed in Tunisia, Jordan and Algeria. From 1994 to 2007, SEMC-9 average productivity increased from USD2,300 per year to USD3,000 in constant 2000 prices. These numbers reflect large cross-country disparities, from USD42,600 for the Israeli worker to 2,100 USD per Moroccan worker in 2007. The pace of apparent productivity growth in the agricultural sector in SEMC-9 was higher than in the world (2 %) during the 1994–2007 period.

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

### *7.5.2 Productivity Growth Determinants: Land, Water and Capital*

Irrigation and equipment are the main factors that affect productivity growth in SEMC agriculture. These factors can compensate for structural rain scarcity in the region and climate change effects. Judicious investments are 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 the total cultivated land increased slowly from 17.3 % in 1994–1996 to 18.5 % in 2007. The highest relative increases were observed in Israel, Morocco, Turkey and Syria, i.e., the countries with the biggest arable land areas.

The change in the weight of irrigated land share is correlated with the change of the agricultural capital stock per active worker. Table 7.7 shows that in all SEMC, the capital stock per worker rose from 6,099 USD (at constant 1995 prices) in 1979–1981 to 8,029 USD in 2003, an average annual increase of 3.5 %. Egypt, Algeria and Palestine remained below the SEMC average, Morocco and Jordan stayed close to this average and Turkey stood at a slightly higher level. Syria and Tunisia had a level that was nearly twice the average, Israel and Lebanon were at five to six times the average and Libya was at more than ten times the average level.

**Table 7.7** Agricultural capital stock per worker and structure of the capital stocks (FAO Statistical Yearbook 2009 www.faostat.fao.org)

| Countries/ regions | Agricultural capital stock per agricultural worker, USD thousand constant 1995 prices | | | Share in capital stocks, % | | | |
|---|---|---|---|---|---|---|---|
| | | | | Machinery | Land | Livestock | Other |
| | 1979–1981 | 1989–1991 | 2003 | 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 |
| Libya | 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 |
| Palestine | 4,042 | 4,471 | 5,725 | 18.3 | 61.2 | 19.3 | 1.2 |
| Syria | 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 |
| SEMC | 6,099 | 7,020 | 8,029 | 16.6 | 66.4 | 16.5 | 0.5 |

### 7.5.3 *Social Factors: Demography, Poverty and Rural Employment*

The development of agricultural productivity is challenged by social factors, especially continued illiteracy, poor education quality (which limits the incentives and capacities to innovate – see Chaps. 16 and 17), and a high rate of population growth.

The working age population in the SEMC is growing rapidly while job creation lags behind labor supply. The number of net entries into the labor market in the Arab SEMC between 1995 and 2025 can be estimated between 80 and 85 mn, with some 45 mn for the period 2005–2020, i.e. an average of 3 mn entries annually over these 15 years. Hence, a huge number of jobs would have to be created in these countries to prevent unemployment from increasing further above its already high levels. But tension in the labor market is felt mainly 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.

The permanent social crisis in the small farm agricultural sub-sector is the cause of the unstoppable expansion of towns with all of its corollaries such as overpopulation, uncontrolled urban sprawl cutting off agricultural land, destruction of the coasts, growth of unregulated spontaneous housing, the development of squalid marginal districts, environmental pollution, land speculation, unplanned urbanism, rising crime, and inadequate or inappropriate infrastructure.

The active population in agriculture in the SEMC was nearly 25 mn in 1994–1996 and 24.5 mn in 2007 (Table 7.8). Thus it fell by only 0.2 % per year on

**Table 7.8** Economically active population in agriculture (From FAO Statistical Yearbook 2009)

| | Economically active population in agriculture, thousand | | | | | Share in total economically active population, % | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Countries | 1994–1996 | 1999–2001 | 2005 | 2006 | 2007 | 1994–1996 | 1999–2001 | 2005 | 2006 | 2007 |
| SEMC | 24,955 | 24,827 | 24,593 | 24,597 | 24,461 | 34 | 30 | 27 | 26 | 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 |
| Libya | 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 |
| Syria | 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 |

average. However, Lebanon, Libya, Israel and Turkey experienced a more substantial reduction in the agricultural population. Morocco, Palestine and Jordan experienced a small decrease while in Algeria and Egypt, the growth rates were positive. They were particularly high in Algeria (2.6 % per year), which may be explained by the improvement of the political situation in this country and the return of the bulk of farmers to their lands.

## 7.6 Concluding Remarks

The agricultural sector is important for the SEMC because it employs a large share of their economically active population. It is also the main source of income for the poorer segments of the population. It generates a large share of export revenues.

However, agriculture is the least open sector of the SEMC economies. Agricultural and trade policies try to reduce social impact and show a firm bias towards food security and self-sufficiency. Productivity growth leads to a reduction of demand for labor in agriculture and contributes to rural–urban migration. The migration of small and poor households enables land concentration, which generates economies of scale.

Looking towards the future, free trade will help increase production and generate revenues while an inward orientation will lead to lower productivity growth, less migration of agricultural workers to other sectors, and a smaller reduction in poverty in rural areas.

The EU is the main SEMC partner in agricultural trade. Therefore the EU agricultural policy can seriously influence the future evolution and performance of SEMC's agriculture sector.

## References

FAO Statistical Yearbook (2009) FAO Statistical Yearbook 2009. Food and Agriculture Organization of the United Nations, Rome. http://www.fao.org/docrep/014/am079m/pdf/am079m00a.pdf. Accessed 27 Sept 2014

WTO (2005) Egypt: trade policy review- revision. Report by the Secretariat. World Trade Organization WT/TPR/S/150/Rev.1

WTO (2006) Israel: trade policy review- revision. Report by the Secretariat. World Trade Organization WT/TPR/S/157/Rev.1

WTO (2008) Turkey: trade policy review- revision. Report by the Secretariat. World Trade Organization WT/TPR/S/192/rev.1

WTO (2009) Kingdom of Morocco: trade policy review- revision. Report by the Secretariat. World Trade Organization WT/TPR/S/217/rev.1