



Thinking Ahead  
for the Mediterranean

## WP 8 - Scenario building and impact assessment

# Quantitative Reference Scenario for the MEDPRO Project

Leonidas Paroussos, Kostas Fragkiadakis,  
Ioannis Charalampidis, Stella Tsani and Pantelis Capros

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### Abstract

In general equilibrium models the reference scenario is important, as the evaluation of the alternative policies modelled is based on their deviation from the reference scenario. The reference scenario relates to the development of an economic outlook for each region and sector of the model. This means that assumptions are made about the main drivers of growth, e.g. population growth and technical progress. This report provides the main assumptions used for the development of the reference scenario in the MEDPRO project. The report also provides a brief country and sectoral overview for each of the southern and eastern Mediterranean countries covered by the MEDPRO project.

Leonidas Paroussos, Kostas Fragkiadakis, Ioannis Charalampidis and Stella Tsani are Fellows at E3M Lab, Institute of Communication and Computer Systems (ICCS), National Technical University of Athens; Pantelis Capros is the Director of the E3M Lab.

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## 1. Introduction

The aim of this report is to document the development of the *reference scenario* of the GEM-E3-MEDPRO model, a version of the GEM-E3 model developed for the MEDPRO project. The development of the reference scenario is of primary importance given that in general equilibrium models, it is the deviations from the reference scenario that are key for policy evaluation. Within the MEDPRO project, the GEM-E3-MEDPRO model has been extended in order to consistently evaluate the impact of Euro-MED integration and of different cooperation policies. The GEM-E3-MEDPRO model covers the whole world and is based on the GTAP (v.8)<sup>1</sup> database and on a database developed by the E3M Lab for each of the 11 southern and eastern Mediterranean countries (SEMCs) covered by the project, namely Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine, Syria, Tunisia and Turkey.

The starting point for the construction of the GEM-E3-MEDPRO reference scenario is the base year (the latest year for which data are available), i.e. 2007, social accounting matrices (SAMs). In the SAMs, the structure of the production function of each economic activity, the consumption patterns of households, the interdependencies among the different economic activities as well as the openness of the economy and the trade interlinkages between regions are defined.

The reference scenario relates to the development of an economic outlook for each region and sector of the model. This means that assumptions are made about the main drivers of growth, e.g. population growth, and exogenous growth. The following section summarises the regional and sectoral disaggregation of the GEM-E3-MEDPRO model, along with the assumptions on the main drivers of growth (such as population and labour force employed) in the reference scenario, and gives a brief country and sectoral overview of each SEMC.

## 2. The reference scenario

### 2.1 Sectoral and regional aggregation

The GEM-E3-MEDPRO model considers 19 countries/regions and 23 economic activities. It extends up to 2030 with five-year time steps. The sectoral and regional detail of the model is presented in Table 1 and Table 2 respectively.

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<sup>1</sup> See Global Trade Analysis Project (<https://www.gtap.agecon.purdue.edu/>).



Table 1. GEM-E3-MEDPRO sectoral aggregation

No.	Sector	No.	Sector
1	Agriculture	13	Transport equipment
2	Animal products	14	Consumer goods industries-Food
3	Coal	15	Consumer goods industries-Rest
4	Crude oil	16	Textiles and clothing
5	Oil refining	17	Construction
6	Natural gas extraction	18	Transport
7	Gas distribution	19	Communication
8	Transmission and distribution of electricity	20	Business-Financial services
9	Water	21	Public services
10	Chemical products	22	Recreational and other services
11	Other energy intensive	23	Dwellings
12	Electric goods – Other equipment goods		

Table 2. GEM-E3-MEDPRO regional aggregation

Country/region	Code	Country/region	Code
Algeria	DZA	Turkey	TUR
Egypt	EGY	EU-10 countries <sup>a)</sup>	R15
Israel	ISR	New EU member states <sup>b)</sup>	NEU
Jordan	JOR	Southern EU member states <sup>c)</sup>	EUS
Lebanon	LBN	Emerging Asian economies <sup>d)</sup>	EAE
Libya	LBY	Rest of the OECD countries <sup>e)</sup>	ROECD
Morocco	MAR	Rest of the emerging economies <sup>f)</sup>	REE
Palestine	PAL	Rest of the Middle East <sup>g)</sup> (the Gulf region)	ME
Syria	SYR	Rest of the world	ROW
Tunisia	TUN		

<sup>a)</sup> Austria, Belgium, Denmark, Finland, Germany, Ireland, Luxembourg, Netherlands, Sweden and the UK

<sup>b)</sup> Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Slovakia, Slovenia, Bulgaria and Romania

<sup>c)</sup> Cyprus, France, Greece, Italy, Malta, Portugal and Spain

<sup>d)</sup> China, Hong Kong, Taiwan, Indonesia, Malaysia, Philippines, Singapore, Thailand, Vietnam and India

<sup>e)</sup> Australia, New Zealand, the Rest of Oceania, Japan, Korea Republic, Canada, the US, the Rest of North America, Switzerland, Norway and the Rest of EFTA

<sup>f)</sup> Mexico, Argentina, Brazil, Chile, Venezuela, Albania, Belarus, Croatia, Russian Federation, Ukraine, the Rest of Eastern Europe, the Rest of Europe, Kazakhstan, Kyrgyzstan, the Rest of the Former Soviet Union, Azerbaijan and Georgia

<sup>g)</sup> Armenia, Bahrain, Iran Islamic Republic, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates, Yemen and Iraq



## 2.2 Population and labour force

Population data have been extracted from the International Labour Statistics database of the International Labour Organization (ILO) and the World Bank database.<sup>2</sup> Projections regarding the EU countries have been extracted from the *2012 Ageing Report* prepared by the European Commission (2011). For the rest of the model countries (excluding the SEMCs), the projections provided by the ILO up to 2020 have been employed. For the period 2020–30, the trends of the 2015–20 projection period are assumed to continue. For the SEMCs, the estimations of population growth for the period 2015–30 have been based on the population projections provided by Groenewold et al. (2011). These were built on the qualitative analysis of Ayadi and Sessa (2011) and were developed under four alternative demographic scenarios (S1–S4) up to the year 2050 for each of the SEMCs.

For the reference scenario, the population projections of scenario S1 have been used. This scenario describes a demographic future in which past trends are extrapolated. The assumptions underlying the S1 demographic projections state that the EU and the SEMCs fail to upgrade their partial and ad hoc style of cooperation into a coherent framework of action and collaboration on key political, security, economic, socio-cultural and environmental issues. In this scenario, the net migration rates observed over the period 2005–10 for individual countries are assumed to remain constant for the whole projection period, with the exception of the period 2010–15, for which it is assumed that for some countries emigration numbers will be higher, as a result of the political turmoil and insecurity in a number of countries in 2011.

The S1 scenario assumes that the EU continues imposing severe restrictions to legal immigration. It is assumed that refugee stocks will not alter significantly. The presence of refugees (e.g. Iraqi refugees in Jordan) is assumed to put pressure on available national (health, housing) resources and the ecosystem, and this may, directly or indirectly, impinge on the health conditions of nationals. The presence of large refugee stocks may affect labour (im)migration flows, as refugees, for their survival, will try to compete in the local labour market, with or without work permits.

The observed decline of fertility rates in most countries is assumed to continue and eventually remain at constant levels, i.e. at replacement level. This means that women, on average, give birth to 2.1 children during their reproductive life. Improvements and a levelling-off of changes in life expectancies are expected to continue in the SEMCs. The recorded differentials among countries regarding life expectancies are assumed to remain in the future.

Data and projections on the active population have been extracted from the ILO database. For the SEMCs, it is assumed that the growth of the active population follows the growth rates of the population group aged 15–64 over the period 2010–30 as documented in the work of Groenewold et al. (2011). The reference scenario assumptions on population and active population are presented in Table 3.

*Table 3. Population and active population in the reference scenario*

Country	Population			Active population (15–64)		
	Million persons, (2010)	Million persons, (2030)	Annual % growth rate, (2010–30)	Million persons, (2010)	Million persons, (2030)	Annual % growth rate, (2010–30)
<b>Algeria</b>	35.5	45.3	1.23	24.2	31.0	1.24
<b>Egypt</b>	81.1	109.3	1.50	51.5	70.8	1.61
<b>Israel</b>	7.6	9.9	1.30	4.8	6.1	1.29

<sup>2</sup> See the websites of the ILO (<http://laborsta.ilo.org/default.html>) and World Bank (<http://DataBank.WorldBank.org/ddp/home.do>).

*Table 3. Population and active population in the reference scenario (cont'd)*

<b>Jordan</b>	<b>6.0</b>	<b>9.0</b>	<b>1.98</b>	<b>3.5</b>	<b>5.8</b>	<b>2.46</b>
<b>Lebanon</b>	4.2	4.9	0.69	2.9	3.3	0.77
<b>Libya</b>	6.4	8.0	1.19	4.1	5.5	1.41
<b>Morocco</b>	32.0	38.7	0.97	21.2	25.9	0.99
<b>Palestine</b>	4.2	7.4	2.91	2.3	4.3	3.19
<b>Syria</b>	20.4	29.7	1.89	12.1	18.9	2.25
<b>Tunisia</b>	10.5	12.4	0.81	7.3	8.4	0.70
<b>Turkey</b>	72.8	87.7	0.94	49.2	59.6	0.96
<b>SEMC</b>	280.7	362.3	1.28	183.2	239.6	1.35
<b>Rest of the Arab world</b>	176.6	225.9	1.24	116.1	149.7	1.28
<b>EU-27</b>	502.1	522.2	0.19	336.6	319.4	-0.27
<b>Emerging Asian economies</b>	3,092.6	3,619.1	0.79	2,114.1	2,471.2	0.78
<b>Rest of the world</b>	3,232.5	4,184.1	1.25	2,031.0	2,620.3	1.97
<b>World</b>	7,284.6	8,913.7	1.03	4,781.0	5,800.2	1.30

*Sources:* Authors' estimations based on ILO, European Commission (2011) and Groenewold et al. (2011) data and projections.

## 2.3 GDP growth

The growth projections provided by Work Package 5 have been adopted for the reference scenario.<sup>3</sup> The projections are based on the extrapolation of past GDP data augmented by the projections from the International Monetary Fund (IMF), which are available up to the year 2015. The projections are based on alternative time frames ranging from 1970 to 2010. For the reference scenario, projections based on the time series data over the period 1970–2010 have been employed. For the GDP projections of EU countries, those provided in the *2012 Ageing Report* by the European Commission (2011) have been adopted.

In the reference scenario, the EU economy is projected to grow at a relatively slow pace. In contrast, the SEMC economies are projected to record relatively high growth rates and to marginally increase the SEMCs' share of world GDP. Turkey is projected to remain the largest economy in the SEMC region in terms of GDP. Economic growth in the SEMCs is sustained by the growing population and the availability of relatively cheap labour and hydrocarbon resources in some of the countries. With no structural changes assumed, the GDP per capita projected for the SEMC region, with the exception of Israel, remains rather low up to 2030, as population trends are also significant.

The SEMC region remains below the world average GDP per capita in the reference scenario throughout the entire projection period. No leapfrogging is assumed for the SEMCs; thus the gap between the EU member states and the SEMC region (excluding Israel) is projected to remain, indicating a lack of convergence between the EU and the SEMCs. The average GDP per capita for the SEMCs increases from \$5,741 to \$9,861 in 2030. However, the gap between these countries and the EU remains, because in 2030 the EU's GDP per capita is projected to reach \$45,529.

<sup>3</sup> See Coutinho (2011).



Table 4. GDP and GDP per-capita projections in the reference scenario

Country	GDP			GDP/capita (US\$ 2010)		% Share in World GDP	
	(bn US\$, 2010)	(bn US\$, 2030)	Annual growth rate (2010–30)	2010	2030	2010	2030
Algeria	157.7	286.5	3.0	4,446.9	6,363.0	0.3	0.2
Egypt	151.6	379.1	4.7	1,868.5	3,458.6	0.3	0.3
Israel	187.0	412.1	4.0	25,212.4	41,144.1	0.3	0.4
Jordan	20.1	49.9	4.6	3,255.8	5,764.1	0.0	0.0
Lebanon	28.4	52.1	3.1	6,715.4	10,887.5	0.0	0.0
Libya	72.8	163.4	4.1	11,449.1	20,074.4	0.1	0.1
Morocco	84.4	186.9	4.1	2,642.4	4,879.8	0.1	0.2
Palestine	5.8	13.3	4.2	1,435.4	1,850.4	0.0	0.0
Syria	49.8	108.5	4.0	2,440.7	3,825.8	0.1	0.1
Tunisia	39.7	101.0	4.8	3,792.1	8,038.9	0.1	0.1
Turkey	812.4	1,811.2	4.1	11,167.1	20,393.9	1.3	1.5
SEMC	1,609.8	3,564.1	4.1	5,741.1	9,860.5	2.7	3.0
Rest of the Arab world	1,349.4	3,053.2	4.2	11,192.0	19,798.8	2.2	2.6
EU-27	17,461.9	23,694.8	1.5	34,892.9	45,529.4	28.8	20.2
Emerging Asian economies	8,840.3	34,571.9	7.1	2,854.8	9,540.5	14.6	29.5
Rest of the World	31,294.4	52,187.9	2.6	11,308.9	14,337.5	51.7	44.6
World	60,555.8	117,072.0	3.4	8,951.0	14,105.5	100.0	100.0

Source: GEM-E3-MEDPRO.

Consumption, investment and trade are based on the historical patterns/trends of the SEMCs and on the convergence hypothesis over the long term. Table 5 summarises the projections regarding the GDP shares of private and public consumption. Table 6 summarises the projected GDP shares of investment and net exports. Net exports are assumed to remain positive in the hydrocarbon-producing countries, namely Algeria, Libya and Syria.

Table 5. Consumption (% of GDP)

	Private consumption			Public consumption		
	2010	2020	2030	2010	2020	2030
Algeria	38.52	41.53	44.69	14.29	14.81	15.42
Egypt	73.06	66.95	61.65	13.84	17.54	21.30
Israel	58.20	60.38	62.72	24.21	22.23	20.30
Jordan	75.48	69.58	64.78	29.82	27.55	25.76
Lebanon	72.12	67.32	63.14	32.87	29.46	26.43
Libya	27.77	32.72	36.95	11.63	13.06	14.12
Morocco	63.60	63.64	64.20	19.98	20.20	20.59
Palestine	54.46	62.99	68.20	64.60	44.10	30.37
Syria	63.31	61.23	59.96	7.56	11.90	14.18
Tunisia	65.64	63.53	61.86	16.12	17.95	19.88
Turkey	69.88	65.90	62.30	14.28	17.03	19.75

Source: GEM-E3-MEDPRO.



Table 6. Investments and net exports (% of GDP)

	Investments			Net exports		
	2010	2020	2030	2010	2020	2030
<b>Algeria</b>	29.56	27.12	24.83	17.63	16.54	15.07
<b>Egypt</b>	21.78	21.54	21.59	-8.69	-6.03	-4.55
<b>Israel</b>	19.70	19.79	19.94	-2.11	-2.40	-2.97
<b>Jordan</b>	31.87	29.56	27.77	-37.18	-26.70	-18.31
<b>Lebanon</b>	16.72	20.97	25.15	-21.72	-17.75	-14.72
<b>Libya</b>	26.10	24.63	22.08	34.50	29.59	26.85
<b>Morocco</b>	31.87	27.73	24.06	-15.45	-11.57	-8.85
<b>Palestine</b>	37.39	34.30	31.31	-56.44	-41.40	-29.88
<b>Syria</b>	11.16	13.56	15.95	17.97	13.32	9.91
<b>Tunisia</b>	24.16	22.78	21.64	-5.93	-4.26	-3.38
<b>Turkey</b>	21.87	21.70	21.45	-6.04	-4.62	-3.50

Source: GEM-E3-MEDPRO.

## 2.4 Economic and sectoral overview of the SEMCs

### 2.4.1 Algeria

Algeria is an export-driven economy presenting stable growth over the last years, mainly due to the ample hydrocarbon resources. Over the last decade, hydrocarbons have accounted for 45% of GDP. Investment activity is limited to projects related to hydrocarbons and is mainly spurred by government expenditure. Overall, the public sector is dominant in the Algerian economy, being financed by revenues of the oil and gas sectors.

Attempts have been made to diversify the economy and to divert economic activities and growth away from the oil and gas sectors (e.g. a Complementary Plan for Growth Support 2005-2009 – see AfDB and OECD, 2007), but strong dependence on hydrocarbons persists. Despite the government's moderate efforts, Algeria has not yet created the favourable economic environment required to attract foreign direct investment (FDI) and other private investment outside the hydrocarbon sector. According to the World Bank's Ease of Doing Business index (2010), Algeria holds the 136<sup>th</sup> position out of 183 countries, showing limited ease in starting a business and in trading across borders. Moreover, a new law was passed in 2008 concerning the restriction of foreign participation in any business to 49% and a tax of 15% on repatriated capital.

According to the IMF (2010a), the challenge for the Algerian economy is still to “ensure sustainable, diversified and private investment-led growth to reduce unemployment, which is still high among the youth”. Structural reforms are necessary in order to attract private investors and expand activities beyond oil and gas.

According to Global Investment House (2008a), the following sectors are those that can generate diversified, sustainable economic growth:

- the banking sector, which is currently underdeveloped and is expected to face higher future demand triggered by both households and private investors;
- the telecommunications sector and especially internet services;
- the chemicals sector, especially the fertilizer industry, since natural gas is one of the main primary inputs for nitrogenous fertilizers; and



- the construction sector, which is expected to grow further but at moderate rates, in light of not only the development of new infrastructure and housing but also the maintenance of existing infrastructure.

In the reference scenario, hydrocarbons continue to dominate the Algerian economy. This assumption is based on figures for reserves in relation to production, which indicate 55.3 more years for natural gas production and 16.7 years for oil production, according to the *BP Statistical Review of World Energy* (BP, 2010). The energy sector is assumed to dominate domestic production throughout the period of study.

### 2.4.2 Egypt

Egypt has shown significant growth trends in the recent past, with an average growth rate of 5% in the last decade driven mainly by private investment (AfDB and OECD, 2007). According to the same source, in 2007 Egypt was the top FDI recipient in Africa, while according to the World Bank's Ease of Doing Business index (2010), Egypt holds the 94<sup>th</sup> position in the general ranking, higher than other countries of the region.

During the latest financial crisis, public investment focusing on oil, gas, water and sanitation projects have partly offset the decline of private domestic and foreign investment (African Economic Outlook, 2010). Over the last years, growth has been facilitated by a steep rise in the ICT and construction sectors, while services and trade have remained significant driving forces of the economy. Another continual source of revenues for the Egyptian economy is the Suez Canal services, which are expected to remain significant in the baseline scenario.

In terms of employment, Egypt faces a persistent unemployment rate of around 9%, which is relatively lower than the average unemployment rates experienced in the region but is foreseen as one of the major challenges for the development of the country (Global Investment House, 2008a) and was a major cause of social unrest in 2011.

The sector employing the largest share of the Egyptian active population is the services sector (40% in 2004), both private and public, followed by agriculture (22%) and industry (13%). According to the Global Investment House report (2008a), the Ministry of Investment of Egypt expects new employment opportunities mainly in services, trade and manufacturing. For the reference scenario, the services sector is assumed to remain dominant.

According to the International Energy Agency (IEA), Egypt is a marginal net exporter of oil despite the steep rise in domestic and industrial energy demand in the country. Gas production is also significant, but due to rising demand, exports have been limited. The electricity sector consumes the largest share followed by the industrial sector, since a policy to switch from oil use to gas has been implemented in order to enable oil exports. Gas exports are facilitated by both LNG terminals and pipelines, with exports going to European and southern Mediterranean countries as well as to Israel (since 2011).

The hydrocarbon sector contributed 12% to GDP in 2004. It is assumed to continue to grow moderately and be one of the major drivers of the Egyptian economy in light of upcoming projects mainly in gas extraction, accompanied by investment requiring gas inputs like petrochemical and fertilizers.

Along with the development of the hydrocarbon sector, in the reference scenario it is assumed that there is no significant removal of energy subsidies, thus hindering liberalisation of the energy sector and discouraging relevant FDI.

The construction sector has contributed largely to the growth of the Egyptian economy, accounting for 8% of GDP in 2004. Housing demand is expected to continue owing to the large young population, but at lower growth rates because of the tight credit conditions foreseen. Foreign investment in the sector is assumed to reach saturation soon. Construction demand is also closely related to gas and oil infrastructure projects and tourism development, both of which are assumed to record moderate

growth to 2030 in the reference scenario. As regards the industrial sector and in particular manufacturing, it is assumed that the chemical industry will grow along with the development of the oil and gas sectors. Strong fundamentals are seen in fertilizers, given the low prices of primary inputs (hydrocarbons and electricity).

The development of the agricultural sector is vital to Egypt's sustainable growth. Agriculture is an important employer and a main feedstock for many domestic industries (textiles, tobacco, etc.), while the world's rising food prices put an additional strain on Egypt's stability. However, if necessary investment for both capital accumulation and infrastructure are not made, the contribution of agriculture will continually decline, thus failing to reduce imports of agricultural products and inducing further social inequalities.

### 2.4.3 Israel

Israel is an export-driven economy. Israel is highly dependent on the growth path of major economies. As stated by Standard & Poor's (2010), "exports to [the] US and Europe are crucial to the country's future growth". Emerging economies are also potential markets for Israel's high-tech products.

In the reference scenario, the central macroeconomic projections provided by the IMF (2011) are assumed to hold throughout the period from 2010 to 2030. Demand growth is driven by exports and investment. In the reference scenario, the recently discovered natural gas fields (Congressional Research Service, 2011) are not included owing to uncertainties about the commissioning time; thus Israel continues to be largely dependent on imports of primary resources.

Regarding the labour market, Israel is equipped with a highly skilled and qualified labour force. The major employing sectors in the country are manufacturing (15% of the total employed population in 2004), trade (13%), real estate (13%), education (12%) and health services (10%). Over the last decade, unemployment rates have been relatively high (10% in 2004) but with a declining trend.

According to the IMF (2011), real wages in Israel show a flexible response and thus unemployment is capped. The Israeli economy is characterised by unused resources, mainly consisting of the ultra-Orthodox and Arabs. For the reference scenario, it is assumed that there are no real structural reforms and no additional investment in education and human capital; thereby unemployment is assumed to remain a persistent problem in the Israeli economy.

### 2.4.4 Jordan

The economy of Jordan grew at an annual average rate of 5.7% over the period 2000–10.<sup>4</sup> The economy is among the smallest in the Middle East, with limited supplies of water, oil and other natural resources. This has resulted in the heavy reliance of the government on foreign assistance. Domestic production is based primarily on manufacturing industries and on public services. In the last decade, the manufacturing sector has accounted for 27% of GDP and the public services sector for 13%.<sup>5</sup>

In 2004, the manufacturing sector employed about 37% of the labour force, while government services employed about 41%.<sup>6</sup> The unemployment rate has averaged at levels of 14% over the last ten years. Demand composition has been driven mainly by private consumption. In the reference scenario, the economy is projected to continue to be dominated by government services and the manufacturing sector.

Following recent discoveries, Jordan has been confirmed to have important uranium reserves estimated to range between 70,000 and 140,000 tonnes, plus a further 59,000 tonnes in phosphate

<sup>4</sup> Authors' estimations based on World Bank data on GDP growth.

<sup>5</sup> Authors' estimations based on national accounts data.

<sup>6</sup> Ibid.

deposits.<sup>7</sup> According to the World Nuclear Association, Jordan holds 2% of the world's recoverable uranium resources (2007 estimates).<sup>8</sup> With confirmation of the reserves, Jordan has signed extraction and trading cooperation agreements with China, the US, France and the UK.

### 2.4.5 Lebanon

Over the last decade, the economy of Lebanon has been growing at an average annual rate of 4%, while unemployment has recorded annual rates of 8.5% over the same period. The services sector accounted for about 30% of GDP in 2004.<sup>9</sup> The major sub-sectors of the services sector are commerce and tourism. The tourism sector is an important part of the Lebanese economy as it drives growth for other sectors, such as real estate and transport, banking and retail.

In addition to the services sector, the manufacturing and agricultural sectors have also been traditional contributors to economic growth in Lebanon. According to the *Economic and Strategic Outlook for Lebanon* prepared by the Global Investment House (2006), the added value of the manufacturing sector has been declining over recent years due to the gradual rise of other sectors of the economy, such as the services sector.

With regard to the external position, in the late 2000s the government reduced customs duties, adopted export promotion schemes for agriculture, decreased social security fees and restrictions on investment in real estate by foreigners, and adopted an open-skies policy. Lebanon has also entered multiple trade agreements with the Arab countries and the EU, such as the Greater Arab Free Trade Agreement (GAFTA), the Free Trade Agreement with six Gulf Cooperation Council countries, the European Mediterranean Partnership Accord and the free trade deal with the nations of European Free Trade Association.

In the reference scenario, Lebanon is assumed to grow at average rates of 3% over the period 2010–30. Economic growth will be driven by the manufacturing sector and the agricultural sector. In the absence of significant, anticipated structural changes, the services sector (mainly tourism, banking and retail) is assumed to be a substantial contributor to growth.

### 2.4.6 Libya

Over the last decade, Libya has recorded levels of economic growth of 4.3% on average.<sup>10</sup> Economic growth has been heavily dependent on hydrocarbons. During that period, hydrocarbons have accounted for more than 70% of GDP on average,<sup>11</sup> and have generated more than 90% of government revenues and 95% of export earnings.<sup>12</sup> Hydrocarbons form the largest source of public finance, while their ample availability has enabled the government to rely only moderately on taxation and other domestically generated revenues. In terms of employment, Libya has been faced with high unemployment rates, which have exceeded 20% on average over the last decade.

In addition to the exploration of oil reserves, Libya has directed efforts at developing the largely unutilised natural gas reserves, which are estimated at 1.54 trillion cubic metres (US EIA, 2011). Despite the efforts to increase the share of the non-oil sector in GDP and to diversify the economy so as to generate more jobs, the Libyan economy appears to continue to be driven primarily by the economic sectors associated with hydrocarbon exploration and production. This tendency is largely

<sup>7</sup> See the *2009 Minerals Yearbook* (USGS, 2009) and the *Annual Report* (2009) by the Ministry of Energy and Mineral Resources of Jordan.

<sup>8</sup> See the World Nuclear Association (<http://www.world-nuclear.org/info/inf23.html>).

<sup>9</sup> Authors' estimations based on national accounts.

<sup>10</sup> Authors' estimations based on World Bank data on GDP growth.

<sup>11</sup> Authors' estimations based on national accounts.

<sup>12</sup> See the Africa Economic Outlook on Libya (<http://www.africaneconomicoutlook.org/en/countries/north-africa/libya/>).



facilitated by the fact that Libya has the largest proven oil reserves in Africa, and most analysts agree that the country is still underexplored.<sup>13</sup>

Regarding its external position, Libya has been able to maintain trade surpluses. This can be attributed to hydrocarbons and to petroleum-based commodities, which make up 97% of exports.<sup>14</sup> More than 80% of the Libyan exports go to the EU, with Italy being the primary destination.

In light of the heavy dependence of Libya on hydrocarbons and taking into account the amount of available proven reserves,<sup>15</sup> for the reference scenario it is assumed that the Libyan economy will continue to support its growth through hydrocarbons over the period 2010–30. In the reference scenario, the growth path of Libya is assumed to be associated with the high dependence of the economy on hydrocarbons and the continuation of the non-diversification of the economy, which will impede the ability of the economy to create jobs.

#### 2.4.7 Morocco

The economy of Morocco has recorded levels of economic growth of 5% on average over the last decade.<sup>16</sup> The engines of economic growth have primarily been the services sector (trade, hotels and restaurants) and to a lesser degree agriculture, manufacturing and mining. In 2008, services accounted for more than 55% of GDP, while agriculture (including forestry and fishing) accounted for 14.6%, manufacturing for 14.2% and mining for more than 7%.<sup>17</sup>

Morocco is the world's largest exporter of phosphate, which has long provided a source of export earnings.<sup>18</sup> Moroccan reserves account for around 50% of the world's total (Cisse and Mrabet, 2004). With phosphate consumption growth estimated at 1-2% per year, depletion of the most economically exploitable reserves is estimated not to occur sooner than a period of 100 years. In this respect, the mining sector is expected to continue to contribute to the Moroccan economy for the foreseeable future.

The economy of Morocco benefits from relatively low labour costs and its proximity to Europe, which sustain the key areas of the economy – agriculture, light manufacturing and tourism. In terms of unemployment figures, Morocco has recorded relatively lower rates compared with its neighbour countries. Over the last decade, the unemployment rate has averaged 10%. In the reference scenario it is assumed that the services and manufacturing sectors will continue to be the pillars of economic growth.

#### 2.4.8 Palestine

Palestine is a small, closed economy influenced by political developments. The continuation of the Israeli–Palestinian conflict has led to severe economic shocks in the Palestinian economy. In the last decade, Palestine has faced 'de-development' due to a stagnant structure of the economy ensuing from political instability, military conflicts, restrictions on movement and trade, and restrictions on access to resources.

According to Palestinian National Authority (2007), economic growth has been driven by agriculture, construction and labour remittances from Israel. The Palestinian economy is now highly dependent on

<sup>13</sup> See US EIA (<http://www.eia.doe.gov/countries/country-data.cfm?fips=LY>).

<sup>14</sup> See the Africa Economic Outlook on Libya (<http://www.africaneconomicoutlook.org/en/countries/north-africa/libya/>).

<sup>15</sup> According to BP's *Statistical Review of World Energy* (June 2010 edition), the Libyan gas reserves are estimated to amount to 0.8% of world proved reserves.

<sup>16</sup> Authors' estimations based on World Bank data on GDP growth.

<sup>17</sup> See the Africa Economic Outlook on Morocco (<http://www.africaneconomicoutlook.org/en/countries/north-africa/morocco/>).

<sup>18</sup> See the CIA World Factbook (2011).



imports due to the economy's small productive capacity. Israel is Palestine's most important trading partner (both exporting and importing), thus leaving the Palestinian population dependent on a particular trading route. As a result, price movements are linked to the NIS and US\$ rate movements (Global Investment House, 2006).

Palestinian trade suffers from non-tariff barriers imposed by Israel and by increased transport costs due to restrictions for security reasons, leading to the disruption of all the trading activities of the past. In the baseline scenario, it is assumed that cooperation will not be achieved in the short or medium term and barriers will not be removed soon; hence the Palestinian economy will continue to face a notable trade deficit.

As noted by the World Bank (2004), the "Palestinian economic recovery will depend on rebuilding commercial cooperation with Israel and third-country markets". In the reference scenario, the high degree of dependency on the Israeli market is sustained and Palestine does not gain access to other markets; thus it is still exposed to political instability, sanctions and price fluctuations.

Palestinian economic dependence on Israel also characterises Palestinian employment in the Israeli labour market. Labour remittances have long been an important source of income for Palestinian households; therefore, border closures and restrictions affect Palestinian economic welfare. Unemployment is seen as a dominant problem in Palestinian society, with limited potential for improvement in the baseline scenario owing to a continuation of the shutout of the Palestinian economy from international trade and credit markets, and the limitations on Palestinian workers in the Israeli labour market, given the extension of conflicts and the persistent Israeli unemployment rate. On a sectoral basis, agriculture is a critical productive sector according to the Palestinian National Authority (2007), given its contribution to food security and the ability to lead to immediate economic recovery.

Industry and manufacturing are assumed to make a small contribution to GDP. This stems from the assumption of the continuation of a lack of credit mechanisms and access to finance, a lack of technological capacity and a restricted level of investment. Geopolitical instability has kept FDI very low in Palestine and this is assumed to continue in the baseline.

## 2.4.9 Syria

The Syrian economy is well diversified among the oil, agriculture, service and light industry sectors. However, during the last few years GDP growth has mainly been driven by the exploitation of the country's oil reserves. The Syrian economy is facing many challenges stemming largely from the country's international relations, which are characterised by US sanctions and diplomatic pressure regarding Lebanon and terrorism, but also from the recent social unrest in the Middle East and North Africa (Global Investment House, 2008b). Attempts to stabilise its international position are being made with the support of European leaders (*The Economist*, 2008). In an effort to become an open economy, Syria has joined free trade agreements like the GAFTA and trade agreements with Turkey, Europe and South America.

State intervention still exists on a large scale through price subsidies and bureaucracy. The latter has put Syria in 144<sup>th</sup> position in the World Bank's Ease of Doing Business index (2010), being particularly problematic in enforcing contracts and getting credit, while the former relates mainly to high energy subsidies that limit the possibilities for government expenditure on investment in infrastructure.

Agriculture has been an important sector in terms of its share of both GDP (24% in 2004) and employment (30% in 2004). The Syrian state sees the agricultural sector as one of great importance for food security and employment as well as for preventing rural migration. According to the IMF (2010b), agriculture was projected to grow after the end of a severe two-year drought, but also because of political efforts aimed at reducing production costs for farmers (e.g. subsidising diesel prices for agricultural use). Nevertheless, in order to achieve long-term development of the sector, investment in infrastructure is required, since most of the land is rain-fed and there is a lack of irrigation systems.





According to the US EIA (2010), oil and gas production were expected to grow post-2010 as new fields come into production. Industry is gradually being privatised in Syria. The sugar, cement and textile sectors received the largest shares of new investment in 2006, of which 20% came from FDI (Global Investment House, 2008b). Industry employed around 17% of the active population in 2004 and accounted for 17% of GDP.

In the reference scenario, the energy sector will account for an increasing share of domestic production throughout the period of study. The construction sector is assumed to grow further in the short term owing to a focus of Arab FDI on the Syrian real estate sector and to the inflow of Iraqi nationals (Global Investment House, 2008b), but to become saturated by 2030. Services will continue to grow as a share of domestic production owing to the gradual opening of private banks and the operation of the Damascus Stock Exchange.

#### **2.4.10 Tunisia**

Economic growth in Tunisia has recorded levels on average of 5% over the last ten years.<sup>19</sup> The cornerstone sectors of the economy have been services (mainly tourism), manufacturing (mainly the textiles, clothing, electricity and mechanical industries), agriculture and fisheries. In 2008, services, manufacturing, and agriculture and fisheries accounted for 53%, 20% and 10% respectively of GDP.<sup>20</sup> Over the last decade, the demand composition has been driven mainly by consumption. Consumption has accounted for more than 75% of the demand composition and 60% of GDP,<sup>21</sup> with more than 60% of it consisting of private consumption. Gross capital formation has ranged from around 25% of total demand, with the largest share of it (ranging at average levels of 22%) being private capital formation.

With regard to its external position, exports and imports have been on the rise over the last decade, recording average levels of 46% and 50% of GDP respectively. The EU remains the main trading partner. In 2008, the EU accounted for 64.5% of Tunisian imports and 72.1% of Tunisian exports.<sup>22</sup> Regarding the opening-up of the economy, the authorities have proceeded with a lowering of customs duties so as to comply with international commitments (World Trade Organisation, Agadir Agreement, Arab Maghreb Union, free trade agreements with Morocco, Jordan and Turkey and the Arab free-trade zone) and to stimulate economic trade across borders. Following a gradual process that started in 1996, since January 2008 Tunisia has constituted a free-trade zone with the EU for industrial products. Pending agreements relate to African countries, while negotiations on a free-trade agreement with the US have been at a standstill.

In the reference scenario, services, manufacturing, and agriculture and fisheries will continue to dominate the Tunisian economy in the period under study.

#### **2.4.11 Turkey**

Over the last decade, the economy of Turkey has recorded levels of economic growth of 4% while unemployment has recorded annual rates of 10%.<sup>23</sup> In the last two decades, the economy of Turkey has been driven by the manufacturing and services sectors, accounting for more than 16% and 39% of GDP on average, respectively.<sup>24</sup> The share of the agricultural sector, the traditional backbone of the

<sup>19</sup> Authors' estimations based on World Bank data on GDP growth.

<sup>20</sup> See the Africa Economic Outlook on Tunisia (<http://www.africaneconomicoutlook.org/en/countries/north-africa/tunisia/>).

<sup>21</sup> Authors' estimations based on World Bank data and on national accounts.

<sup>22</sup> See European Commission, "Tunisia" (<http://ec.europa.eu/trade/creating-opportunities/bilateral-relations/countries/tunisia/>).

<sup>23</sup> Authors' estimations based on figures from the national accounts.

<sup>24</sup> These are 2010 estimates. See CIA World Factbook (<https://www.cia.gov/library/publications/the-world-factbook/geos/tu.html>).





economy, in GDP has been diminishing over time, ranging from 18% in the 1990s to 13% in 2004 and 9% in 2010.<sup>25</sup>

Turkey has also recorded increasing flows of imports and exports, which have represented increasing shares of GDP over the last decade. In 2004, imports accounted for 35% of GDP, while exports accounted for 30%.<sup>26</sup> The textile and clothing sectors play a vital part in the export mix, yet the automotive, construction and electronics industries have been rising in importance (and have surpassed textiles) in Turkey's export flows. For the reference scenario, Turkey is assumed to continue to grow at annual rates of 4%. Economic growth will continue to be driven by the manufacturing sector, followed by the services sector.

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<sup>25</sup> Figures for the 1990s have been retrieved from the World Bank's database. Figures for 2004 consist of authors' estimations based on data from the national accounts. The 2010 figures are estimates from the CIA World Factbook.

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