Population Scenarios and Policy Implications for Southern Mediterranean Countries, 2010-2050

George Groenewold and Joop de Beer

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Abstract

Four population scenarios were derived that describe indicators of demographic behaviour for people living in different future political-economic contexts. This policy paper explores future trends in i) population growth at regional and national levels, ii) working age populations, in view of demographic dividend potential, and iii) elderly populations, in view of the financial burden they place on economies. Results show that different scenarios do *not* have large effects on population growth, at least up to 2030. This is due to the in-built 'population momentum' effect in the relatively young age-structures of most southern and eastern Mediterranean countries (SEMCs). In the short term, up to 2030, and depending on which economic-political scenario unfolds, SEMCs are expected to grow from 280 million people to a figure of between 362 and 349 million people. Thus, in a period of about 20 years SEMCs are expected to grow by between 69 and 83 million people. In the same period, EU27 populations will grow by 21 million; only from about 500 to 521 million people. Between 2030 and 2050, additional population growth is foreseen in SEMCs, between 48 and 62 million people, while EU27 populations are expected to grow by 4 million only. SEMCs vary widely regarding demographic transition profiles so that demographic dividend potentials also vary. Old-age dependency ratios – the share of elderly people in relation to the working age population – are still low compared to EU27 ratios, but will increase after 2035. Should SEMCs' economies remain politically, economically and environmentally precarious in the coming decades, their relatively low dependency ratios may impose an even higher social and financial burden on economies than the EU countries' high dependency ratios impose on their economies.

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Introduction

The European Neighbourhood Policy (ENP) was developed in 2004, with the goal of strengthening the prosperity, stability and security of all and avoiding the emergence of new dividing lines between EU countries and its neighbours. The ENP idea was revamped in 2008 with the launch of the Union for the Mediterranean (UfM); a multi-lateral partnership between the 27 EU countries and 16 Mediterranean partner countries from North Africa, the Middle East and the Balkans. The UfM (also known as the Barcelona Process) was launched when plans to create an autonomous Mediterranean Union, akin to the EU, were dropped (EC, 2012).

Demographic factors and pressures in both EU and ENP countries impinge on the realisation of the ENP and UfM goals. The latter include Algeria, Armenia, Azerbaijan, Belarus, Egypt, Georgia, Israel, Jordan, Lebanon, Libya, Moldova, Morocco, Occupied Palestinian Territory, Syria, Tunisia and Ukraine. The ENP excludes Turkey because, contrary to ENP countries, it gained an EU accession perspective in 1999 at the Helsinki European Council meeting (EC, 2012).

Population structures, pressures and future prospects in the two regions are quite different because the characteristics of demographic transition, such as the timing and speed of decline in fertility and mortality rates are quite different. Compared to EU countries, most ENP countries started experiencing declining fertility and mortality much later, during the 1990s, especially the southern Mediterranean ENP countries (WHO, 2011; UN, 2011a; UN, 2012). As a result, ageing population structures currently characterise EU countries, while younger age structures characterise many ENP countries.

Systematic and comparative research has been carried out on future population and development prospects of EU countries (e.g. Rees et al., 2012; Hilderink, 2004; Lutz & Scherbov, 2004), but it is absent for EU neighbour countries. Demographic research carried out by the MEDPRO project (Groenewold et al., 2012) aimed to contribute to this effort by presenting population scenarios for ENP countries for the period 2010-2050, analysing the implications. Below, we briefly describe how development scenarios were derived by the project, how population scenarios were derived from these and what the scenarios entail. Next, we present main population scenario results. Our focus is on population growth prospects at the level of regions and countries, on working age populations (15-64yrs) and on the elderly (65yrs+). In the concluding section we discuss the plausibility of the scenario results in light of the political upheaval and transformations since 2010 (i.e. the Arab Spring) and we address the policy implications of these events.

The focus on working age populations and the elderly is important because any change in these two age groups has implications for the economy. The share of the working age population determines the size of the potential labour force contributing to economic production and growth. A rise in the share of the working age population is therefore considered as a 'demographic dividend' to the economy, provided certain conditions are met. The share of the elderly is also of economic interest because, generally speaking, they may contribute to the economy indirectly through investments derived from their accumulated wealth and savings. They are also consumers of paid or subsidised old-age care (Mason & Lee, 2007; Lee & Mason, 2006; Mason, 2005).

We focus on a subset of ENP countries, the ten geographically and culturally adjacent ENP countries: Algeria, Egypt, Israel, Jordan, Lebanon, Libya, Morocco, Palestine (O.P.T.), Syria, Tunisia, and Turkey. Turkey was included because it is a key player in the political arenas of the Mediterranean region and the Middle East, in a cultural and an economic sense it is intertwined with neighbouring ENP countries and comprises one of the largest populations in the region. Below, we refer to these 11 countries as SEMCs (southern and eastern Mediterranean countries).

Population scenarios

A first step in the design of population scenarios was to identify the pillars of a framework for development scenarios, which are later used to derive population scenarios. The MEDPRO project chose the following pillars to build a framework for development scenarios: i) development of total wealth in SEMCs, ii) development of political-economic cooperation between SEMCs and EU countries, and iii) development trajectories are assumed to be either a success or a failure (Sessa, 2011; Ayadi & Sessa, 2011). The table below brings these pillars together, shaping the contours of a broad framework for development scenarios. Different combinations lead to eight different development scenarios, which should be interpreted as eight different visions of how the economic-political context of SEMC countries might look. However, working with eight different conceptualisations of the future is rather confusing and cumbersome; assumptions were therefore

introduced to reduce the number of eligible scenarios from eight to four (S1 to S4 in Annex 1):

a. Future increases in total wealth cannot coexist or be achieved without interregional or regional cooperation.
b. Future options of international cooperation are limited to two types: i) cooperation with EU countries and the integration of SEMCs into an expanding EU market, ii) the launch of an independent Pan-Arab political and economic system akin to the EU.
c. SEMCs either cooperate within a framework with EU countries, or in one with all other Arab League nations, not in both.

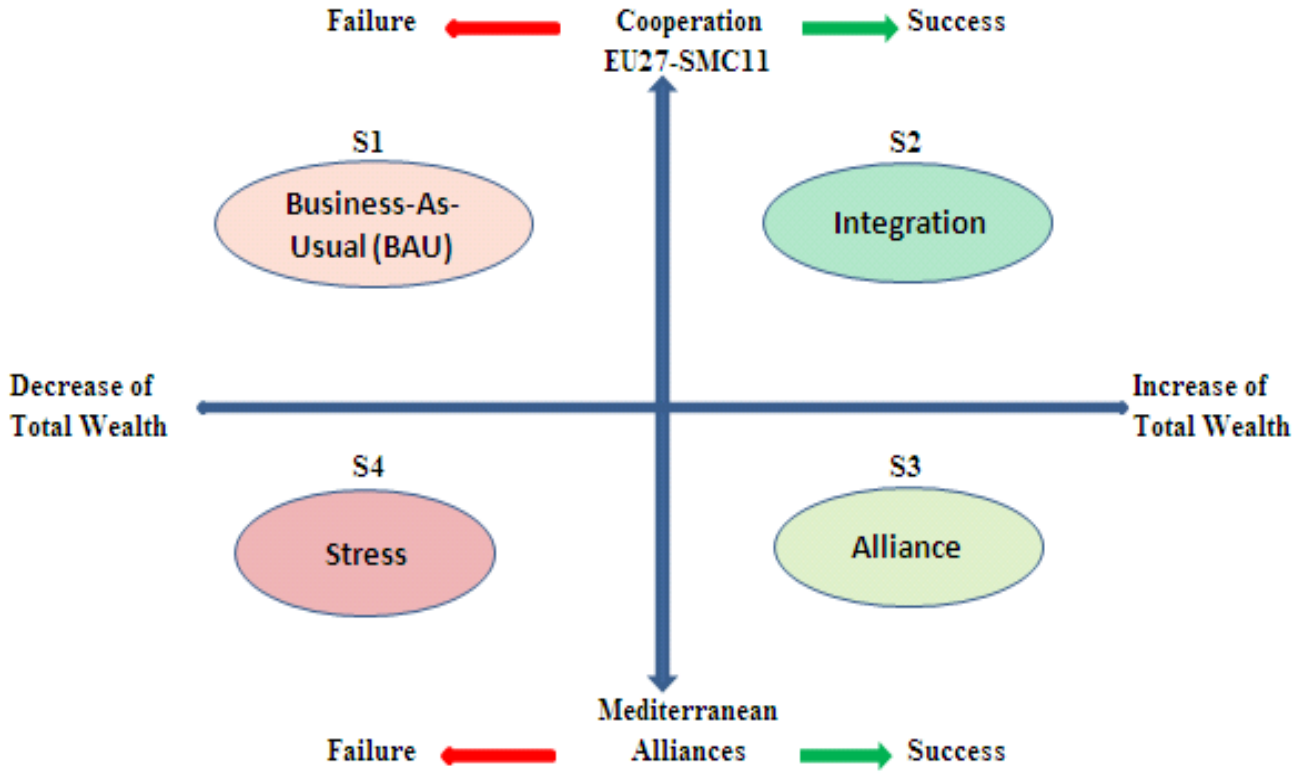
Table 1. Broad framework for population and development scenarios

		Total wealth	
		Increase	Decrease
EU-SMC cooperation	Success	S2	
	Failure		S1
Meditteranean Alliance cooperation	Success	S3	
	Failure		S4

The framework in Table 1 was then transformed into a two-dimensional framework (Figure 1) whereby each development scenario comprises a particular combination of characteristics in terms of developments in regional political cooperation and envisioned total wealth prospects. Development scenarios sketch broad and different kinds of future worlds in which demographic behaviour in terms of migration, fertility and mortality is likely to differ, leading to different population growth trajectories. For practical reasons, the four scenarios were labelled, providing a kind of 'identity' to each scenario. Contrary to the business-as-usual and stress scenarios, the integration and alliance scenarios are both, economically and politically speaking, favourable outlooks for the future.

Below, storylines are presented that describe the qualitative economic, political, and demographic characteristics and assumptions of four population and development scenarios, and we conclude with an overview table (Annex 1) showing the results of operationalising these storylines and assumptions. These were used to derive the population scenarios results proper for the period 2010-2050.

Figure 1. Derived framework for population and development scenarios (adapted from Sessa, 2011)



The business-as-usual (BAU) scenario (S1) sketches an *unfavourable* political and economic future that could be interpreted as an extrapolation of past trends. It assumes that the political upheavals and changes in various SEMCs (e.g. Tunisia, Libya, Egypt, and Syria) since 2010, as well as the EU financial crisis, will settle at a development trajectory between 2015 and 2020. This could be interpreted as a repositioning on a trend line that would have emerged in the absence

of these upheavals and changes. This means a continued decrease in total wealth in populations resulting from a partial and *ad hoc* kind of SEMC-EU cooperation that fails to develop firm action and collaboration regarding key political, security, economic, socio-cultural and environmental issues. The BAU scenario (S1) assumes that the EU also pays a price for not expanding EU membership beyond the current 27 countries, i.e. in terms of foregoing certain economic and political benefits. Overall, the BAU scenario (S1) assumes that during the 2010-2050 period the economic influence of the EU in the Middle East continues to decline. On the political front, the scenario assumes that the Israel-Palestine conflict will not be resolved, thereby constraining economic growth and political stability in the region. From a long-term perspective, this scenario assumes no breakthrough political, social, technological, and cultural changes (Ayadi & Sessa, 2011).

Also in terms of demographic behaviour, no major changes are assumed to take place. Regarding international migration stocks and flows, the BAU scenario assumes that annual *net* numbers of migrants (i.e. number of immigrants minus emigrants) for the period 2005-2010 remains more or less stable during the whole of the period 2010-2050, with the exception of the period 2010-2015. The latter accounts for the unexpected international migration flows resulting from the political upheaval during the 2010-2012 period (Arab Spring). We expect that numbers emigrating in a number of countries will be higher than anticipated in those years. The *net* numbers of migrants that we used in our population scenario projections are based on figures compiled by the UN Population Division (UN, 2011a). Regarding future fertility levels, the BAU scenario assumes that the observed past changes in fertility rates in most SEMCs will continue, but the speed of the change will differ by country, depending on past rates of change. Thus, fertility rates for some countries will decline even further, while rates of other countries may increase. The decline will be less rapid than, for instance, in the integration scenario (S2), because it will take more time before institutions (men, kinship groups, community) will have lowered family size preferences and individual women gain more freedom to decide the number of children to have. However, it is expected that by 2050 the average country-specific fertility rates will have settled at replacement level in the SEMCs' region. This means that, on average, women in SEMCs are expected to give birth to 2.1 children during their reproductive life so that, after accounting for mortality risks, each mother will just be replaced by a daughter who also will become a mother and survive at least up to the end of her reproductive life, at about age 50. This scenario assumes that observed past improvements in life expectancy at birth for each individual country will continue but at a pace that is dependent on the level currently attained and the pace with which life expectancy improved since 1990. The BAU scenario assumes that differences between countries regarding fertility, mortality and migration rates remain intact.

Integration scenario (S2) describes a *very favourable* political and economic future. EU-SEMC cooperation is assumed to improve significantly so that by 2050 the EU27 market has expanded to include the 11 SEMCs, becoming EU38. This market is highly integrated at the political, economic, social and military levels, where total wealth has increased markedly, and where incidence and prevalence of poverty in SEMCs is comparable to the average EU level. Because of institutional and governance adaptations in SEMC economies it will take up to 2030 before these countries match the economic growth rates of EU countries. In this vision of the future, the Palestinian-Israeli conflict is resolved by 2020, providing extra impetus to economic growth and cultural tolerance. By 2050, the EU38 has become one of the three key economic and political powers in the world, alongside the USA and China (Ayadi & Sessa, 2011).

Such a development context is likely to be associated with different types of demographic behaviour than in other scenarios. In the first phase of economic growth (2010-2030) it is expected that the mobility behaviour of people will increase, contributing to migration from SEMCs to EU countries where labour demand is increasing due to rapidly ageing working age populations. Furthermore, many of the SEMC emigrants who work as contract labourers in the oil-producing Gulf States are also expected to migrate to EU countries because access to and stay in EU countries have become much easier and living conditions better. As a result, negative *net* numbers of migrants are expected to increase during the period 2010-2030 as emigrants from SEMCs to the EU will outnumber immigrants and return migrants. In the second phase of economic growth (2030-2050), economies and welfare in SEMCs will have reached full development. Potential emigrants now find it easier to secure attractive income-earning opportunities in their own country while return migration will become more significant, including children of first-generation emigrants who were born in EU countries of destination. As costs of international travel relative to total income decrease in this scenario, temporary short-term and circular

types of migration will be on the increase too. The overall net result is that during the 2030-2050 period, all SEMCs currently having negative net migration numbers (i.e. emigration higher than immigration) will experience their negative net migration numbers turning into positive ones.

In an EU38 (i.e. EU27 + 11SEMCs) setting it is expected that intercultural contact with EU citizens increases and that EU rules and regulations regarding equality and equal opportunities of men and women are adopted in SEMCs. Overall, the status and decision-making power of women is expected to increase considerably in this scenario, which is attributed to fertility rates declining more rapidly than in the BAU scenario (S1), leading to rates resembling the currently observed low levels in EU27 countries, which is currently 1.5 children. It is expected that, as time goes by, similar economic, social, cultural and psychosocial factors underlying the decline in European fertility will affect fertility levels in SEMCs. For instance, larger numbers of women in the SEMCs will successfully participate in the education system, leading to higher levels of educational attainment, to gains in decision-making power regarding personal aspirations (e.g. number of children, timing and spacing of births, labour force participation and employment careers), household and community matters (participation in councils and local government). Furthermore, it is expected that 'individualism' will become more widespread in SEMCs so that an increasing number of women have the number of children they want. Also, women in SEMCs will be increasingly called upon to participate in the labour market to cope with local labour shortages resulting from economic development and growth. It is therefore expected that women in SEMCs, notably those with the right diplomas, will have opportunities to work in Europe and will increasingly make use of that opportunity. Overall, the educational attainment increases of women are expected to lead to an irreversible increase of female labour force participation (i.e. paid work outside the home, including working overseas) competing with childbearing and rearing, resulting in lower fertility aspirations and rates. Another fertility-reducing effect in this high economic growth scenario comes from expected improvements in health infrastructure in SEMCs. Such improvements are expected to lead to a further reduction in levels of unmet need for family planning services.

This economic growth scenario will also have a net positive effect on the health and mortality conditions of people in SEMCs as the availability, access and affordability of health services will eventually be on a par with the average EU level. Pre- and post-natal care, immunisation of children, childcare practices of mothers (partly due to increases in educational attainment levels) will improve, leading to much lower infant and child mortality rates and higher life expectancies. However, this scenario also entails a negative development as the unhealthy western-style diet and lifestyle will be increasingly adopted in the region, leading to further increases in obesity (among adults and children) and related welfare diseases with higher risks of mortality at intermediate and higher ages. The expected net effect is that the pace with which life expectancy in the SEMCs increases in this scenario will be higher than in the BAU- (S1) and stress (S4) scenarios, but lower than in the alliance scenario (S3).

Compared to the BAU and stress scenarios (S1 and S4), the integration scenario (S2) is a kind of 'convergence scenario' in that it assumes that differences between countries regarding fertility, mortality and migration rates will eventually have disappeared by 2050.

Alliance scenario (S3) also sketches a *favourable* economic and political future context. SEMCs will increase their collaboration and expand to include other countries in the Middle East (e.g. Iraq, Yemen, Saudi Arabia, and Sudan) and form one large pan-Arab common market, akin to the EU. Turkey is assumed to join the EU. Due to their geographic proximity a strategic alliance is formed between the EU and pan-Arab markets to ensure that the two adjacent and independent markets are connected in an efficient and effective manner, contributing to economic prosperity and political stability in both regions. Thus, economic and political interaction and development is first and foremost taking place between countries *within* the two regional markets. According to this scenario, the Israeli-Palestinian conflict is also assumed to be resolved. However, peace results from a somewhat different political process than in scenario S2 as in this scenario the weight of Arab states' political influence in reaching a peace agreement will be higher than in scenario S2. The main point is that a peace solution has been reached, removing barriers to internal (south-south) market cooperation and intercultural contact. Eventually, the Mediterranean region emerges as a peaceful and inspiring meeting and business place of people living in two adjacent regional markets. The EU and pan-Arab markets collaborate, in particular on some key issues such as security, the quality of environmental resources and research and development. However, the development of an independent and effective pan-Arab economy and political system takes time so

that economic benefits in terms of total wealth increases are expected at a later stage in the period 2010-2050 than according to the integration scenario (S2). This scenario envisages a multi-polar global market with several economic regions competing and with no particular region dominating (Ayadi & Sessa, 2011).

As economies grow and the movement of people and goods within the two newly established market areas becomes easier, it is expected that the net negative migration of many SEMCs increases as working in the Gulf States becomes easier. These volumes are expected to level off during the period 2015-2030 as growing SEMC economies increasingly provide job-opportunities to their own citizens. Like the integration scenario (S2), the economic growth process in SEMCs takes time to gain momentum and success so that this scenario foresees that negative net migration numbers, as a result of declining numbers of emigrants and increasing numbers of immigrants, will gradually turn into positive net numbers of migration by 2030 and later. By 2050 this process will lead to a situation whereby numbers emigrating and immigrating will balance so that the net numbers of migrants is zero. Thus, the orientation of migrants in this scenario is primarily towards labour markets in the Arab region and not towards the EU or elsewhere, as in the integration scenario (S2). In this scenario it is also expected that most long-term refugees will have managed to establish a new life in their host country and have integrated into these societies.

There are two main forces at play that determine future trends in fertility according to this scenario. On the one hand economic growth is expected to lead to major improvements in availability and access to health services. This will have a fertility-reducing effect as, like the situation in the integration scenario (S2), levels of unmet need for family planning; around 10% in many SEMCs (UN, 2012), are expected to reduce to 0%. On the other hand, western-style individualism will have much less of an effect on the lives of people in SEMCs than in the integration scenario (S2). Traditional family norms and values will remain intact and the influence of the larger social group and concomitant control mechanisms will lead to family size preferences that are, on average, somewhat higher than in the integration scenario (S2). However, such traditions are under pressure as the labour market in this scenario will increasingly expect women to participate and this will stimulate governments to encourage parents to invest in the education of their daughters, eventually leading to higher levels of educational attainment and occupational skills among women (and men). As a result the current very low labour force participation rates of women are expected to increase significantly. We assume that the net outcome of both forces is that fertility levels decline, but that the speed of decline is slower than assumed in the integration scenario (S2), so that, by 2050, fertility levels in this scenario will have settled at a somewhat higher level than in the integration scenario (S2).

Health status and life expectancy improvements are expected to be better than in the integration scenario (S2) implying a higher annual rate of change in life expectancy than in the integration scenario (S2). The main reason for this assumption is that western-type lifestyles and health behaviour will have less of a chance of being adopted due to the presence of a strong tradition of social control over how individuals behave. Thus, individualism will have far less chance of developing, so that adverse western-style lifestyles will occur less than in the integration scenario (S2). Overall, and in contrast to the situation in the integration scenario (S2), individuals will remain more embedded in their social group and receive more protection in situations of stress, ill-health and need.

Like the integration scenario (S2), and contrary to the BAU and stress scenarios (S1 and S4) country-specific values of indicators of fertility and mortality in this alliance scenario (S3) are assumed to converge to some average regional level value.

Stress scenario (S4) is a *worst-case* scenario regarding economic and political development in the Arab world. The Mediterranean Sea is perceived as the dividing line between two opposing and competing cultures, i.e. the European vis-à-vis the Arab cultures. Within the Arab region, the Israeli-Palestinian conflict lingers on, hampering economic development and political cooperation within the region. Although inhabitants of SEMCs pay the highest price in terms of decreasing prosperity, security and well-being, people in adjacent EU countries will also be affected by negative economic and political spill-over effects in the medium and long run. Factories, firms and small shops in SEMCs find it increasingly difficult to make a profit and pay their staff. The mismatch between government expenditures and income becomes greater so that, eventually, governments have to lay off staff. As government institutions employ a relatively large share of the labour force, unemployment rates increase dramatically, notably among young adults, leading to political unrest and foreign investors becoming more hesitant to invest in SEMCs. Eventually, political stability in the region is at

stake and new conflicts arise that cannot adequately be dealt with by the governments and elite groups. This scenario essentially describes a future with increased poverty, political instability and insecurity, natural resource depletion and pollution, and social and ethnic conflicts (Ayadi & Sessa, 2011).

In such a future context, households find it increasingly difficult to cope with poverty. In spite of the restricted access to EU countries and Gulf States, many unemployed citizens, mainly men, choose to leave the country in search of income overseas to support their families and relatives back home. Many emigrants will therefore enter the EU and Gulf State countries as illegal immigrants where they become exploited and live as outcasts. Some of them will be recovered by jihad and other terrorist organisations that prosper and gain power over time, increasing the probability of war in the region and beyond. As this will not go unnoticed by the media in the EU, the general attitude towards immigrants in the EU will become even more negative than it is today. In spite of the limited prospects many emigrants have abroad, poverty at home means that many people are forced to migrate to other countries. During the period 2010-2050 the stress scenario (S4) foresees that annual net migration numbers will hover at very high negative numbers as emigrants far outnumber immigrants and return migrants. Only a sub-group of well-educated SEMC citizens find ways to overcome restrictive entry measures (e.g. for the EU, Gulf States, the US, and Far East) and, through internet contact, find attractive jobs abroad (the brain drain). These persons find employment because the ageing EU labour market provides openings to well-educated and skilled immigrants from outside the EU. In the stress scenario (S4) the situation in SEMCs has become such that emigrants do not want to return and do their utmost to reunite with their family by letting them immigrate too in destination countries. The (negative) net number of international migrants rises to historical highs in SEMCs during the period 2010-2050.

The deterioration of SEMC economies results in more impoverished health services, including the availability and access to family planning services. Having many children becomes a great burden in terms of cost, leading to fewer births in some families than desired. However, in other families fertility levels increase because access to family planning services decreases as costs (user fees) increase. In terms of underlying factors, negative economic growth is, generally speaking, detrimental to female labour force participation and wages, resulting in more women staying at home, losing decision-making power and independence and leading to a higher number of children than anticipated. In a similar way, parents tend to invest less in educating their daughters if poverty strikes the household, also leading to higher fertility rates. Overall, the stress scenario (S4) foresees that the long-term net effect of poor macro-economic and political performance is that fertility decline in some SEMCs will halt or even increase during the 2010-2050 period and that, at the aggregate level of the SEMC region, the fertility level settles at levels above replacement level fertility. Of all scenarios, the decline in country-specific fertility levels is the least and eventually settles at higher levels in 2050 than under the other scenarios.

The detrimental macro-economic and political trend implies that health infrastructure becomes increasingly disrupted. Furthermore, large-scale emigration means that in certain places social group support systems break down and communities disintegrate, leading to increased poverty levels in urban and rural areas. Deteriorating living conditions may result in higher infection rates and disease prevalence among vulnerable groups, such as pregnant women and children. At the macro level this development may translate into higher maternal mortality rates and higher childhood mortality rates, leading to life expectancies that increase less or even decrease. We assume that, in times of stress, the tendency of people in this region is that community spirit increases leading to a revival of social support systems within descent groups, clans, neighbourhoods, etc., and this will have a positive effect on mortality rates in vulnerable groups. The stress scenario (S4) foresees that the net effect of these expectations is that life expectancy, at the level of the nation, will still increase, but at a much slower pace than in the other three scenarios.

The above storylines and assumptions were operationalised and are summarised in Annex 1.

Data

Base-line age-sex data of SEMCs and data required for the formulation of assumptions about future rates of fertility, mortality and migration (Annex 1) were obtained from databases of National Statistical Offices of SEMCs, UN Population Division (UN, 2011a), World Health Organisation (Health statistics and health information systems) (WHO, 2011), and from the UN Global Migration Database (version 0.3.6) (UN, 2011b). For an explanation of the projection methodology, see Groenewold et al. (2012).

Regional and national population scenarios

Table 3 and Figure 2 show that populations in SEMCs are expected to grow from 280 million in 2010 to a figure of between about 395 million (S4) and 426 million (S3) in 2050. In the short term (2010-2030) SEMC populations are expected to grow, to a figure of between 69 (S4) and 83 (S3) million. Conversely, during that period EU27 populations are expected to grow by about 21 million (Eurostat, 2012). In the long term (2030-2050) however, another 48 to 62 million persons will be added to SEMC populations while only 4 million will be added to EU27 populations. In the next ten years the population in the SEMC region is expected to grow by a figure of between 39 million and 43 million, depending on the scenario.

Table 5 shows that SEMCs differ markedly in population size and population growth rates and that regional population growth is predominantly determined by growth in the largest two countries, Egypt and Turkey. There, in 2010, about 81 and 73 million people lived, respectively, comprising 55% of the population in the region. At the level of the region, the effect of the alliance scenario (S3) assumptions lead to the highest population growth, while at country level, different scenarios lead to highest population growth. For instance, in the case of Lebanon it is the integration scenario that (S2) leads to the highest population growth while for Libya and the Occupied Palestinian Territory it is the BAU scenario (S1).

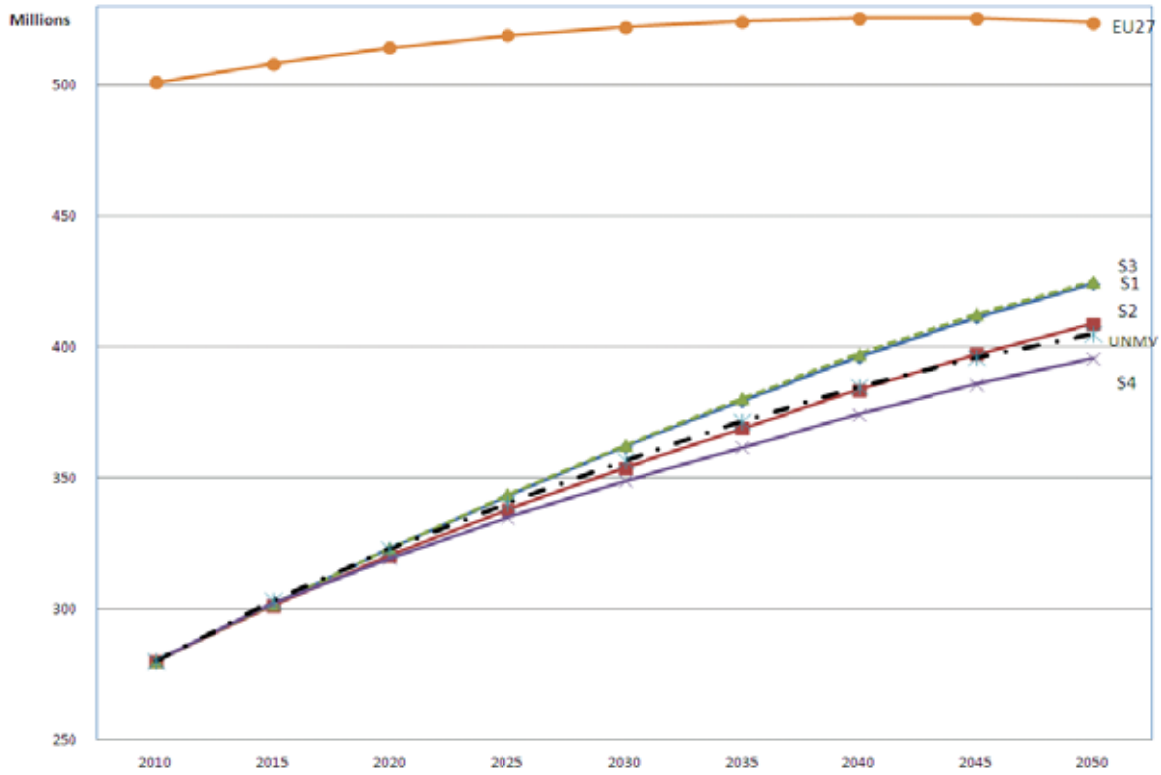
Expected population growth in Egypt is the highest in the region. Depending on the scenario, Egypt's population will increase between 2010 and 2050 to come to a figure of between 44 and 53 million persons. The stress scenario (S4) has the most severe effects on population growth in Lebanon. Lebanon already has a low and below replacement fertility level (TFR about 1.8 in 2005). Although fertility in Lebanon is expected to increase to replacement level fertility during the period 2010-2050, the effect of large-scale emigration in the stress scenario (S4) will more than cancel out the increase in births, leading to an expected decline in the population from 4.2 million in 2010 to about 2.8 million during the 2045-2050 period. Israel is the only other country for which population size will also decline in the stress scenario (S4), as a result of the assumed high level of out-migration and a very low level of immigration.

Table 3. Population estimates by development scenario (S1-S4), and UN estimates (millions)

	2010	2020					2030					2050				
		S1	S2	S3	S4	UN	S1	S2	S3	S4	UN	S1	S2	S3	S4	UN
Algeria	35,5	41,0	40,6	41,0	40,6	40,6	45,3	44,3	45,4	43,8	44,0	51,6	50,3	52,3	48,1	48,2
Egypt	81,1	95,9	94,9	95,8	95,2	95,7	109,3	106,6	109,3	107,3	108,0	133,5	125,7	132,2	130,7	126,9
Israel	7,4	8,5	8,6	8,5	8,0	8,9	9,6	10,3	9,9	7,9	10,2	11,7	13,4	11,8	7,2	12,7
Jordan	6,2	7,7	7,5	7,6	7,3	7,4	9,2	8,8	9,1	8,0	8,5	12,0	11,9	11,7	9,0	10,1
Lebanon	4,2	4,6	4,8	4,8	4,4	4,6	4,9	5,6	5,4	4,0	4,8	5,0	7,1	6,1	2,8	4,9
Libya	6,4	7,2	7,1	7,2	6,9	7,1	8,0	7,3	7,8	7,0	7,9	9,7	8,6	8,9	6,9	9,1
Morocco	31,9	35,6	35,0	35,7	35,4	35,5	38,7	37,1	39,0	37,9	38,0	42,7	41,5	44,3	40,5	40,6
O.P.T.	4,0	5,5	5,4	5,5	5,2	5,3	7,2	6,8	7,0	6,2	6,8	10,8	9,9	9,8	8,5	9,8
Syria	20,4	24,8	24,5	24,7	24,4	24,3	29,7	28,4	29,2	28,2	28,2	38,4	35,1	36,4	35,1	34,0
Tunisia	10,5	11,5	11,5	11,5	11,3	11,7	12,3	12,0	12,4	11,7	12,4	13,2	13,0	13,4	11,6	13,2
Turkey	72,8	80,9	80,6	81,1	80,7	81,8	87,7	86,6	88,3	87,0	88,1	96,1	92,5	98,4	95,3	95,6
Total	280,4	323,3	320,6	323,5	319,5	322,8	362,0	353,9	362,8	348,9	356,9	424,5	409,0	425,2	395,8	405,2

Source: Groenewold et al., 2012.

Figure 2. Regional population growth by development scenario (S1-S4), UN estimate, and EU-27 population growth



Source: Groenewold et al., 2012.

The figures in Annex 2 show how 2010 age structures are expected to change over a 40-year period, should one of the four development scenarios unfold. The current age-sex pyramids of SEMCs have quite different shapes reflecting different stages of demographic transition. The typical 'pyramid'-shape of several SEMCs, with large proportions of the total population in the youngest age groups, imply a large *population momentum*, notably in Palestine and Egypt. This means that even if future fertility rates in the youngest cohorts of women are much lower than they are today, the sheer size of these young cohorts will still lead to large numbers of births.

Working-age population and demographic dividend

Empirical studies conclude that demographic factors have a strong, statistically significant effect on aggregate saving rates and on economic growth (e.g. Bloom & Canning, 2001), notably the share of the working age population.

In past decades, countries experience substantial changes in their age structures depending on whether, when, how and how fast they move through different stages of demographic transition, that is, from a regime of high mortality and fertility rates to one with low rates. During the transition period countries undergo a substantial rise in the share of the working age population in the total population. This is a positive development as it can have a direct, favourable effect on per capita income. Given fixed output per worker, labour force participation rates, employment rates, and the absence of environmental and spatial restrictions to economic growth, a rise in the share of the working age population leads to an increase in output per capita, which can be considered as *a first demographic dividend*. This first demographic dividend may last for some decades but it is a temporary phenomenon. A period of high shares of people of working age will eventually be followed by lower ones, while shares of elderly people in the population will increase. The same demographic forces producing an end to the first dividend may lead to a s*econd demographic dividend* arising from savings and assets accumulated during the years people worked, while costs of raising children were low, because they had fewer children to raise as fertility rates were lower than in previous generations. The second demographic dividend typically follows the first but depends on the propensity to save (e.g. Lee & Mason, 2006; Mason, 2005).

The figures in Annex 3 show for each country and for each scenario how the *share* of the working age population in the total population is expected to change between 2010 and 2050. Differences between countries appear to be large, reflecting differences in *when* fertility and mortality started declining and the *speed* with which this took place.

In all countries the integration scenario (S2) is associated with highest levels and increases in demographic dividend, while the S3 scenario is frequently second best. This is not *a priori* evident. It turns out that these two scenarios in combination with existing age-sex distributions of SEMC populations lead to the most favourable timing and duration of fertility declines and life expectancy increases during the period 2010-2050 (e.g. see Annex 1). The rapid rise of the demographic dividend occurs because numbers populating the bottom of the age-pyramid decrease rapidly, due to the speed of decline in fertility. This decline is not attenuated much by growing population numbers in the highest age groups (65+) resulting from life expectancy increases at higher ages and from larger birth cohorts that gradually start populating these highest age groups.

The figures in Annex 3 show that, as time goes by, the demographic dividend, after a period of increase, declines again and this is because population decline in the lowest age groups will increasingly be compensated by population growth in the oldest age-groups (65+), which is caused by the long-term effect of rising life expectancies (Annex 1) and of large birth cohorts of the past that start populating the oldest age groups (65+). Thus, during the period of the increase in demographic dividend the share of the dependent population comprises predominantly youth below age 15 and less so of elderly (>65+), while during the period of declining demographic dividend the population composition of the dependents shifts towards an increased share of elderly people.

The figure also shows that for the majority of countries the peak level of the share of working age population comes close to 70%. Furthermore, it shows that countries differ markedly regarding *when* peak level shares are highest and for *how long* such high levels prevail. For most countries shares are still rising up to about 2035. Palestine, Jordan, and Syria reach peak-level shares beyond 2050 however. Of the 11 countries, Palestine currently has the lowest working-age population share (54.7%) and the highest growth potential in terms of demographic dividend. Tunisia (69.6% in 2010) and Lebanon (70.1% in 2015) however, have practically already reached a peak-level demographic dividend but levels remain high, at least up to 2035, after which working age shares will rapidly decrease and shares of elderly people (Table 6) increase. The figure shows that, compared to Libya and Algeria, Turkey benefits relatively longer from high levels of working-age shares. The large differences between scenario results for Israel reflect the large effect that different international migration assumptions have on the size and composition of the population. For instance, the stress scenario (S4) assumes that out-migration rises to all-time high figures similar to the all-time high figures of immigration in the years following the establishment of Israel in 1948.

Although the demographic dividend may be a necessary condition for economic growth it certainly is not a sufficient condition. To take full advantage of a situation whereby around 70% of SEMC populations are of working age, SEMC governments and market sector enterprises must set the stage for continuous economic growth to absorb growing numbers of people entering the labour market. Thus, employment rates[1] should remain stable or, preferably, increase, to ensure that increased numbers of people looking for work can find it.

Table 5 shows trends in employment rates in SEMCs and main EU countries (ILO, 2012). Employment rates of men in SEMCs are high and frequently higher than in EU countries. To a high degree this reflects the necessity of men to work and care for the family because women in most of these Islamic countries have cultural restrictions that prevent them from participating in the labour market. This is illustrated by the large differences between male and female employment rates in SEMCs, as compared to the differences in EU countries.

The table also shows that in the past decade the employment rates of men in most SEMCs have remained fairly stable or slightly increased, except for Palestine, Syria and Turkey where rates have declined. Apart from Syria, female employment rates have remained either stable at low levels or increased. Only in the case of Syria did rates for women clearly decline even further. The low

[1] The employment rate or employment-to-population ratio is defined as the proportion of a country's working age population (15-64yrs) gainfully employed. It is one of four indicators to measure progress in Millennium Development Goal 1b "achieving full and productive employment and decent work for all, including women and young people". The limitation of the indicator is that it does not measure job quality, working conditions, or adequacy of income derived from being employed (ILO, 2012).

participation rates of both men and women in Palestine are likely to reflect the problematic political and economic conditions there. To date, Palestinians depend greatly on employment opportunities in Israel and Jordan. All scenarios foresee rapid Palestinian population growth and rising numbers in the working ages (Figures 3 and 4); numbers that are unlikely to be absorbed in local labour markets should the BAU or stress scenarios (S1 and S4) materialise.

To cope with declining shares of working age populations, for most SEMCs beyond 2035 a way out is to increase female labour force participation. To date, women in SEMCs are a relatively untapped source of economic growth, so investing in their educational attainment, occupational skills and labour force participation is not only wise from an ethical point of view but also from an economic point of view, notably in countries where working age shares are decreasing, such as in Tunisia, Lebanon, and Turkey.

Table 5. Trends in employment rates in SEMCs and selected EU countries

	2000			2005			2010		
	M	F	F-M	M	F	F-M	M	F	F-M
Algeria	54	9	-45	62	13	-50	64	15	-49
Egypt	69	18	-51	71	18	-53	70	22	-48
Israel	56	48	-8	56	50	-6	58	54	-4
Jordan	60	12	-48	60	11	-49	59	15	-44
Lebanon	65	19	-46	65	21	-44	65	22	-43
Libya	67	28	-39	70	30	-40	72	30	-42
Morocco	68	26	-42	69	27	-42	68	26	-42
Palestine (O.P.T.)	57	12	-45	49	15	-34	49	16	-33
Syria	75	18	-57	71	14	-57	67	12	-55
Tunesia	61	20	-41	59	22	-37	60	23	-37
Turkey	69	25	-44	64	22	-42	63	26	-38
Sweden	64	57	-7	63	57	-6	63	57	-5
U.K.	66	51	-15	66	52	-13	63	53	-10
France	57	46	-12	58	49	-9	57	49	-7
Germany	63	45	-18	59	46	-13	62	50	-12
Italy	56	31	-25	57	36	-22	55	36	-19
Spain	60	33	-27	63	41	-22	54	43	-11

Source: ILO, 2012.

The elderly

Last but not least, scenario results indicate that the number of persons in the age group 65+ is expected to grow considerably in various countries. The first signs of ageing populations are clearly illustrated by the age pyramids of Algeria, Lebanon, Tunisia and Turkey. Another way of looking at this aspect of ageing is shown in Table 6 by means of old-age dependency ratios (ODR). ODRs are expressed as percentages and relate the number of persons aged 65 and older to the number of persons in the working ages 15-64 years. Such ratios describe the population base for financing the cost of health care for the elderly, which increase as people grow older. A substantial part of the working age population needs to be gainfully employed to provide the financial basis for this health care. However, this group is not simply a cost factor to the economy. Accumulated wealth and savings are likely to be higher at higher ages. If part of this is invested in the economy, growth in the share of the elderly in the population can be interpreted as an increase of a second type of demographic dividend (Mason & Lee, 2007; Lee & Mason, 2006; Mason, 2005).

The figures in Table 6 show even more clearly that the 2010 age distributions of all SEMCs in 2010 are those of relatively young populations compared to populations of EU countries. On average, in the EU, there are about four persons in the working age population vs. one person aged 65 or older. In the Palestine population (OPT) there are about 20 persons in the working age range for one person aged 65 or older. In neighbouring Israel the situation is quite different and resembles the situation in the EU. In Israel, there are only about six persons of working age that need to support one person of age 65 or older. However, the GDP per capita of Israel is much higher than that of Palestine. Old-age dependency ratios are on the increase in SEMCs, but lag far behind EU values.

Table 6. Old-age dependency ratios of SEMCs and EU27 (rounded percentages)

	2010	2030				2050			
		S1	S2	S3	S4	S1	S2	S3	S4
Algeria	7	11	12	12	11	23	27	28	23
Egypt	8	11	12	12	11	16	19	20	15
Israel	17	21	19	20	23	26	20	24	34
Jordan	7	6	7	7	6	14	15	17	14
Lebanon	11	15	15	16	16	26	24	29	37
Libya	7	10	11	11	10	24	27	29	28
Morocco	8	13	14	14	13	21	25	27	20
O.P.T.	5	6	6	6	5	9	10	11	8
Syria	7	10	10	10	9	15	16	17	14
Tunisia	10	16	16	17	15	28	31	33	28
Turkey	9	14	15	16	14	25	29	30	22
EU27	26	38				50			

Source: Groenewold et al., 2012.

The figures also reflect the fact that the demographic transition from high fertility and mortality rates to low rates started relatively late (1980s) compared to countries in Europe and that the speed of the decline is different. By 2050 about half the number of SEMCs (Egypt, Jordan, OPT, Morocco, Syria, Turkey) will still not even come close to the average 2010 old-age dependency ratio of EU27 countries. Only few SEMCs (Lebanon, Israel) will have dependency ratios by 2050 resembling the EU27-average of 2030.

Discussion and policy implications

The MEDPRO project developed four political-economic development scenarios for SEMCs and we hypothesised how present values of demographic behaviour indicators might change should they be shaped in a different context. Using conventional population projection methodologies, we derived four scenario estimates for each country's population in terms of future population size and age-sex structures for the period 2010-2050. We focused on analysing future trends in i) population growth at regional and country levels, ii) growth of working age populations and potential demographic dividend, and iii) ageing aspects in view of future cost and benefits of this group.

Results show that in spite of declines in fertility rates in SEMCs, populations are still growing fast and far more so than populations in EU countries. During the 2010-2050 period SEMCs' populations are expected to grow considerably, from about 280 million to a figure of between 395 and 426 million, while EU27 populations will only grow from about 500 to 525 million people. We found that the margins between lowest and highest scenario estimates are not large for predictions of short-term population growth. For instance, the largest difference in 2020 is between the BAU scenario estimate (323.3 million) and the stress scenario estimate (319.5 million), which is 3.8 million, or about 1% only. This small difference is not surprising because much of the population growth in these countries is already embedded in the current size and shape of these countries' age-sex pyramids; a phenomenon called 'population momentum'. In the long term though, population estimates become more sensitive to differences in scenario assumptions. However, such differences are attenuated because effects of specific fertility and mortality scenarios cancel out to some extent. For instance, in the alliance scenario (S3) the population-increasing effect of increasing life expectancy is partially offset by the population-reducing effect of declining fertility. Another issue is that the rather widely different scenario assumptions about net numbers of international migrants turned out to have little overall impact on expected population growth for some countries because net numbers turned out to be small relative to total population size, as in the case of Turkey and Egypt.

We then examined scenario estimates for working age populations. The growth of the working age population is considered as a *demographic dividend* because, other things being equal, growing numbers of potential workers means increased economic production and earnings. Whether and to what extent SEMC economies take advantage of the demographic dividend depends on the political and economic climate in the country, region and world, the presence of creative and effective

policy-makers and planners, and environmental and ecological conditions permitting sustainable economic growth.

We found that in the coming decades most SEMCs will either experience increases in numbers and relative size of working age populations, or they will experience stabilisation of already high numbers and shares. Thus, the window of opportunity for a demographic dividend is opening or is already open to SEMCs, but will start closing around 2035. Furthermore, the perks of this demographic dividend may equally turn into a *demographic penalty* if employment opportunities do not adequately increase too. Should employment rates remain the same or even decline, such as in the case of Syria and Palestine, then the numbers of unemployed people will increase, placing a burden on society, causing social unrest and political instability. Labour migration, frequently a safety valve in the past for excess (unemployed) population, will become more difficult because receiving countries, such as in the EU, despite expected labour force shortages, will increasingly prevent immigrants from entering if they do not have the vocational skills to properly integrate into the receiving countries' labour market and socio-cultural environment.

From an economic and demographic point of view it would have been better if the Arab Spring had started 10-15 years ago, leaving more time to reform SEMCs' societies and take maximum advantage of available demographic dividend potential (i.e. a growing share of working age population shares vs. a declining share of the economically dependent population (youth, elderly). To take advantage of the still-available demographic dividend potential implies that SEMCs' governments develop and implement effective policy measures contributing to political stability, economic-, employment- and income growth, including the establishment of social and financial safety nets. Such measures include the improved availability of and access to education and vocational skills (in particular for young women); adaptation of human resource development to meet labour market requirements (i.e. upgrading curricula in schools and colleges, and improving educators to ensure that acquired knowledge and skills prepare students for employment). Also needed is the improvement of infrastructure; the reduction of government regulations that hamper economic growth; protection against labour and ecosystem exploitation, and the promotion of ethnic and religious tolerance.

These policy options are consistent with the findings of other MEDPRO studies (Ayadi, El Mahdi and Carrera, 2013). This research concludes, among other things, that in past decades SEMCs have experienced considerable progress in human capital development, such as higher school enrolment, reduction of gender gaps in education, and higher government spending on education. However, differences with EU countries are still considerable, in particular in the domain of female labour force participation. In most SEMCs there are socio-cultural barriers that prevent the mobility of women and their participation in *and* contribution to the economy and policies are needed to overcome such barriers. Furthermore, increased educational attainment in most SEMCs has not led to higher participation rates in the job market. This is partly attributed to the quality of education received. Education and skills acquired in schools generally do not match the requirements in the job market. This is an area requiring the urgent attention of policy-makers, in both SEMCs and the EU. In SEMCs, working age populations are high and in several countries still rising, which leads to higher numbers of unemployed persons who have diplomas and skills that do not match the demands of employers. In various EU countries, in decades to come, the demand for skilled labour is expected to increase as working age populations shrink. EU investment in improving education quality in SEMCs would be beneficial to both regions, if labour force surpluses and shortages in both regions could be matched and overcome.

National and EU policy-makers could convene and develop strategies and programmes to better prepare children and young adults, in particular women, for the human skills and quality demands of labour markets in SEMCs and EU countries. The future need for *skilled* labour in EU countries requires EU and SEMC policy-makers to modernise EU migration policies to encompass new admission rules and regulations, and labour migration programmes that better control the flow of (skilled) labour migration from SEMCs to the EU *and back*. Obviously, such programmes should prepare prospective migrants for life in EU countries in terms of socio-cultural adaptation. These issues should be agreed upon between EU and its neighbouring countries, for instance in the format of a kind of 'Roadmap to Mobility' programme.

An emerging issue is that ageing will also become a phenomenon to reckon with in some countries (e.g. Israel, Tunisia, Lebanon, and Turkey) after about 2035. This means that the health system has to be

transformed to be able to cope with disease pattern changes, entailing a shift in focus from mainly dealing with infectious and preventable diseases of children and mothers to typical old-age lifestyle diseases (obesity, diabetes) and degenerative diseases (cancers). The future growth in the numbers of elderly people will result in growing health costs during a period when numbers of workers in the economy are declining. This requires governments to stimulate healthy lifestyles in the population in all age groups, including youth. A healthy life at an older age requires living a healthy life at a young age. The latter ensures that the future elderly will age as healthily as possible, requiring a minimum of health and old-age support. Should the S2 or S3 scenarios unfold an increasing share of the future elderly may have accumulated sufficient wealth and savings during their lifetimes to permit them to contribute, at an older age, to the rising healthcare costs in their ageing population. Wealth and savings among the elderly of the future reduce dependency and stimulate the economy as savings may be either reinvested or consumed by the elderly. This is another type of potential demographic dividend, whereby people are motivated and in a position during their working lives to create financial reserves for their old-age support.

If the BAU or stress scenarios unfold the expected economic conditions will be unfavourable in SEMCs. This may increase emigration pressure among young adults, which may lead to a brain drain of the relatively small group of well-educated young adults in SEMCs to EU countries. There, highly-skilled labour and people with 'desirable skills' are becoming scarce as most EU countries, in contrast to SEMCs, face shrinking populations in the working ages. Should the integration or alliance scenarios unfold, the future for young adults will be much brighter and may even lead well-educated, pioneering children of SEMC country emigrants, born in the countries of destination, to return to the homeland of their parents to explore possibilities of a future there. This kind of migration has already been observed among enterprising and well-educated children of Turkish emigrants born in Germany who explore their options in the currently booming Turkish economy.

The population and development scenarios were developed at a time when various countries in the region were going through a major transition period of fighting for political freedom, democratisation and for different government structures. To date, the outcome is yet uncertain. We made the assumption that by 2015 the situation would have returned, more or less, to stability in the sense that new political contexts would not lead to major changes in demographic behaviour. But is this assumption reasonable if the Arab Spring protests and political mayhem spreads across the entire region, leading to the establishment of anti-western, conservative Islamic governments in all SEMCs? More specifically, can the results of these population scenarios encompass a population growth trajectory of societies led by such governments?

We think the answer is affirmative, and most certainly in the intermediate term, say, up to 2030, for the following reasons.

Firstly, the 'population momentum' embedded in the current age-sex pyramids of SEMCs means that population growth during the 2010-2030 period is rather insensitive to sudden changes in fertility and mortality rates. Past high fertility rates created large birth cohorts that will reach reproductive age about 15-20 years later. Although having fewer births per woman than older generations, the sheer size of these birth cohorts means that the absolute number of births is high. Therefore, reinforced by declining mortality rates, these will continue to grow for years to come, despite the decline in fertility rates in the past two decades. With respect to the international migration component of population growth, even if all persons who even slightly oppose lifestyles according to conservative Islamic law would all intend to emigrate or flee from SEMCs, the actual numbers departing would be limited by immigration and asylum restrictions in receiving countries. After 2030, the effects of changes in fertility and mortality rates would become apparent but population growth effects would still be attenuated if the new political context leads to both higher fertility and mortality rates, because the effects would to a certain extent cancel each other out.

Secondly, the establishment of anti-western, conservative Islamic governments may raise fears about a population explosion in these countries. However, there is little evidence that the presence of a government driven by conservative Islamic values, Shiite or Sunni, necessarily leads to higher fertility and higher population growth rates. The cases of Iran and Saudi Arabia are illustrative.

With about 77 million people, in terms of size, Iran is between the two largest SEMCs, Egypt and Turkey. Since 1979, after the ousting of the western-oriented Shah of Persia, Iran has an anti-western and conservative Shiite Islamic government, initially under the leadership of Ayatollah Khomeini. Before 1979, Iran was open to western modernisation and lifestyle influences but

the number of children (TFR) per woman between 1960 and 1979 hovered between 6.8 and 6.0 children per woman. However, after the establishment of the Islamic government in 1979, fertility rates dropped rapidly to about 1.9 in 2010, below replacement level fertility (i.e. 2.1 children). Furthermore, the trend in declining mortality rates was only interrupted for about seven years, shortly before and after the establishment of the Islamic government. While life expectancy increased from 45 years in 1960 to about 55 in 1977, it then dropped to 50 years by 1984. However, after the firm establishment of the Islamic government the past trend in life expectancy improvement picked up again, leading to a life expectancy of 72 years in 2010 (UN, 2012). Saudi Arabia, with its population of 26 million people – the size of Morocco and Syria, is the core area of Sunni Muslim tradition. There, too, the average number of children per woman fell in recent decades, from more than 7 children per woman before 1978 to about 2.8 children in 2010, while life expectancy increased from about 45 years in 1960 to about 74 years in 2010 (UN, 2012). Islamic countries are also going through a period of demographic transition, which is interrupted temporarily by changes in the socio-political character of their governments.

Thirdly, the influence that governments and other macro-level factors have on the micro-level demographic behaviour of individuals should not be overrated. There are many examples where governments have failed to influence the behaviour of individuals, notably if the proposed behaviour is not in accordance with individuals' aspirations, couples or social groups. The strict norms and values promoted by religious leaders and their followers in government may in practice only be implemented by a minority of the population. For example, despite the pro-natalist and anti-abortion stance of the Vatican, Catholic Italians have reduced their number of births rapidly in recent decades to a level below replacement. Furthermore, they legalised abortion back in 1978, and abortion rates are still fairly high. Other types of examples can be found in the sub-Saharan region where governments tried, with the financial support and advice of international organisations, but mostly in vain, to control fertility or safe-sex behaviour by conveying messages to the public. This is because awareness-raising among the public through the media (and church or mosque) is a necessary but most certainly not sufficient measure. Other, more pervasive factors at the community, household and individual level mean that people behave differently and do not necessarily follow the will of governments or the clergy. Factors such as educational attainment, wealth status and aspirations, gender norms, values and roles, perceived costs and benefits of rearing children may lead to attitudes and behaviour of individuals that are resilient to change in a specific direction. Evidence suggests that the impact of religious leaders on reproductive (and other) decisions of couples is limited and often overrated, regardless of the prevailing faith in countries or regions.

The above considerations convince us that future population trajectories of SEMCs, irrespective of the presence of governments with strong or weak religious prescriptions, will develop somewhere between the high-low margins of predicted population size as indicated by the population projection results of the alliance (S3) and stress (S4) scenarios, respectively (see Table 5).

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Annex 1. Operationalisation of migration, fertility, mortality assumptions

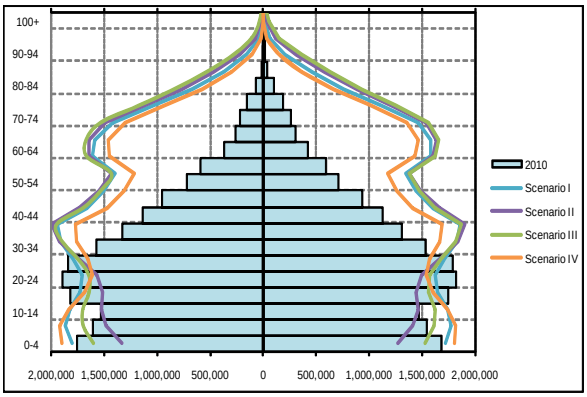
Model variables		BAU scenario (S1) Diversity remains	Integration scenario (S2) Convergence	Alliance scenario (S3) Convergence	Stress scenario (S4) Diversity remains
Population	Base year population	Age-sex distribution 2010	Age-sex distribution 2010	Age-sex distribution 2010	Age-sex distribution 2010
Migration	Net number of migrants (NM), by sex	NM estimated by UN for the 2010-2050 period, by cntry, slightly adapted for 2010-15 due to Arab spring upheavel in the region	2010-2015=S1 NM 2010-2015 2015-2020=2 x S1 NM 2015-2020 2020-2030=back to S1 NM 2010-2020 2030-2050=linear change to highest recorded (absolute) NM since 1950	2010-2015=S1 NM 2010-2020 2015-2020=S1 NM 2015-2020 2020-30=back to 50% S1 NM in 2010-15 2030-50=linear change to NM=0 by 2050	2010-2015=S1 NM 2010-15 2015-2050= S2 NM 2045-2050 but with opposite sign (-)
	Mode of change	constant	linear	linear	constant
	Age pattern of migration (ASNM), by sex[1]	Model Western Standard	Model Western Standard	Model Western Standard	Model Western Standard
Fertility	Total Fertility Rate (TFR)	TFR 2010 level to TFR= 2.1 (2050)	TFR 2010 level to TFR=1.5 (2050)	TFR 2010 level to TFR=1.8 (2050)	TFR 2010 level to TFR=2.4 (2050)
	Mode of change	linear	linear	linear	linear
	Age pattern of fertility (ASFR)	UN 2010-2050 medium variant	UN 2010-2050 medium variant	UN 2010-2050 medium variant	UN 2010-2050 medium variant
Mortality	Life expectancy at Birth, e(0), by sex	0.1250 life expectancy years increase per calendar year	0.1825 life expectancy years increase per calendar year	0.2500 life expecancy years increase per calendar year	0.0625 life expectancy years increase per calendar year
	Mode change	linear	linear	linear	linear
	Age pattern of mortality (ASDR), by sex	Constant WHO 2008 age pattern of mortality, by cntry	Constant WHO 2008 age pattern of mortality, by cntry	Constant WHO 2008 age pattern of mortality, by cntry	Constant WHO 2008 age pattern of mortality, by cntry

[1] United Nations (UN), (1992), Preparing Migration Data for Subnational Population Projections, pp41-44. New York. 1992.

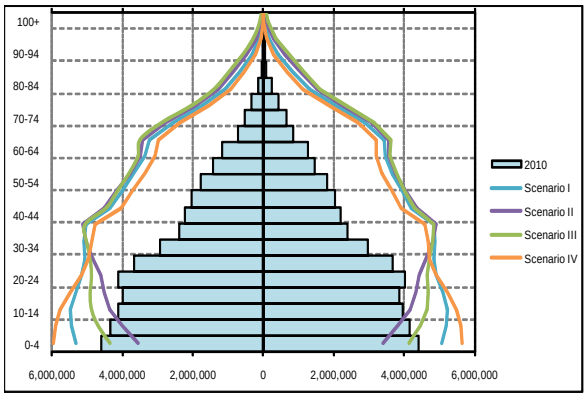
Source: Groenewold et al., 2012.

Annex 2. Current (2010) and estimated (2050) population pyramids of 11 SEMCs, implied by four different development scenarios

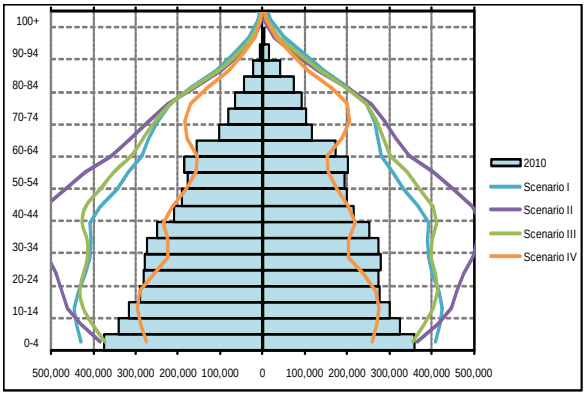
Algeria (2010 and 2050)



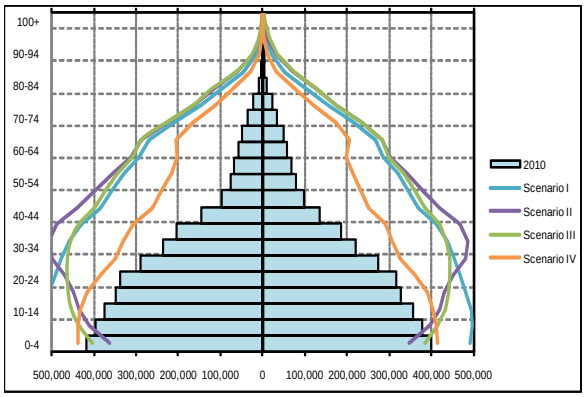
Egypt (2010 and 2050)



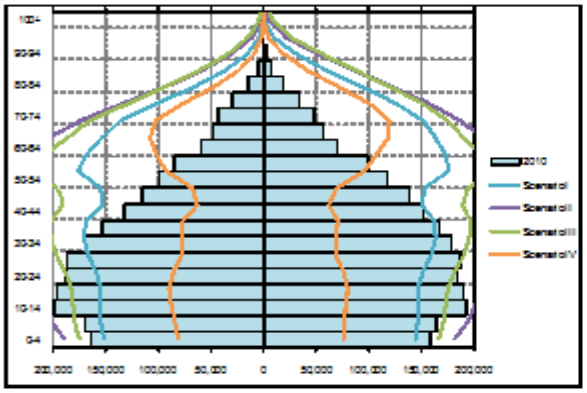
Israel (2010 and 2050)



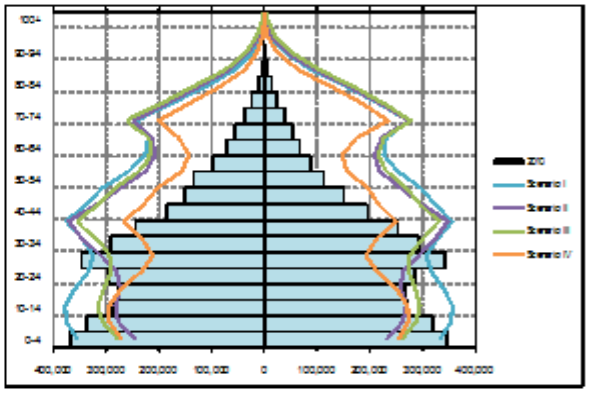
Jordan (2010 and 20 50)



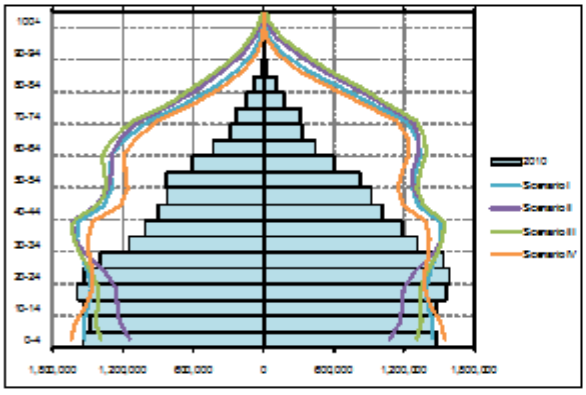
Lebanon (2010 and 2050)



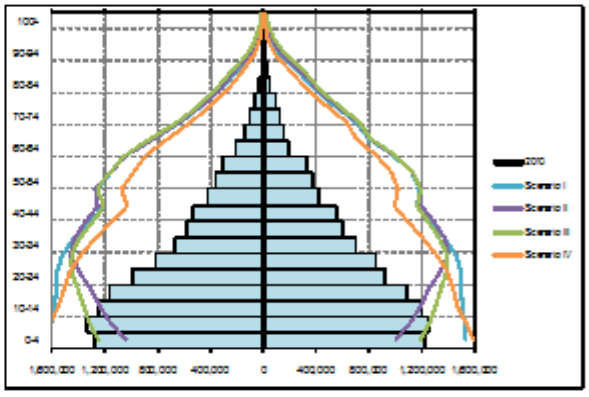
Libya (2010 and 2050)

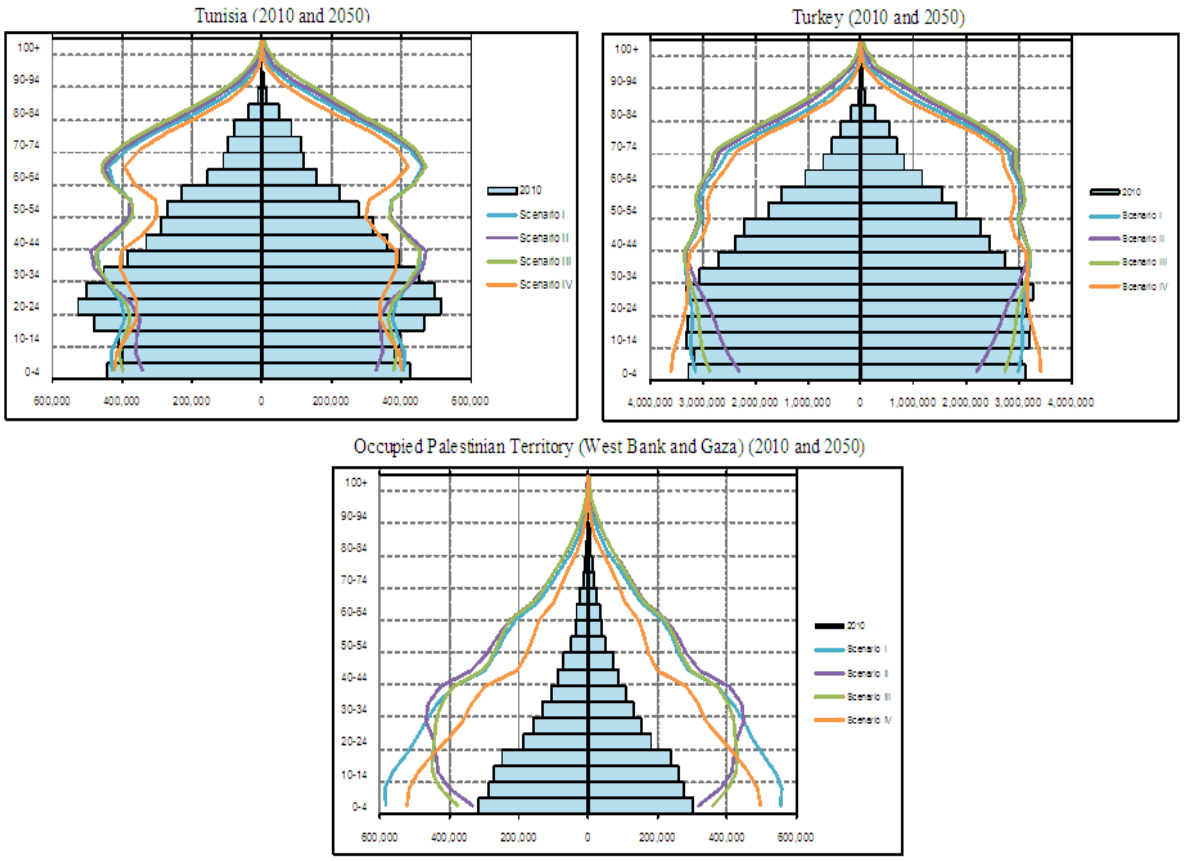


Morocco (2010 and 2050)



Syria (2010 and 2050)

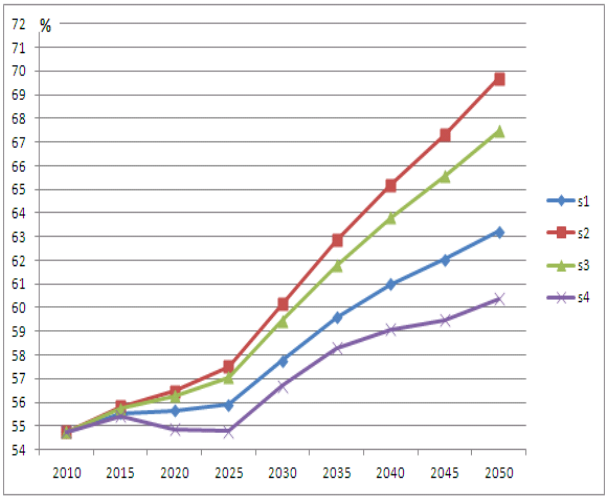




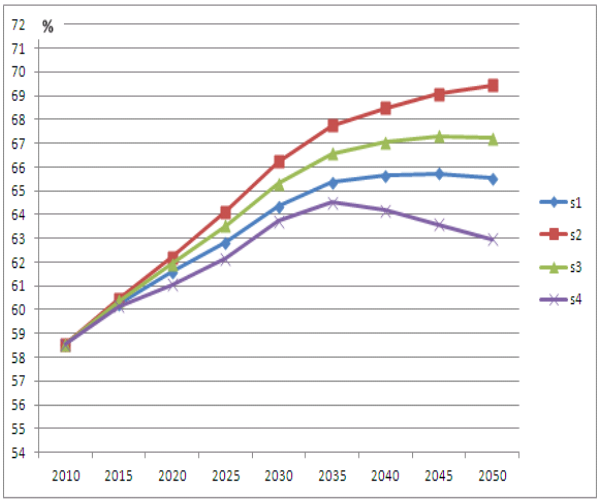
Source: Groenewold et al., 2012.

Annex 3. Expected demographic dividend: working-age population (15-64) as a % of the total population, by development scenario (S1-S4)

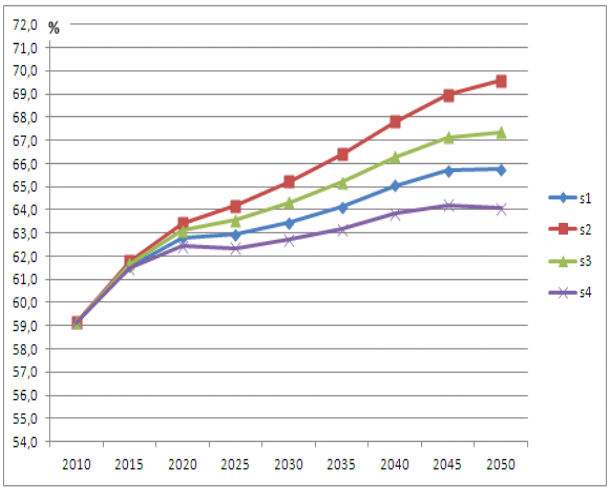
Palestine (O.P.T.)



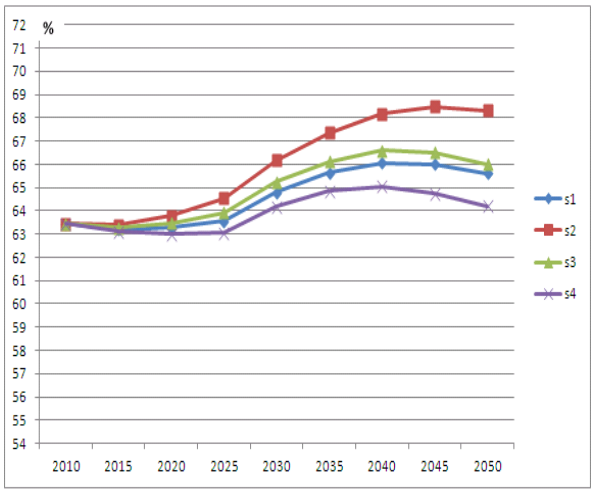
Jordan



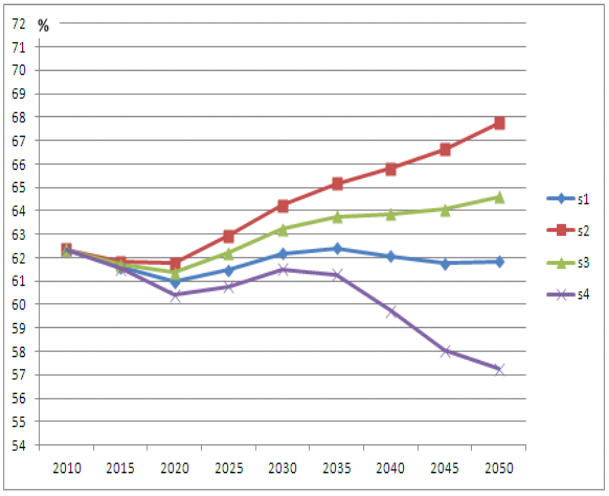
Syria

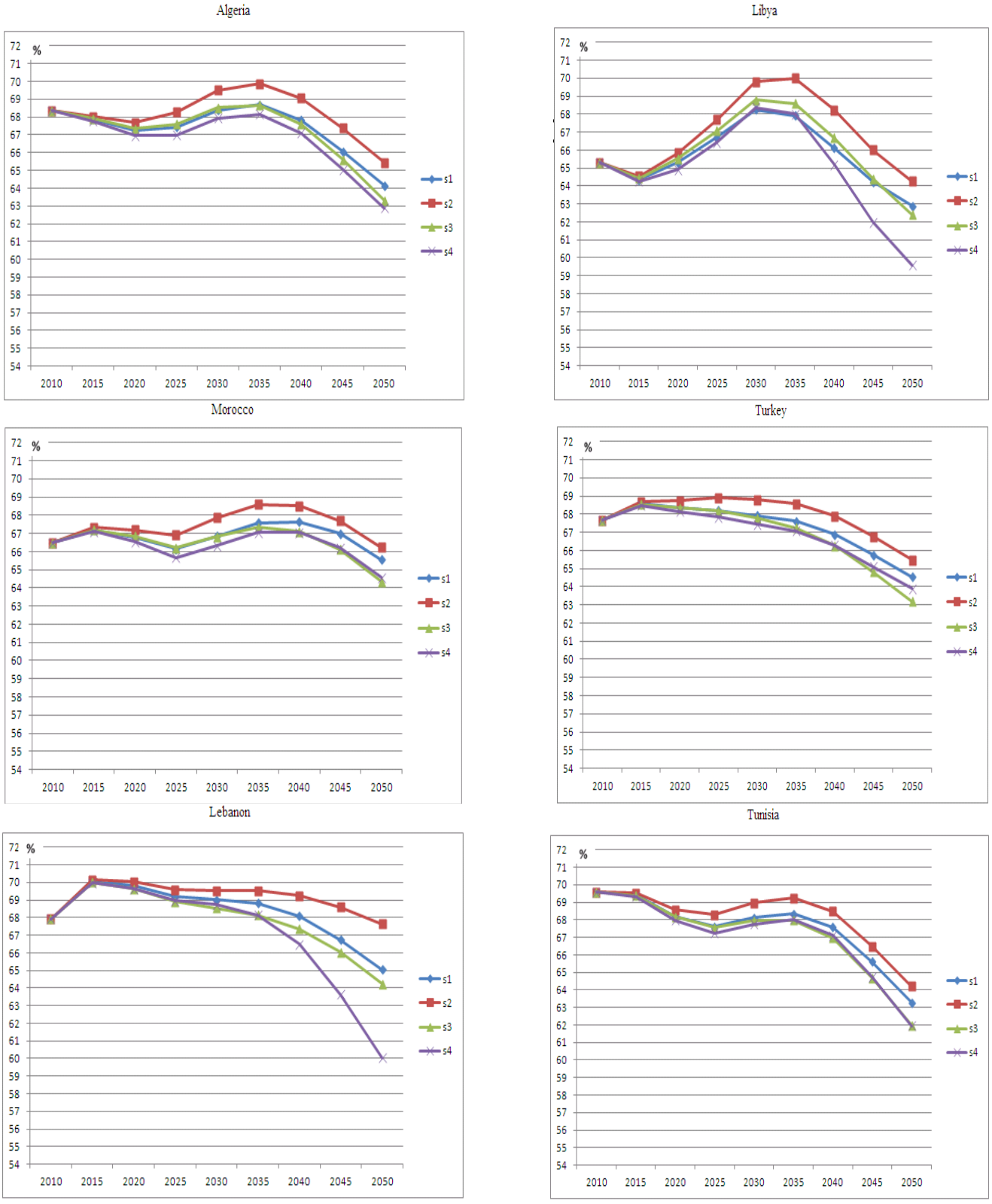


Egypt



Israel





Source: Groenewold et al., 2012.

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.

Title	MEDPRO – Prospective Analysis for the Mediterranean Region
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
Budget and Funding	Total budget: €3,088,573 EC-DG RESEARCH contribution: €2,647,330
Duration	1 April 2010 – 31March 2013 (36 months)
EC Scientific Officer	Dr. Domenico Rossetti Di Valdalbero, DG RESEARCH
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