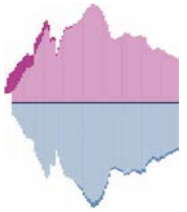

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Demographic developments in the Middle East and North Africa

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Keywords

Middle East, North Africa, MENA, demographic development, fertility, age structure, migration, mortality, demographic potential

Abstract

BACKGROUND

Against the background of the concept of demographic transition, the demographic developments in the Middle East and North Africa (MENA) have been described as 'peculiar' and 'unique'. Since the discussions about the demographic performance and changing age-structure, the picture has changed and needs to be updated.

OBJECTIVE

We evaluate the current state and recent demographic development in 25 countries. We show how population structure and processes have changed in this region from 1950 to 2015 and compare these processes with the developments in Western societies.

METHODS

We use recent and internationally comparable macro-data on changing demographics, and present standard and self-computed indicators based on the databases of various United Nations agencies.

RESULTS

Main findings are (1) a natural increase in population in all countries; (2) an increase in fertility in three countries; (3) changing age structures that do not support the notions of a 'youth bulk' or population aging; (4) substantial migration but diverging patterns of refugee migration; (5) no guarantee of a demographic dividend; and (6) a heterogeneous picture in terms of the country-specific phases of demographic transition.

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CONCLUSIONS

Our findings underline that the MENA countries have to respond to demographic developments to benefit from the demographic dividend and the population momentum by adapting their economic, social and political institutions.

CONTRIBUTION

We outline the debate about demographical developments in MENA countries and update the demographic profiles of 25 countries that have experienced considerable change in the last decades.

1. Introduction

The demographic developments in the Middle East and North Africa (MENA) have previously been described as "peculiar" (Obermeyer 1992: 33) and "unique" (Omran 1980: 97). This is due to its differing nature with the concept of demographic transition which suggests a transition from high birth and death rates to lower birth and death rates leading to an accelerating population growth (Thompson 1929). This transition is expected to occur in every society which is experiencing modernization including educational, economic and social progress (Kirk 1996: 365).

There have been basically two succeeding streams of literature on the demographics in MENA countries. First, in the 1980s, demographers described the Arab Middle East as a region with poor demographic performance (Cleland and Wilson 1987; Fargues 1989). Unlike the negative relationship between fertility and development in Western countries, the association was weak and sometimes positive in the Arab region (Omran 1980: 97). Moreover, the overall declines in mortality lagged behind expectations based on levels of economic development (Caldwell 1986; Courbage 1999). Obermeyer (1992) counter-argued that mortality fit well with models of demographic transition, although regional trends in fertility rates lagged behind economic development. Thus, demographers have disagreed about the timing of mortality decline and some even suggested that fertility declines have lagged behind improvements in the economy. In the last two decades, others claimed that birth and death rates declined while educational facilities increased (Rashad 2000; Eltigani 2009; Casterline 2009; Courbage 2015; Loichinger et al. 2016), whereas, more recently, Courbage (2015) and Samari (2017) have documented increased fertility in Egypt and Algeria. Using comparative as well as country-specific analysis, Groth and Souza-Poza (2012: 9) even summarized "that few stylized observations apply uniformly to Muslim countries,

whose heterogeneity is enormous" and the demographic developments resemble a jigsaw puzzle.

A second stream of literature has stressed the effect of declining levels of fertility and mortality on the age-structure resulting in a youth bulk (Roudi-Fahimi and Kent 2007; Courbage 2015; Courbage and Puschmann 2015), population ageing (Rashad and Khadr 2002; Yount and Sibai 2009; Hussein and Ismail 2016), economic growth (Jones 2012; Loichinger et al. 2016) and migration (Fargues 2006, 2008). According to economic literature, the demographic transition can boost economic growth by increasing the size of the labor force (Bloom & Williamson 1998; Birdsall et al. 2001; Bloom et al. 2003). The positive effect of the country-specific age structure on economic performance should occur during the intermediate phase of the demographic transition. This "demographic dividend" or "bonus" has been assessed using age dependency ratios as well as growth rates of working-age population (Jones 2012; Loichinger et al. 2016). Decreasing demographic support ratios and growth of the working-age population between 1990 and 2010 point to a demographic dividend in the MENA region (Jones 2012, Loichinger et al. 2016). Further, age-structure not only affects economic growth, but also the future demographic potential of a country (Billeter 1954). Although this relation seems obvious, there is – according to our knowledge – no empirical evidence on this issue for the MENA countries.

Several years have passed since these two debates about the demographic transition (for an overview see Tabutin and Schoumaker 2005, 2012), and the demographic profiles of many Arab countries have changed. Previous findings, of which some are surprising from a western perspective, call for a closer inspection of the actual levels and trends of demographic processes as well as of the demographic dividend and potential in the region. To evaluate the current state and recent demographic development in the MENA countries, we present comparable and recent data on changes since 1950 and on the current characteristics of the population in 25 countries using the databases of various United Nations agencies (Population Division, Statistics Division). Consciously, we resign from discussing forecasts due to the strong underlying assumptions (United Nations 2015b; Loichinger et al. 2016) but provide a comprehensive demographic picture of the region.

We discuss various indicators jointly which yield additional insights in the demographic processes and present self-calculated indicators to assess the demographic potential. In doing so, we add to the literature in five ways: first, we describe the socioeconomic and geographical context with indicators of gross domestic product, urbanization, and population density. Second, we consider the level and trends of crude

fertility and mortality, and natural increase. Third, against this background, we analyze how migration processes contribute to annual population growth since 1950. Fourth, we inspect fertility and mortality processes using more specific demographic indicators. Fifth, we discuss the level and trends of the resulting age structures, demographic dividends and demographic potentials. We close with a discussion of the observed processes and identify issues that call for closer inspection in the near future.

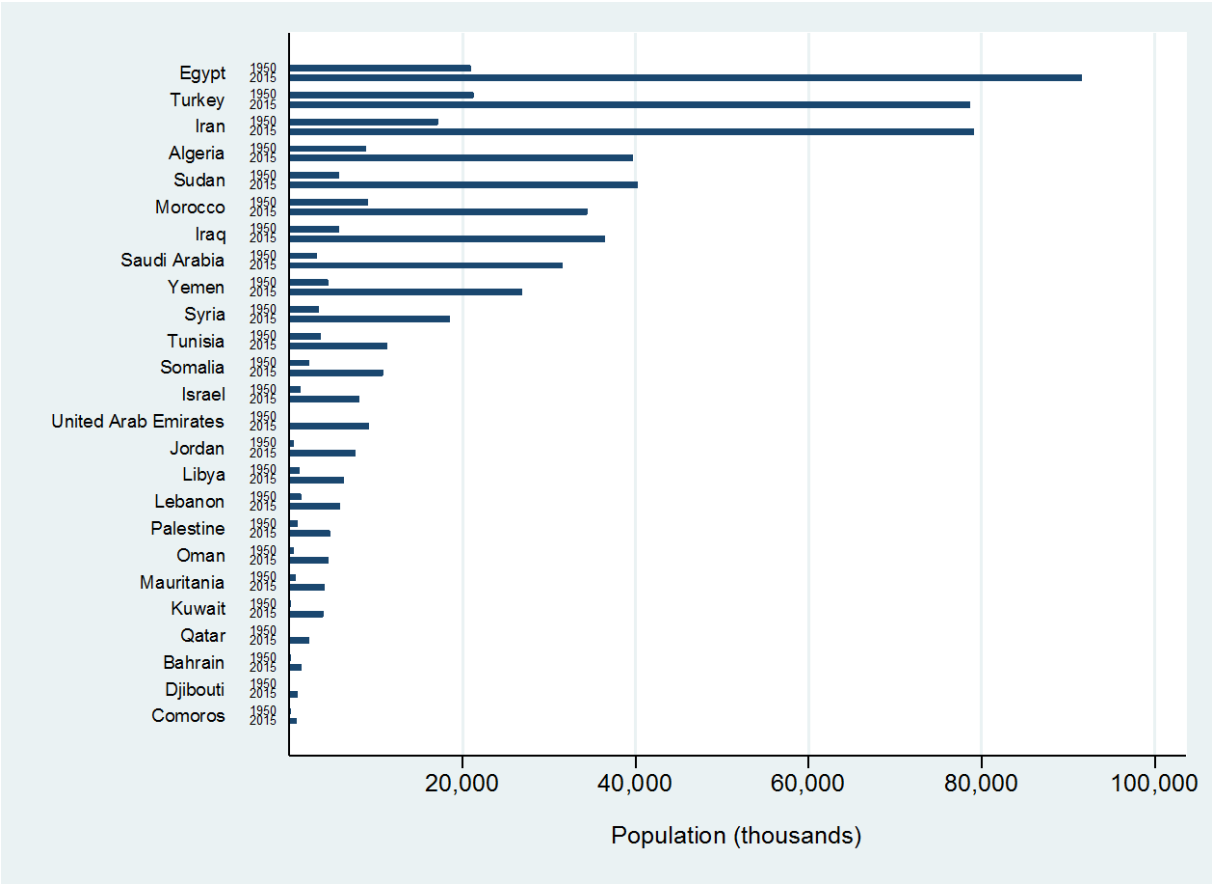
2. The region

There have been several approaches to choose the countries for MENA region analyses (Tabutin and Schoumaker 2005, 2012; Casterline 2009; Crane et al. 2011; Courbage 2015; Loichinger et al. 2016). We use a broad definition of the MENA region and consider the 22 members of the 'Arab League' plus three neighboring countries (Israel, Turkey, and Iran). We analyze each of these 25 countries separately. Additionally, we perform regional comparisons considering (1) the Arab least developed countries (Comoros, Djibouti, Mauritania, Somalia, Sudan, Yemen); (2) the countries of the Gulf Cooperation Council (Bahrain, Kuwait, Oman, Qatar, Saudi Arabia, United Arab Emirates); (3) the Mashreq countries (Egypt, Iraq, Jordan, Lebanon, Palestine, Syria); and (4) the Maghreb countries (Algeria, Libya, Morocco, Tunisia) (Loichinger et al. 2016: 1). As the neighboring countries Israel, Turkey and Iran did not clearly fit into one of these groups, we dropped these three countries from the regional comparison. The regional demographic profiles are displayed in the Appendix.

Except for Israel, Islam is the dominant religion throughout the region. The 25 countries strongly differ regarding their economic and social conditions and are, moreover, culturally diverse, particularly because of numerous religious and ethnic minorities (Tabutin and Schoumaker 2005: 505). The demographic weight of these countries varies substantially (Figure 1, cf. Tabutin and Schoumaker 2005: 511). The region includes three countries with large populations, each with more than 70 million inhabitants (Egypt, Iran, Turkey). The region also includes two countries with less than one million inhabitants (Comoros, Djibouti) and two countries with less than two million inhabitants (Bahrain, Qatar). In sum, the MENA region was home of 1,279 million people, with North Africa having a population of 224 million. For comparison, in 2015 the United States had 322 million and Western Europe 445 million inhabitants (Figure A1). However, the Arab world has grown rapidly over the past decades. In 1950, only 66 million people were living in the region, whereas by 2015, the population was nearly twenty times that size. On the level of single countries, Qatar and the United Arab Emirates experienced huge increases of their population over the last 60 years. In

Tunisia, Turkey and Morocco, the population increased by factors between 3 and 4 over this period. This makes the region the second-fastest growing in the world over that period, lagging only behind Sub-Saharan Africa.

Figure 1: Demographic weight of the MENA countries in 1950 and 2015

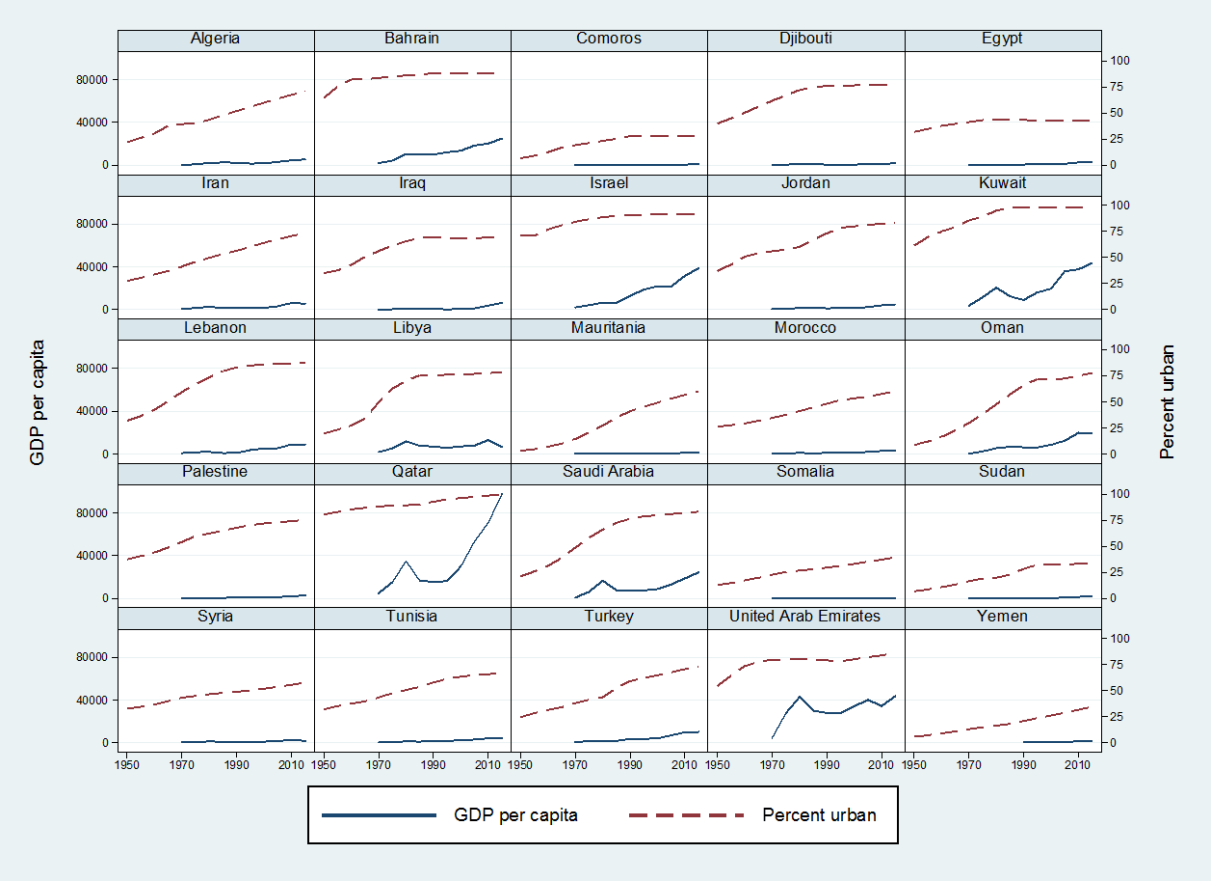


Data: United Nations (2015a)

The 25 countries of the MENA region have also extremely contrasting geographical features in terms of surface areas and population densities (Tabutin and Schoumaker 2005: 510). Their land areas range from 6,220 square kilometers in Palestine to almost 2.4 million square kilometers in Algeria. In many countries, vast regions are covered by deserts and steppes and population is mainly distributed in the coastal zones (Mediterranean, Red Sea, Persian Gulf) or along rivers (e.g., Nile, Tigrus, Euphrates). Thus, crude densities of population (inhabitants per square kilometers) as reported by the United Nations Population Division (2015a) – ranging from 3.6, 14.5 and 14.7 inhabitants per square kilometer in Libya, Oman and Algeria respectively, to 373 in Israel 572 in Lebanon, 765 in Palestine and 1,812 in Bahrain – may not elicit the real crowding of the population. Moreover, they are poor indicators of the relationship between agricultural resources and population (Mathieu and

Tabutin 1996). Very different pictures emerge when looking at the population densities based on arable and permanent crop land areas (Tabutin and Schoumaker 2005: 511).

Figure 2: GDP per capita at current prices in US Dollars and share of urban population, 1950–2014



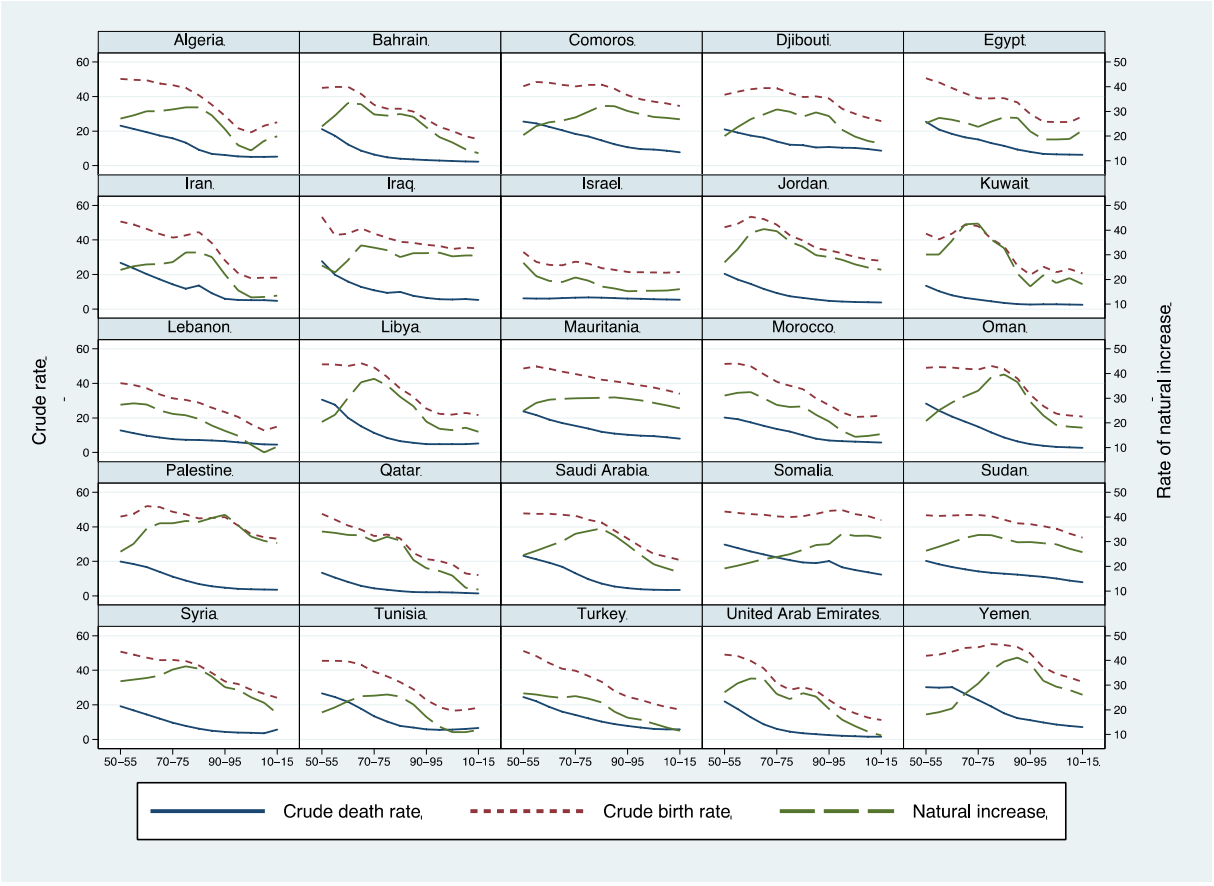
Data: United Nations (2014, 2016)

Alternatively, the share of urban population as reported by the United Nations Population Division can be considered. Note, that these numbers are based on country-specific definitions of cities. Bahrain for instance defines agglomerations with more than 2,500 inhabitations as cities, whereas Lebanon takes 5,000 inhabitants as a threshold for urban population (UN 2014: Sources for Urban Population). As shown in Figure 2, the share of urban population increased remarkably in all MENA countries. In 2014, the majority of the population in many of these countries lived in cities. In Lebanon, Jordan, Bahrain and in the United Arab Emirates, up to 80% of inhabitants lived in cities. In Qatar, Kuwait and Israel, only 10% of the population was residing in rural areas. In Western Europe and in the United States, about 80 % of the population were living in urban areas in 2014 (Figure A2).

3. Demographic transition

Figure 3 shows the mortality and fertility patterns for the 25 countries from 1950–55 to 2010–15 based on crude death rates and crude birth rates per 1,000 inhabitants. As the model of demographic transition suggests, the entire region experienced a decline in mortality in the 1950s and 1960s. The initially very high mortality, ranking between 30.592 in Libya and 6.261 in Israel, fell to values ranging from 12.386 in Somalia to 1.489 in Qatar. In 2015, the crude death rates of Western Europe and the United States were 9.699 and 8.238 respectively.

Figure 3: Crude death and birth rates and rates of natural increase (per 1,000 population), 1950-55 to 2010-15



Data: United Nations (2015a)

Birth rates, also initially very high ranging between 53.321 in Iraq and 32.976 in Israel, decreased much more slowly until the 1980s. The birth rate then started to fall more quickly while mortality levelled off. In the period 2010–15, crude birth rates varied between 43.912 in Somalia and 11.199 in the United Arab Emirates. Most interestingly, crude birth rates suggest an increase in fertility in Algeria, Egypt, and the Lebanon since 2010, when the

"Arab Spring" occurred in these countries. In 2015, the crude birth rates of Western Europe and the United States were 10.218 and 12.601 respectively (Figure A3).

Although reported regularly in studies on the demographic transition, the crude birth rate as well as the crude death rate gives only a vague hint on the pace of fertility and mortality in a country. This is because it depends strongly on the country-specific age structure as well as on the country- and age-specific mortality rates. Therefore, we inspect the fertility and mortality per country in more detail based on more specific demographic indicators.

The different patterns of onset and speed of decline in mortality and fertility yield differences in the shape of the demographic transition. Tabutin and Schoumaker (2005: 521f., 2012: 2) have grouped countries according to their latest birth and growth rates and labeled these patterns as 'traditional', 'classical' or 'advanced'. However, the heterogeneous patterns found in Figure 3 do not support such classifications in a longitudinal perspective and only a few countries indeed show similar patterns (e.g., Mauretania and Sudan, or Libya and Oman).

4. Population growth and international migration

The annual rate of population growth between two time points – conventionally expressed in percentage units per year (United Nations 1983) – is calculated as an exponential rate of growth. Obviously, in almost all countries the annual growth rate does not follow the shape of the natural population growth. As Figure 4 shows, the shape of annual population growth is closely linked to the rate of net migration (defined as difference between in and out migration per 1,000 population). The estimates of net international migration are calculated as the difference between overall population growth and natural increase (United Nations 2015b); with the existing country-specific data, it is not possible to calculate net migration from counts of in- and out-migration.

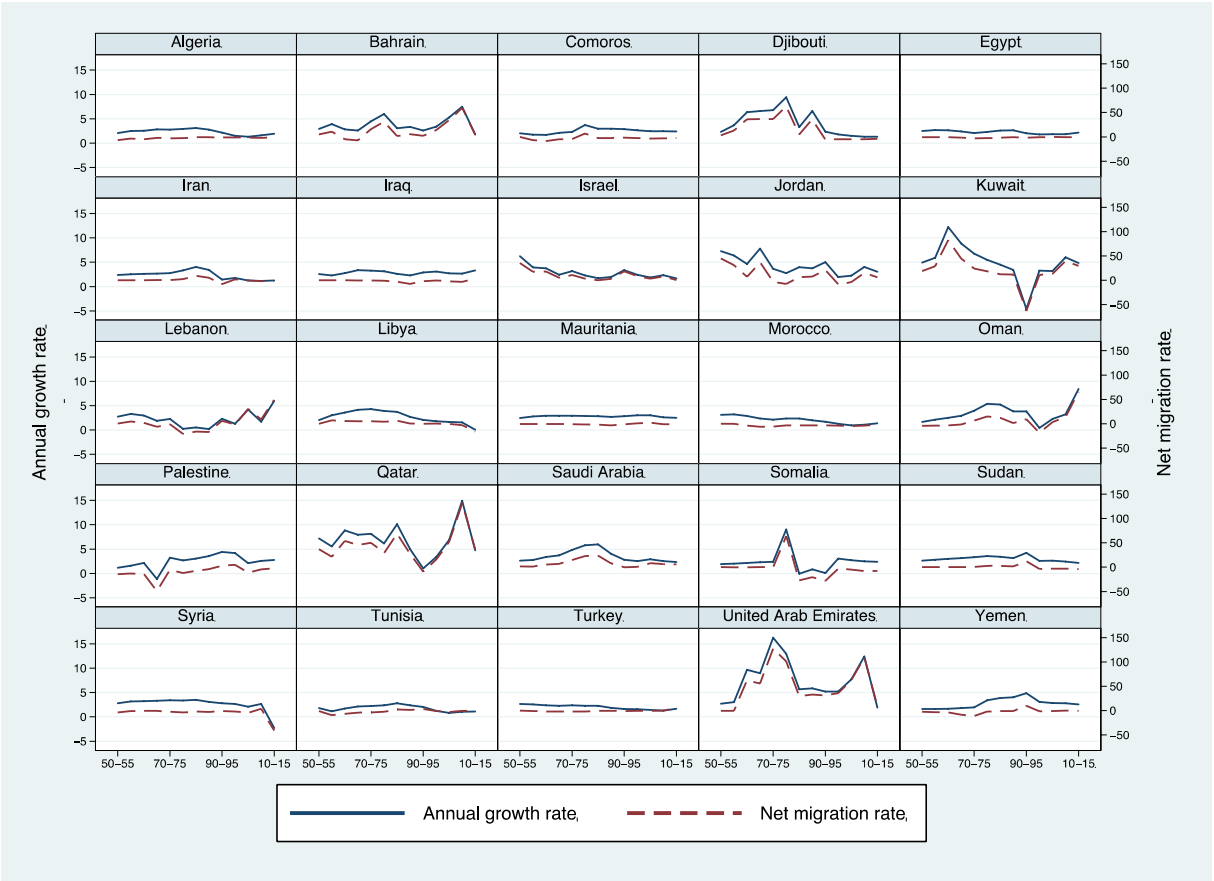
Compared to Western Europe and the US, the annual growth rate in all four MENA regions is considerably higher (Figure A4). In the region of the Gulf Cooperation Council, the annual growth rate declined sharply from 1970-75 to 1990-95, increased till 2005-10 and decreased sharply thereafter. This increase and decline goes hand in hand with the flow of migrants, in particular labor migrants, generated by a strong demand for labor due to the oil boom in the 1970s. The increase of the annual growth rate in the Arab least developed countries is driven by the influx of refugees in the beginning of the 1970s.

While the Maghreb and Mashreq-countries apart from Jordan are seen as sending areas, the Gulf States are regarded as net-receivers (Puschmann and Matthijs 2015: 130).

Thus, in Jordan, Kuwait, Oman, Saudi Arabia, Qatar and the United Arab Emirates, annual population growth is tempered by immigration, while in Algeria, Morocco, Tunisia, Libya, Egypt, Syria, Lebanon, Palestine and Iraq, annual population growth is reinforced by emigration.

Country-specific net migration rates are strongly shaped by economic and political situations. For example, the Lebanese Civil War (1975-90) produced a high increase in the annual flow of Lebanese emigrants; the Iranian Revolution in 1979 resulted in a large wave of emigration; and the Iraqi invasion of Kuwait and the ensuing first Gulf War (1980-88) were responsible the expulsion of temporary migrants working in Iraq and the Gulf States. At last, net migration in the MENA region is similar to net migration in the US and Western Europe while annual growth is considerably higher.

Figure 4: Annual growth rate and net migration rate (per 1,000 population), 1950-55 to 2010-15

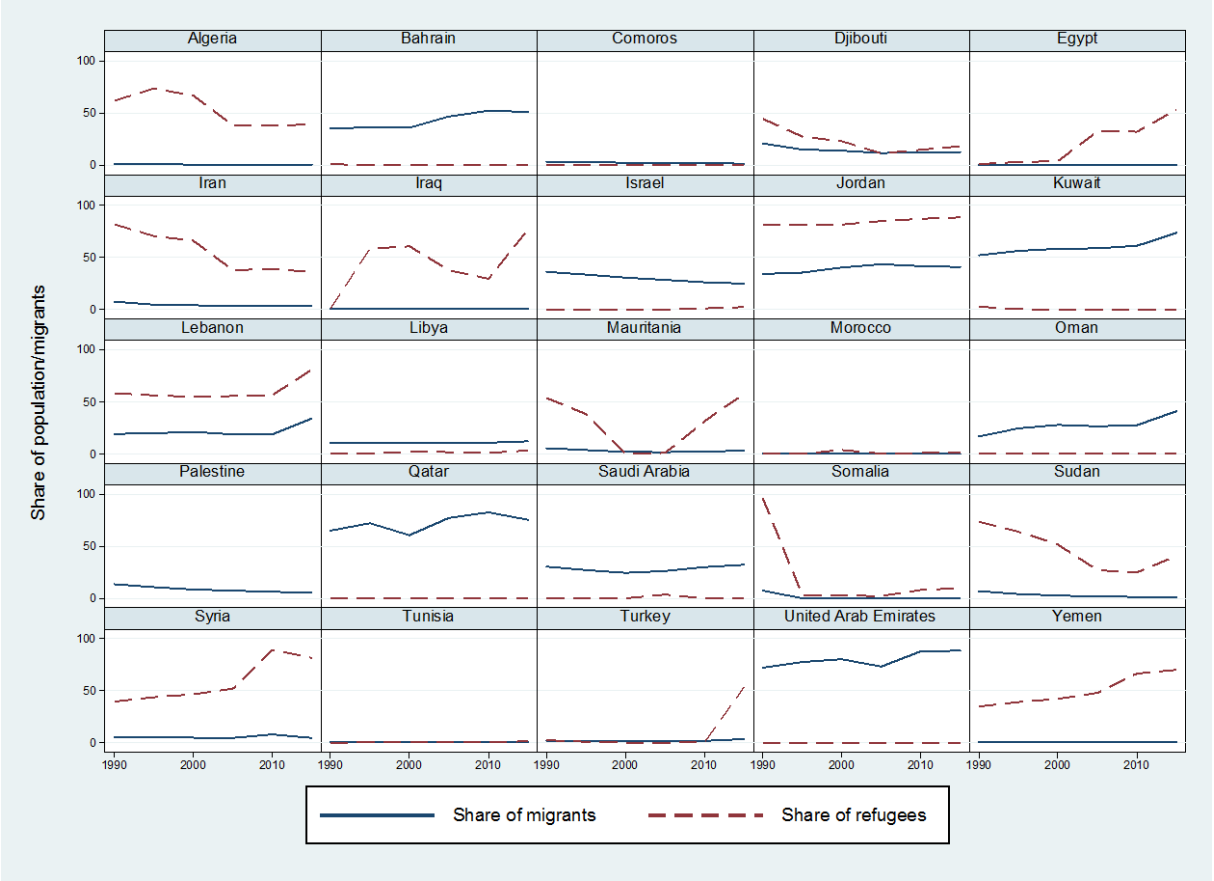


Data: United Nations (2015a)

Figure 5 shows data on international migrant stock as percentage of total population (measuring the number of foreign-born population in a country at a particular point in time) and refugees as percentage of international migrant stock. In 2015, 34.5 million international

migrants, including refugees, were residing in the MENA region (International Organization for Migration 2016). The destinations with most international migrants in the MENA region are Saudi Arabia, the United Arab Emirates, Jordan, Kuwait and Lebanon in descending order. Nearly three quarters (74%) of international migrants reside in the countries of the Gulf Cooperation Council. This includes over 10 million in Saudi Arabia and 8 million in United Arab Emirates, which together host over 50% of all international migrants in the MENA region.

Figure 5: International migrant stock as percentage of total population and refugees as percentage of international migrant stock, 1990 to 2015

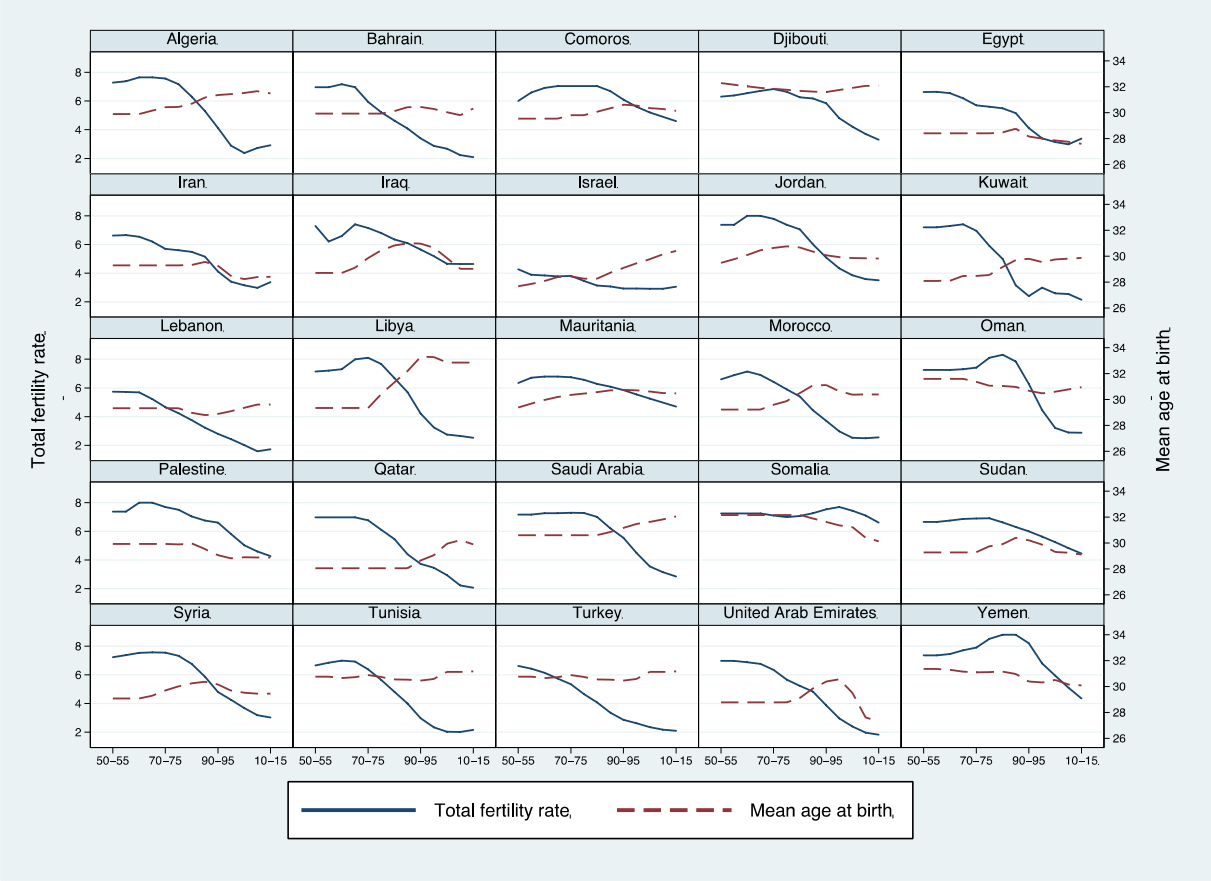


Data: United Nations (2015c)

Compared to Western Europe and the US, the stock of international migrants in the Gulf Cooperation countries is considerably higher (Figure A5). The highest share of migrants is in the United Arab Emirates with 88.4% of all inhabitants being migrants in 2015 (Figure 5). Despite the sizeable share of migrants, the share of refugees as percentage of international migrant stock in the single countries of the Gulf Cooperation countries amounts zero (Figure 5). The MENA countries with lower stocks of international migrants obviously

have higher percentages of refugees. In particular, Lebanon with a share of international migrants among total population of 34.1 percent has a particular high percentage of refugees (80.1 percent).

Figure 6: Total fertility and mean age at birth, 1950-55 to 2010-15



Data: United Nations (2015a)

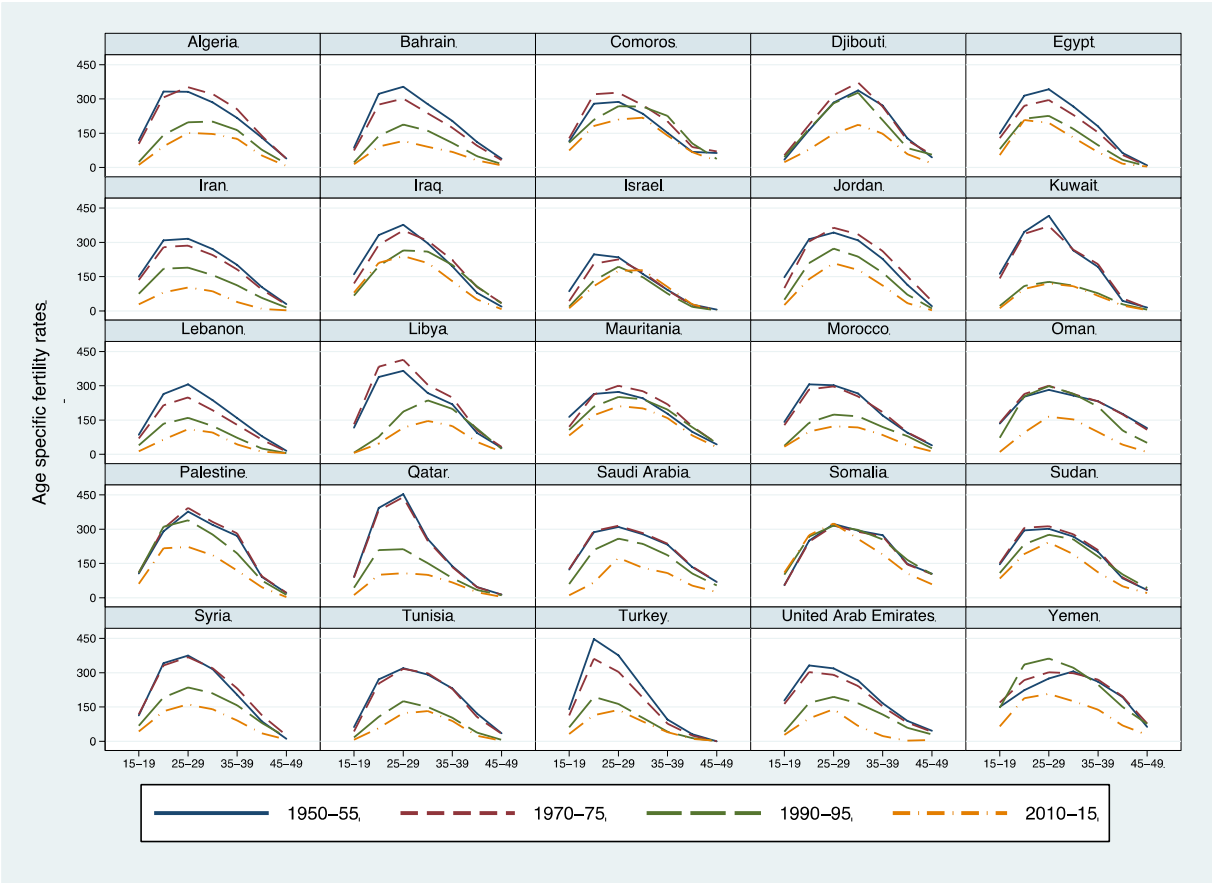
5. Fertility

In the Arab League, the average number of children per woman has declined markedly since 1950. For example, total fertility in Northern Africa declined by 3.47 children per women (from 6.74 in 1950-55 to 3.27 in 2010-15). However fertility across the region is considerably heterogeneous. The United Arab Emirates experienced the sharpest decline: fertility fell by 5.15 children, from 6.97 in 1960-55 to 1.82 children per woman in 2010-15 (Figure 6). Kuwait's fertility decline was similar, falling from 7.20 children in 1950-55 to 2.15 children in 2010-15. As in the United Arab Emirates and Kuwait, fertility declined by more than 50% in Algeria, Bahrain, Jordan, Lebanon, Libya, Morocco, Oman, Qatar, Saudi Arabia, Syria, Tunisia and Turkey during this period. In some of these countries, however, the pace of

fertility decline has stagnated. In three countries, Egypt, Syria, and Jordan, fertility remains at three or four children per women. In four countries, fertility is already close to replacement (Bahrain, Kuwait, Tunisia, Turkey) and in two countries below replacement level (Lebanon, United Arab Emirates). Not all the countries have experiences sharp declines in fertility. In seven countries, fertility remains above 4 children per women. Somalia, with total fertility of 6.61 children, has the highest total fertility in the region. On average the total fertility rates of the MENA region is still higher than in Western Europe (1.66) and in the US (1.89).

The sharp decline in fertility in many of the MENA countries has been attributed to several factors, including the rising age at marriage for women and men, delayed childbearing (see Figure 6), increased availability and use of modern contraceptive methods, higher levels of female education, increased female labor force participation, improved status of women, and urbanization (Mirkin 2010: 13f.).

Figure 7: Age-specific fertility rates (births per 1,000 women), 1950-55 to 2010-15

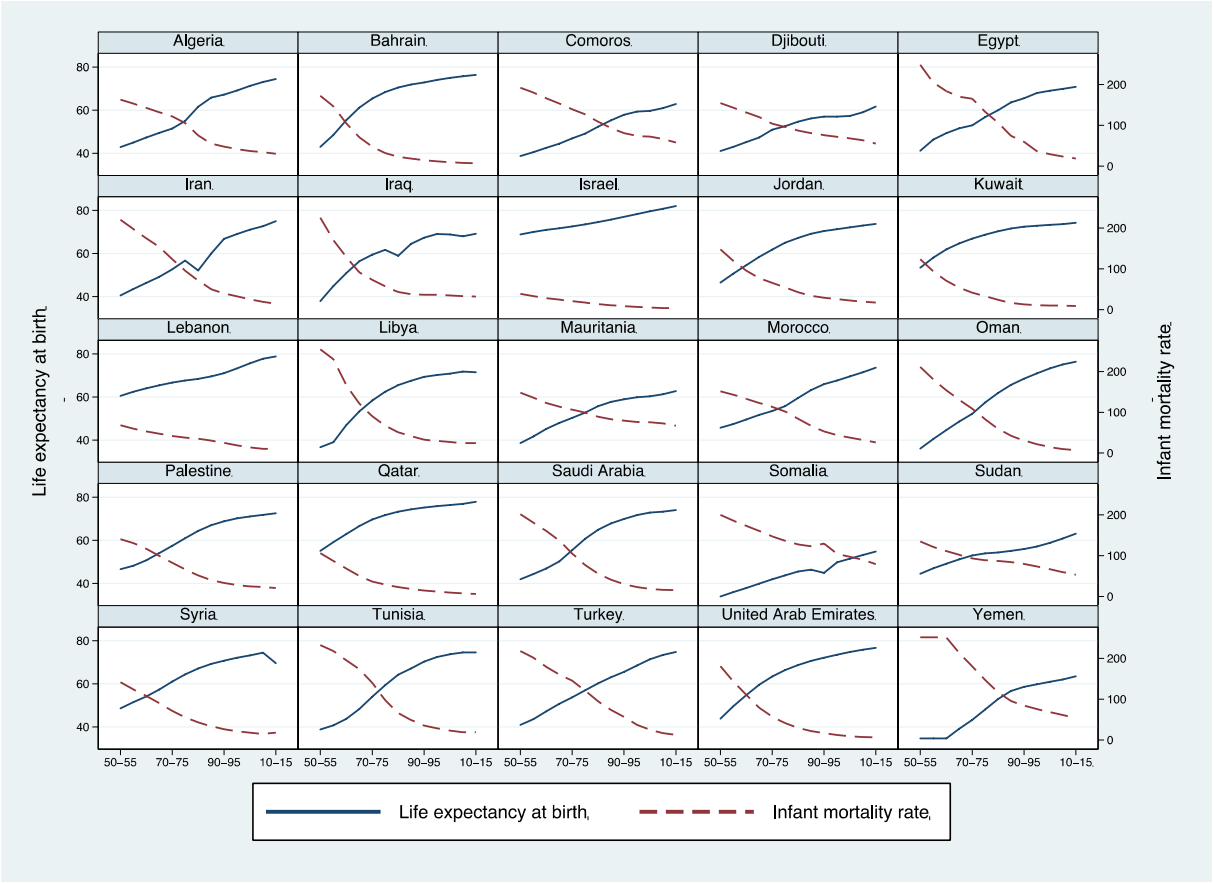


Data: United Nations (2015a)

However, the trend of the age-specific fertility rates shows that the decline in total fertility is caused mainly by a change in the quantum of fertility at all ages rather than a change in the tempo of fertility (Figure 7). Delayed child-bearing is only the case for selected

countries during the years 2010-15 (e.g., Algeria, Saudi Arabia, Tunisia, Turkey, and the United Arab Emirates). Thus, change of fertility in MENA countries is very different from the patterns of change in Western Europe and in the US (Table A7), which show quantum and tempo effects of fertility like Libya: a decline in the level of fertility at all ages and postponed childbearing to higher ages.

Figure 8: Life expectancy at birth and infant mortality rate (both sexes combined per 1,000 live births), 1950-55 to 2010-15



Data: United Nations (2015a)

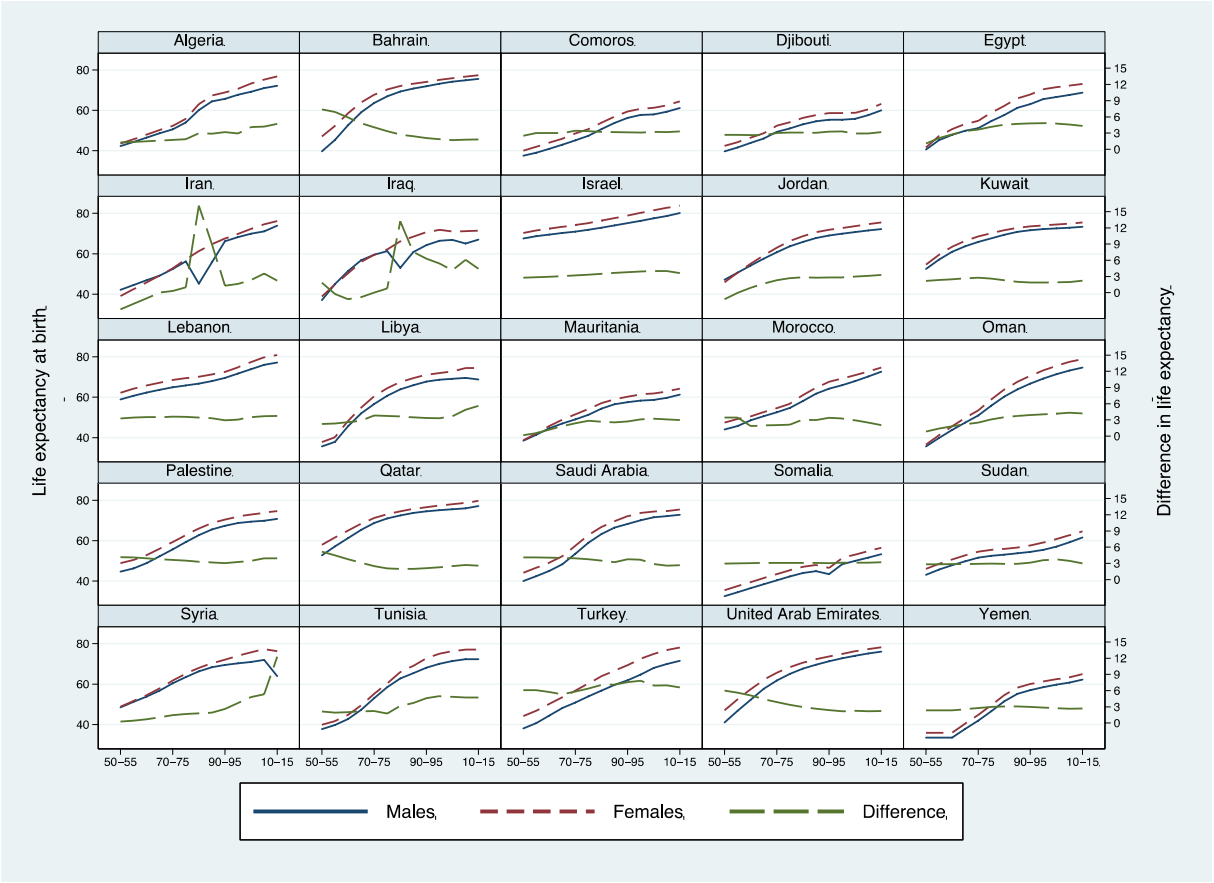
6. Mortality

Over our observation period, considerable advances in life expectancy at birth have emerged in the MENA countries (Figure 8). In 1950-55, 8 of 23 25 countries had life expectancies at birth below 40 years. In 12 of the 25 countries, life expectancies at birth ranged from 40 to 49 years and in only 3 countries life expectancies at birth reached 50-59 years. By 2010–15, life expectancies have dramatically shifted upwards across all MENA countries, with only 4 countries having life expectancies less than 60 years. The majority of countries have life

expectancies between 70 and 79 years. In Western Europe and the United States, life expectancy at birth has been at about 81 and 79 years, respectively, in 2015.

The advances in life expectancy at birth during the last decades is mainly due to the improvement of life expectancy at higher ages while at the beginning of the 1950s, infant mortality still was part of life. As Figure 8 shows, infant mortality (i.e., infant deaths per 1,000 live births) decreased considerably during the last decades. In 2010-15, Comoros, Djibouti, Somalia, Sudan and Yemen have infant mortality rates between 79 and 50, while all other MENA countries range well below 50 cases. In Western Europe and the United States, the infant mortality rate has been at 3 and 6, respectively, in 2015 (Figure A8).

Figure 9: Male and female life expectancy at birth, 1950-55 to 2010-15

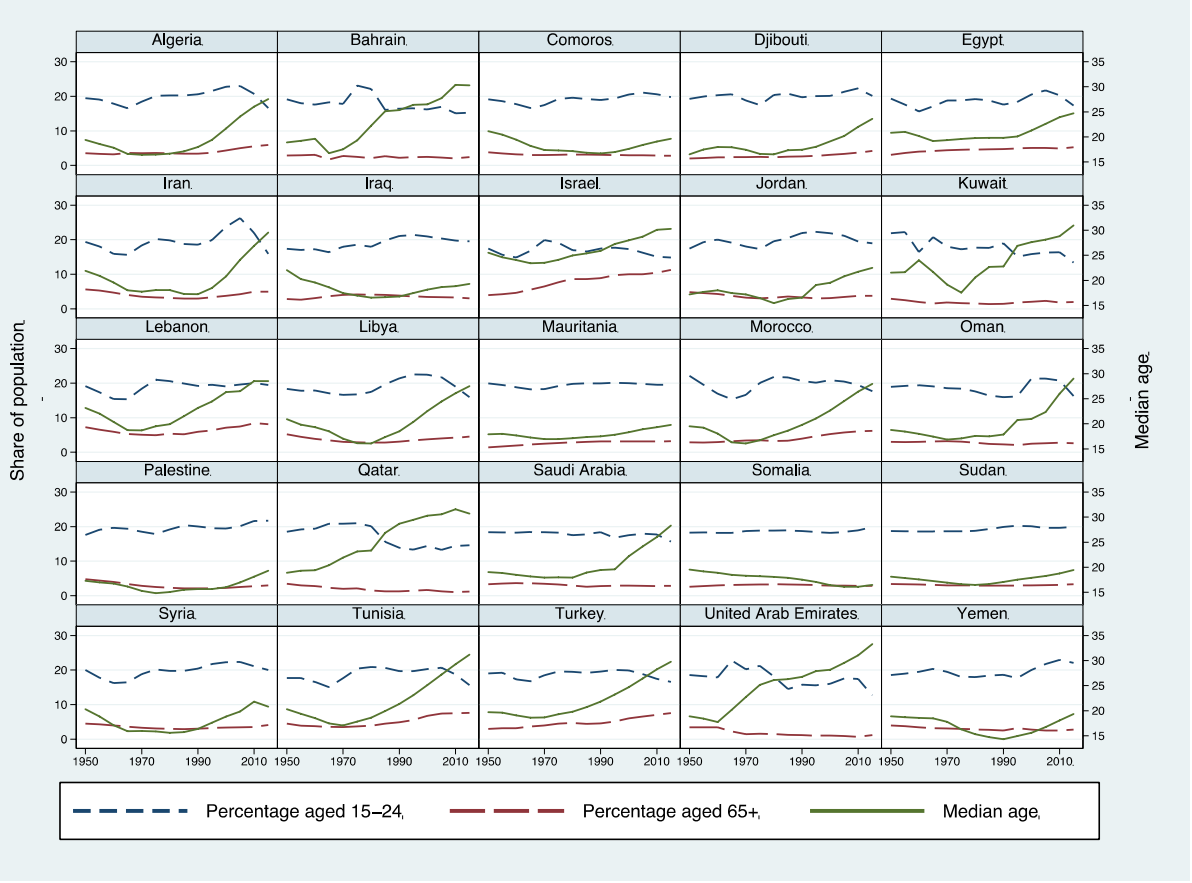


Data: United Nations (2015a)

Concerning the male and female differences in life expectancy, the MENA countries show the well-known gender gap with male excess mortality (Figure 9). However, while in many Western countries the gender gap narrowed over time (Luy and Gast 2014), this seems only the case for Bahrain, the United Arab Emirates, and to a smaller extent to Qatar and Saudi Arabia. In Bahrain, the difference in life expectancy at birth in 2010-15 was 1.84 years, while it was 7.38 years in 1950-55. In the United Arab Emirates, the difference decreased

from 5.99 to 2.21 years during the same period. In a minority of MENA countries; the gender gap in life expectancy remained constant over time, whereas the difference in longevity increased in many others suggesting that women have gained more from medical progress compared to men. In Western Europe and in the United States, the difference in life expectancy at birth has been about five years to the advantage of women in 2015 (Figure A9). Most interestingly, the difference in life expectancy in all MENA regions except the Mashreq suggests less gender specific mortality compared to Western Europe and the United States.

Figure 10: Median age, share of population age 15 to 24 and 65+, 1950 to 2015



Data: United Nations (2015a)

7. Age structure and demographic dividend/potential

Over the course of the demographic transition, declines in fertility and mortality cause important changes in a population's age composition. In general, countries in the early stages of the transition have a younger age structure than countries in the later stages.

As can be seen in Figure 10, most MENA countries have J-shaped median age during the period of investigation. The countries, though, differ with respect to the reversal of the

trend. While it was earlier in Bahrain, Lebanon, Morocco, Qatar and the United Arab Emirates, it was quite late in Algeria, Iran, Iraq, Jordan, Libya, Saudi Arabia and Yemen. In the year 2015, the median age ranged between 16.5 in Somalia and 30.7 in Qatar. This is quite young compared to the median age of 43.7 years in Western Europe or 38.0 years in the United States in 2015.

Despite the increase in median age, population ageing measured by share of population aged 65+ can only be observed for Algeria, Egypt, Israel, Lebanon, Tunisia and Turkey (Figure 10). However, the increase in median age goes hand in hand with a declining share of population under age 15 in most MENA countries (Figure 11). Exceptions to this pattern are Comoros, Djibouti, Israel, Mauretania, Somalia and Sudan, where no clear downward trend in the share of younger population can be observed.

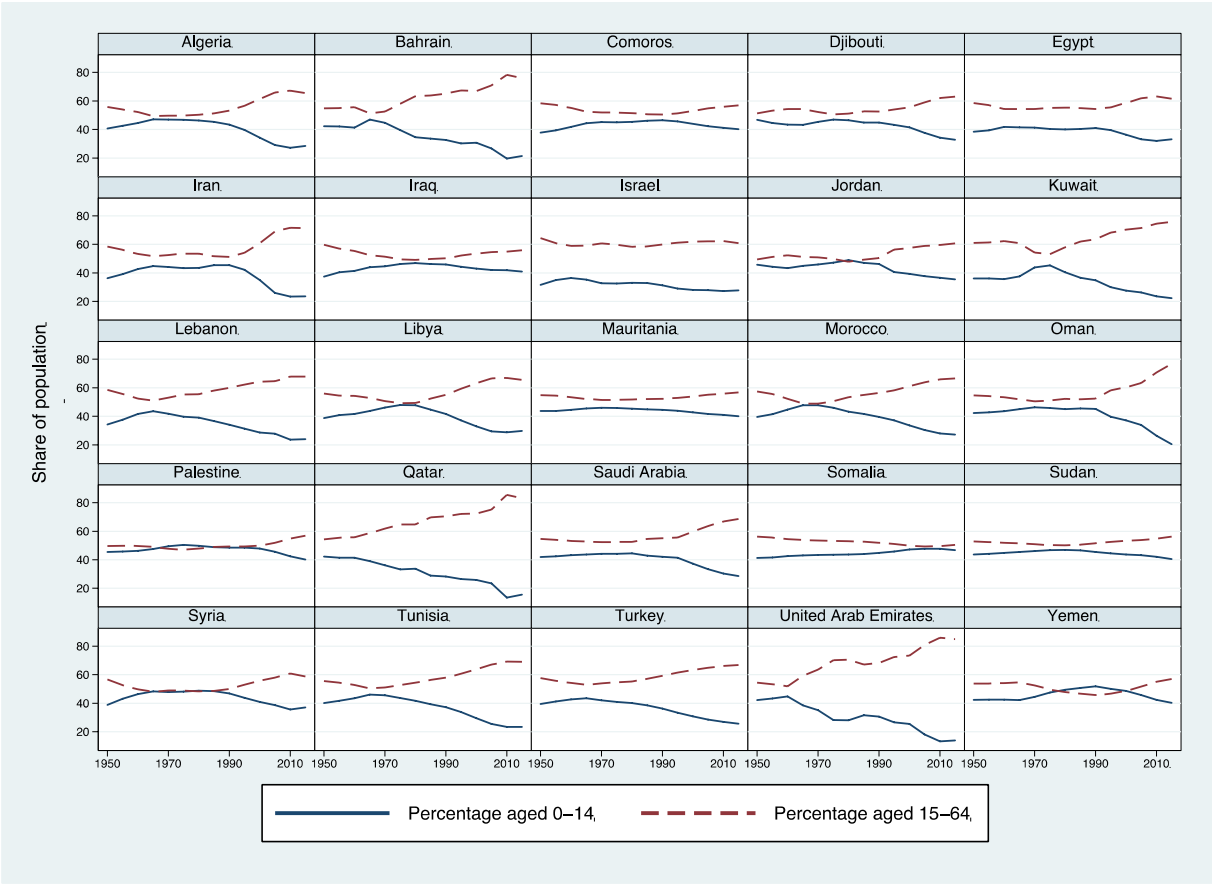
The share of the working age population is usually used as a measure of the demographic dividend. Figure 11 shows that in all MENA countries the share mirrors inverted the share of children under age 15. In most countries, we clearly observe an increasing share of the working-age population and a decreasing share of the young population. This trend is particularly pronounced in Kuwait, Lebanon, Oman, Qatar, and the United Arab Emirates. In countries such as Algeria, Bahrain, Egypt, Libya, and Tunisia, the increase has leveled off in recent years. Somalia is the only country in which the working-age population is decreasing slightly, and in Israel, the population aged 15–64 has been rather stable over the last decades.

The share of the 15 to 24 years old in relation to the total population (or to the population aged 25 to 64 years) is usually used as the measure of the youth-bulge. Figure 10 clearly shows that the youth bulge belongs already to the past in most MENA countries. For instance, the Lebanon reached its maximum in 1976, Saudi Arabia in 1999, Libya and Morocco in 2000, Algeria in 2004, Egypt and Iran in 2005. Only Palestine, Somalia, Sudan, and Mauritania show a sustained youth-bulk since many decades.

A changing age distribution has significant social and economic consequences such as the allocation of education, healthcare and social security resources to the young and old (Bongaarts 2009). Assessments of this impact often rely on the so-called total age-dependency ratio that summarizes key changes in the age structure. In this study, the total age-dependency ratio at a given point in time equals the ratio of population aged below 20 and over 64 to the population of age 20–64. This ratio aims to measure how many “dependents” there are for each person in the “productive” age group. Obviously, not every person below 20 and over 64 is a dependent and not every person between ages 20 and 65 is productive. Despite its crudeness, this indicator is widely used to document broad trends in the age composition.

Additionally, the young-age dependency ratio (the ratio of population aged below 20 to the population of age 20–64) or the old-age dependency ratio (the ratio of population aged over 65 to the population of age 20–64) can be considered.

Figure 11: Share of population under age 15 and 15 to 64, 1950 to 2015

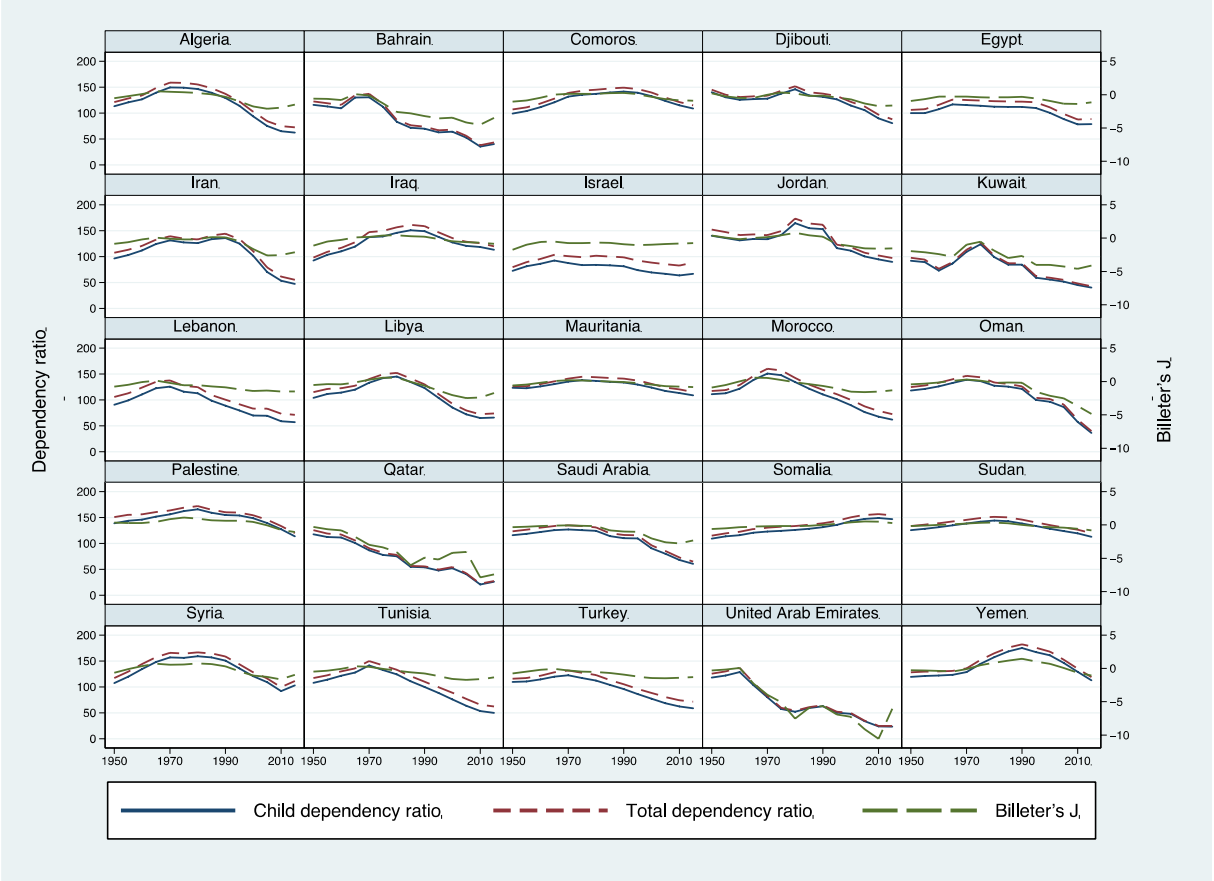


Data: United Nations (2015a)

Over the course of a demographic transition, the total age-dependency ratio is supposed to show a characteristic pattern of change. Figure 12 presents this pattern as observed in the MENA countries from 1950 to 2015. Early in the transition, the age-dependency ratio typically rises slightly as improvements in survival chances of children raise the number of young people. Following this, the age-dependency ratio falls sharply as declines in fertility reduce the proportion of the population under age 15. This decline has important economic consequences, because it creates a so-called demographic dividend, which boosts economic growth by increasing the size of the labor force relative to dependents and by stimulating savings (Birdsall et al. 2001). In western countries that are at the end of the transition, the age-dependency ratio finally increases again as the proportion of the population over age 65 rises. This is not yet the case in the MENA countries.

Figure 12 additionally plots the young age dependency ratio from 1950 to 2015. Most interestingly, it follows almost the same pattern with the total age-dependency ratio. Even though forecasts by the United Nations Population Division (2015b) expect population aging for the MENA countries, albeit to a lower degree than in the western world, ageing does not seem a major problem for the MENA countries by now.

Figure 12: Child dependency and total dependency ratio and Billeter's J, 1950 to 2015



Data: United Nations (2015a)

Finally, Figure 12 plots Billeter's J (Billeter 1954) for the 25 MENA countries. This indicator divides the difference of the population aged under 15 and over 50 (under and over reproductive age) by the population aged between 15 and under 50 (reproductive age). Billeter's J follows the country-specific patterns of the child dependency and total dependency ratio. Most interestingly, in all countries except Somalia, there is negative demographic potential in the year 2015. In Bahrain, Kuwait, Qatar, and the United Arab Emirates, this trend of a negative demographic potential already started in the 1970s. For many countries though, the number of persons under reproductive age equals more or less the number of persons above reproductive age until 1990 (Egypt, Iran, Joran, Libya, Morocco, Oman, Syria, Tunisia). The negative values of Billeter's J in all MENA countries in 2015 are

clearly opposing the continuously increasing shares of persons in reproductive age and suggesting an end of population growth in MENA countries due to a declining demographic potential.

8. Discussion

In recent years, there has been a growing interest in the demographic developments in the Middle East and North Africa. Against the background of earlier discussions about poor demographic performance of this region or the demographic transition model, we provided recent data on demographical change in MENA countries. By rearranging standard indicators and adding self-calculated measures of demographic development, we highlight five important aspects which call for closer inspection in the recent future.

First, as suggested by the model of demographic transition, we find a decline in fertility and mortality in the MENA countries. The observed patterns (i.e., time of onset and speed of decline) are very heterogeneous over the countries and do not strictly follow the transition model. In all countries under investigation, we still observe a natural increase in population. This increase in population, however, is declining for all countries; exceptions are Algeria, Egypt, Iraq, and Israel. Moreover, the annual growth of the population is strongly linked to the net migration in all MENA countries. This result stresses the important role of migration for further population growth – a point which can be addressed in population projections only with strong assumptions.

Second, the age-specific fertility patterns suggest that the decline in fertility in most countries is due to a decline in the quantum of fertility rather than in the timing of fertility. Nevertheless, we interestingly observe an increase in fertility in Algeria, Egypt, and Lebanon in recent years. Whether this increase is due to early births (tempo effect) or will result in an increase in completed fertility (quantum effect) is a topic for future research. Another surprising finding is the increasing difference between male and female life expectancy which also calls for further investigation.

Third, the demographic transition from high fertility and low life expectancy to low fertility and high life expectancy results in changing age structures. Previous literature has strongly emphasized the importance of youth bulk and population ageing (Roudi-Fahimi and Kent 2007; Courbage 2015). According to the concept coined by political scientists (Fuller 1995; Goldstone 1991), “an excess of young adult males in a population leads to social unrest, war and terrorism, as ‘third and fourth sons’ (within the same family) find nor prestigious positions in their existing societies. Therefore, these ‘lost sons’ rationalize their impetus to

compete with religion a political ideology" (Courbage and Puschmann 2015: 213). Contrary to this literature, we do not find a youth bulk in the MENA countries with the latest available data. Furthermore, our finding is supported by the decrease in child dependency in all countries, except Somalia. While the median age is increasing in all countries, except Somalia, population ageing in terms of an increased share of population aged 65+ is not an issue yet for most MENA countries, except Israel.

Fourth, the changing age-structure suggests, but does not guarantee, a demographic dividend Nevertheless, a demographic dividend also does not conform economic development by itself. To reap the benefits and to capitalize on the growing pool of potential workers, MENA countries have to adapt their economic, social, and political institutions. "Educational systems, labor markets, housing supply, and health systems will need to expand and adapt to meet the needs of young people and the countries' economies. A demographic bonus can only occur when a large young population is healthy, educated, trained, and ready to be absorbed into a market economy" (Roudi-Fahimi and Kent 2007: 16). Thus, for reaping the demographic dividend, sufficient jobs, a skilled labor force, housing and health care is required. Without such investments, the demographic bonus will not be realized or even become a burden when an increasing working-age population can't get access to productive employment (Khadr 2012: 139). In other words: "Without the right policy environment, countries will be too slow to adapt to their changing age structure and, at best, will miss an opportunity to secure high growth. At worse, where an increase in the working-age population is not matched by increased job opportunities, they will face costly penalties, such as rising unemployment and perhaps also higher crime rates and political instability" (Bloom et al. 2007: 4). Moreover, increased emigration processes and "brain drain" will be likely (Winkler 2009).

Fifth, as has been shown, the MENA countries are in different phases in the process of demographic transition. At the end of the demographic transition – when fertility levels-off at replacement level and mortality stops declining – natural population growth reaches zero. Therefore, the age structure has to be adjusted to the post-transitional levels of fertility and mortality (Bongaarts 2009). This adjustment is a slow process and takes many decades to complete. Thus, in case of relatively young populations, population growth continues for many years after replacement fertility is reached. This tendency is referred to as population momentum (Bongaarts and Bulatao 1999). The population momentum inherent in the age structure at a certain point in time can be estimated with a population projection. Therefore, future fertility must be set to the replacement level while mortality is held constant and

migration is assumed to be zero. To our knowledge; estimations of the population momentum for MENA countries are not available, but would add to our understanding of future demographic developments in the region.

Sixths, we observed substantial migration in the MENA countries. In all countries the annual growth rate goes hand in hand with net migration. This result might be partially caused by the estimation of net migration as the difference between population growth and natural increase in most countries (United Nations 2015b). Country specific data on international migrant stocks at a particular point in time show, that the MENA countries with the highest share of migrants are those with zero refugees. It should be noted, that the interpretation of the international migration data becomes more complicated when looking at country-specific definitions: "When does a visitor become a short-term migrant, and when does a short term migrant become a long-term migrant? When does a temporary migrant become a permanent immigrant? When does a migrant become a national?" (Johansson de Silva and Silva-Jáuregui 2004: 5). Questions such as these, as well as the inconvenient situation of available migrant-flow data make it difficult to assess the issue of migrations (with-)in the MENA regions. However, there are plausible evidences of migration triggers in the MENA countries (e.g., Fargues 2008), such as the 'demographic gift' of sharply declining birth rates, which creates intertemporal benefits for those who do not have to support future generations, lacking labor-market opportunities, or environmental conditions. Together, these evidences outline the actual situations, though they are hardly testable with existing data (a shortcoming that researchers normally admit).

Finally, we need to comment on the data of our analysis. We have used the most recent data from different United Nations agencies for each of the presented indicators. This data is sourced from censuses, sample surveys, national estimates based on population register data, or estimates based on census or survey data (United Nations 2015a). The survey data include survey programs, such as the Demographic and Health Surveys (DHS), Multiple Cluster Surveys (MICS), Reproductive Health Surveys (RHS), Pan-Arab Project for Child Development Surveys (PAPCHILD), Pan-Arab Project for Family Health Survey (FAPFAM), as well as other national surveys. It should be clearly noted, that an indicator for one country could be based on census data, while for another country, the same indicator is calculated from survey data. For instance, total fertility is based on annual birth registers for Bahrain, Qatar and Kuwait, while it is based on DHS data from different years for Comoros. For other countries, such as Egypt, Iran, Iraq, Oman, total fertility is based on a mixture of different sources. These different sources of data apply to all of our indicators. Thus, the country

comparisons are based on the assumption of internal and external validity of all indicators, as are all other studies using this kind of international comparative macro data. Evaluating this assumption is far beyond the scope of our paper; nevertheless, it should be kept in mind, when concluding on our results.

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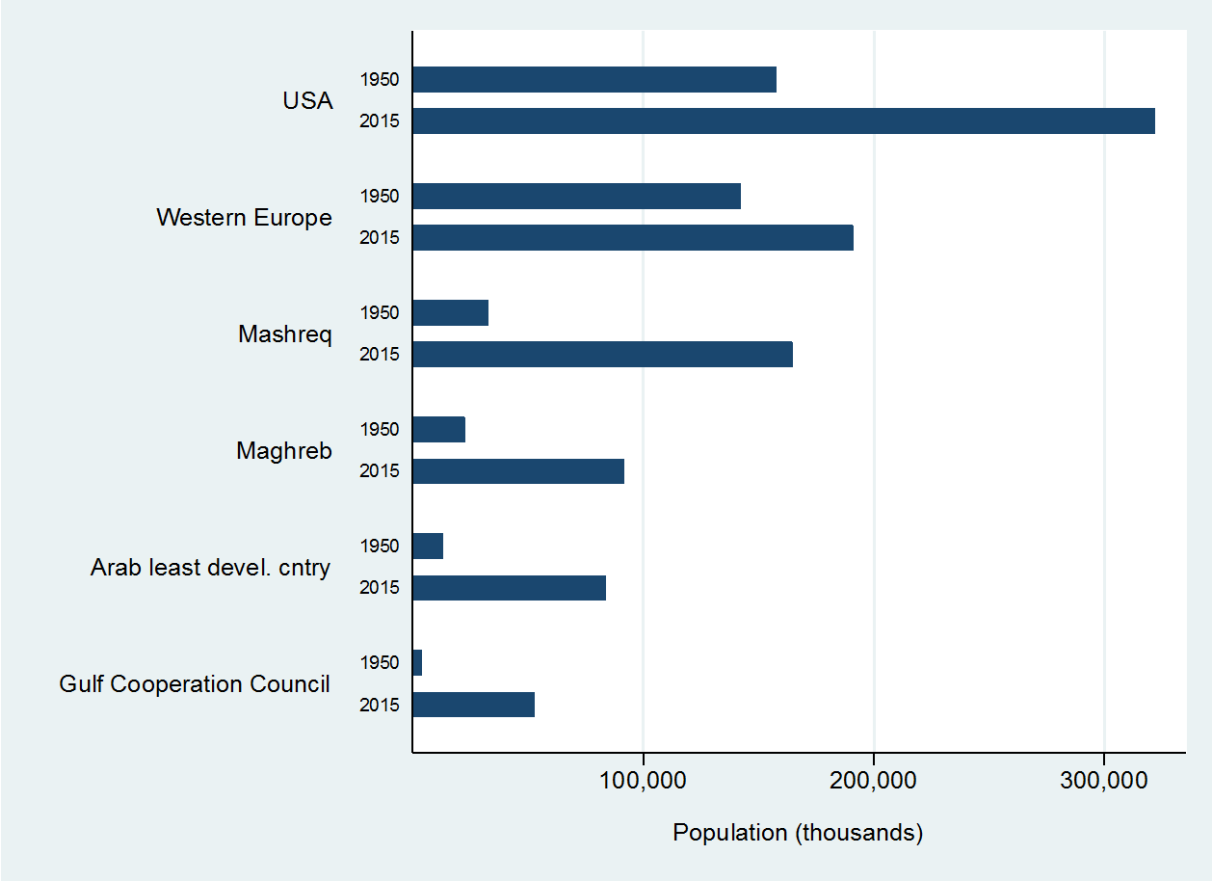
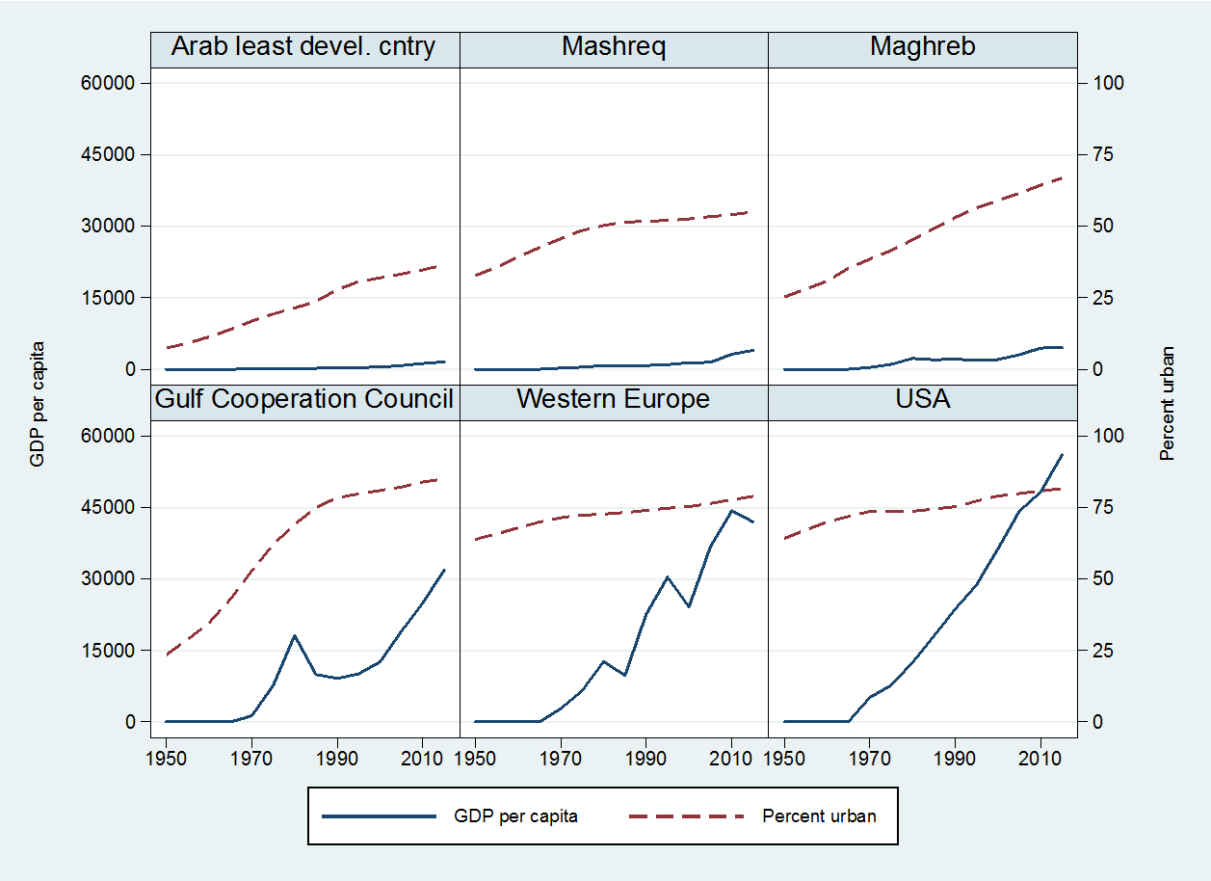
Appendix

Figure A1: Demographic weight of the MENA regions, Western Europe and the USA in 2015



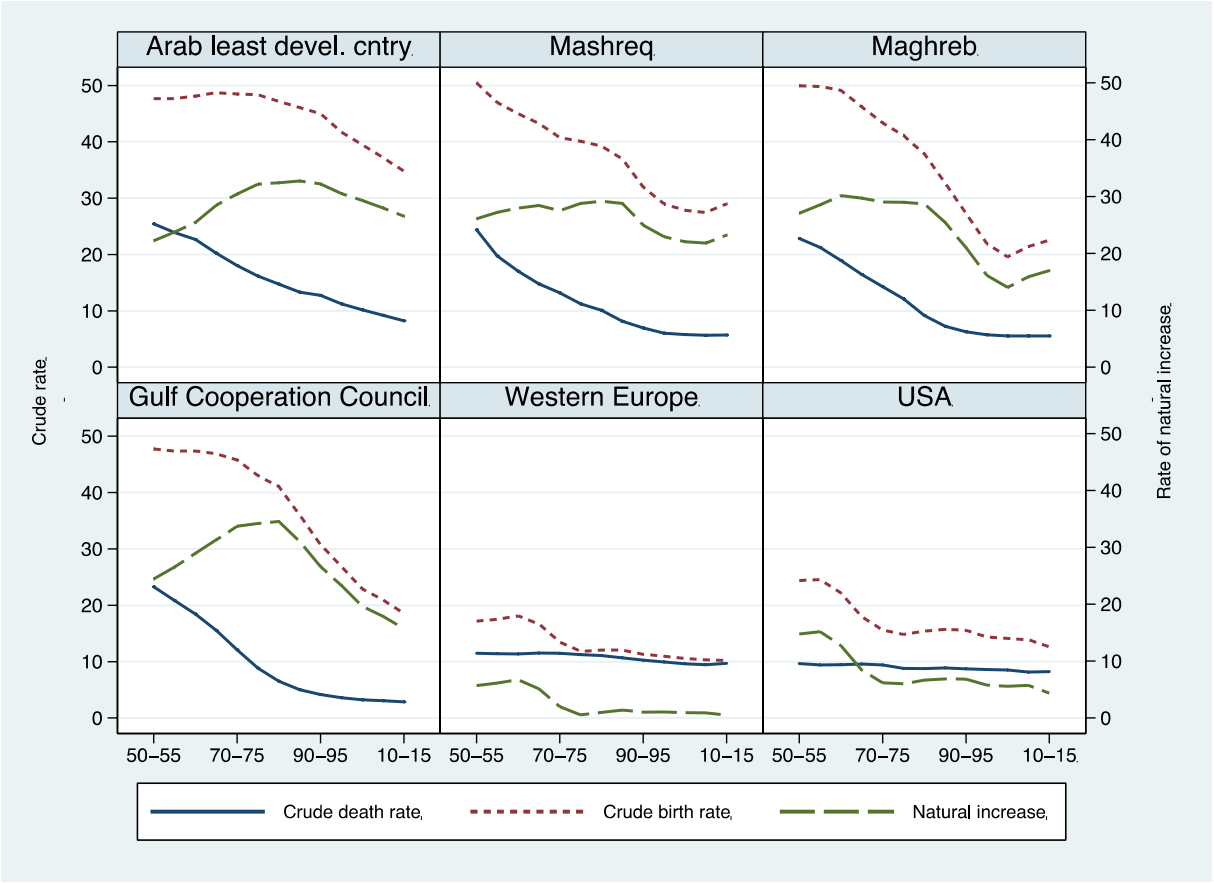
Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)

Figure A2: GDP per capita at current prices in US Dollars and share of urban population of the MENA regions, Western Europe and the USA, 1950–2014



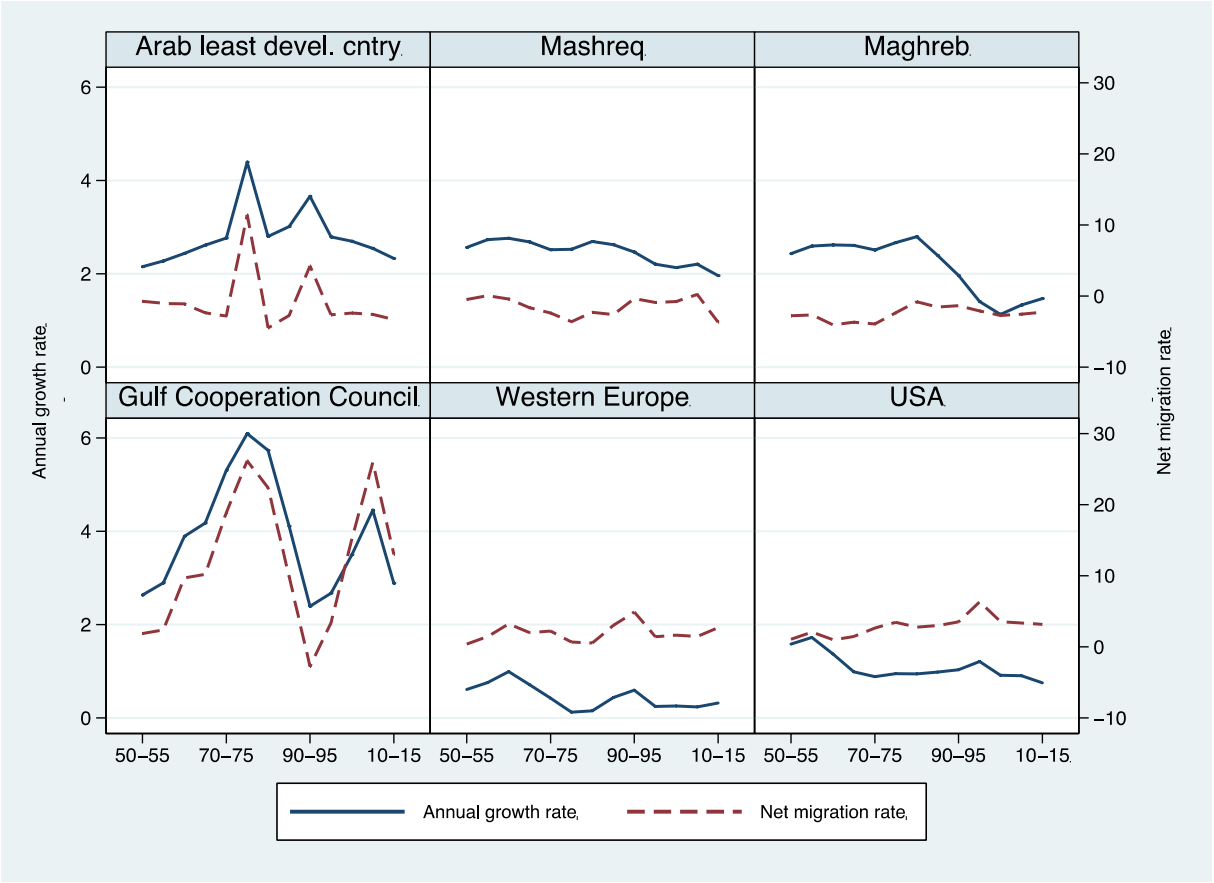
Data: Own calculations based on total population weighted country-specific data (United Nations 2014, 2016)

Figure A3: Crude death and birth rates and rates of natural increase (per 1,000 population) of the MENA regions, Western Europe and the USA, 1950-55 to 2010-15



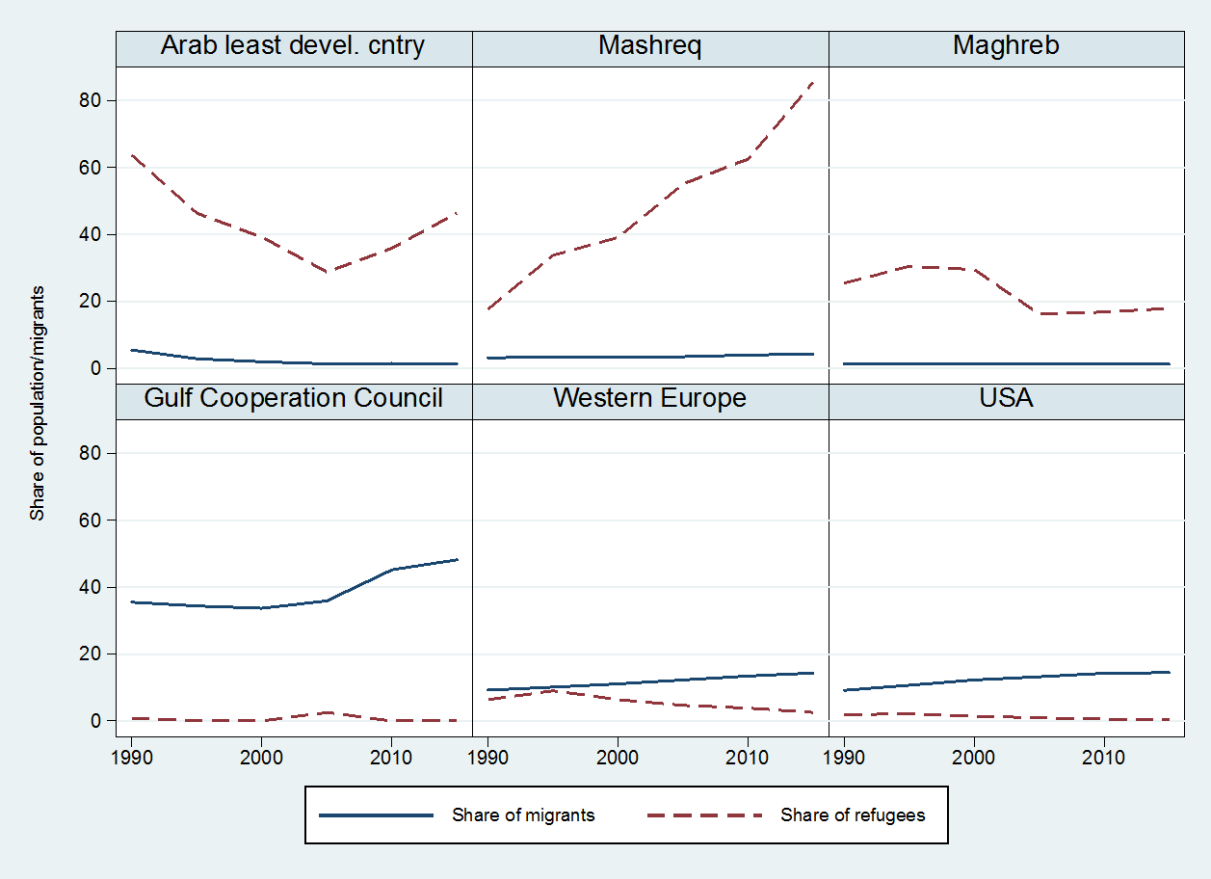
Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)

Figure A4: Annual growth rate and net migration rate (per 1,000 population) of the MENA regions, Western Europe and the USA, 1950-55 to 2010-15



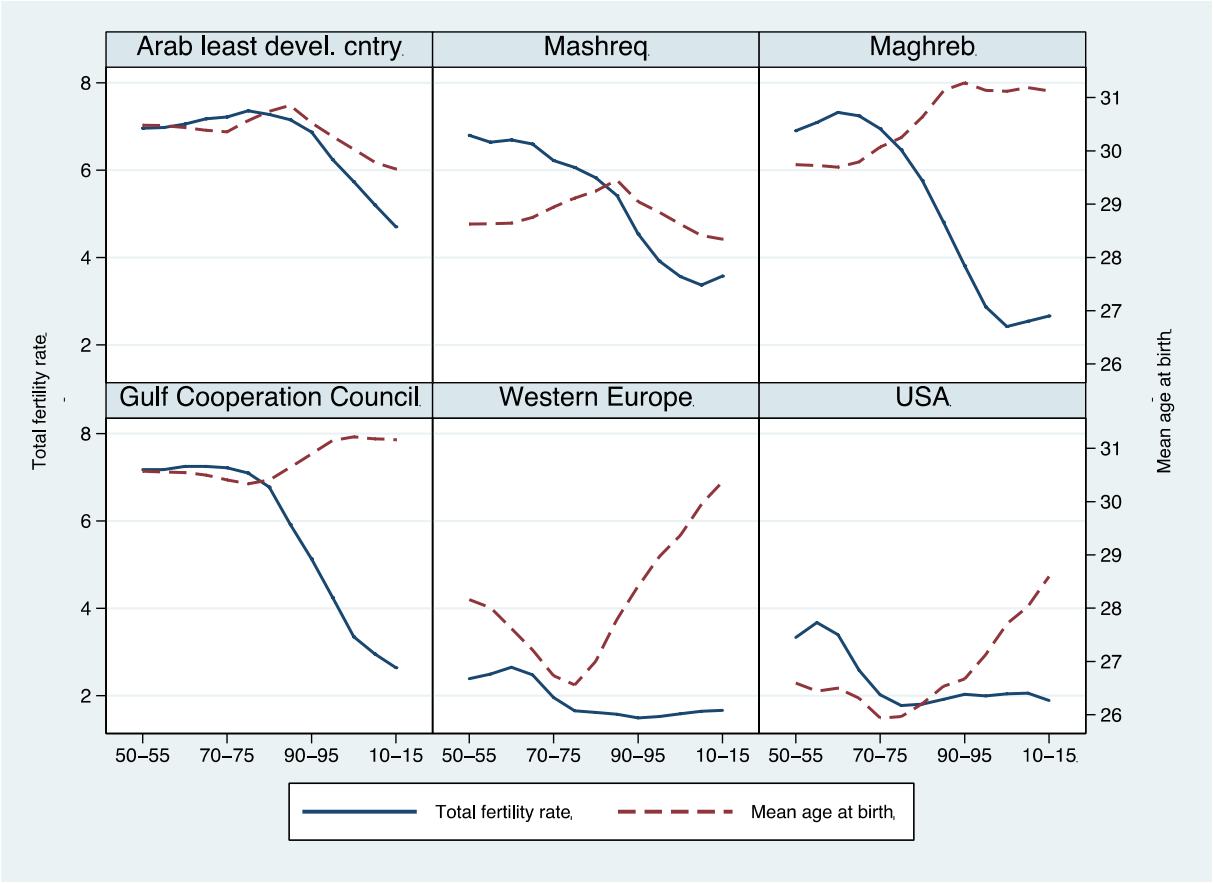
Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)

Figure A5: International migrant stock as percentage of total population and refugees as percentage of international migrant stock of the MENA regions, Western Europe and the USA, 1990 to 2015



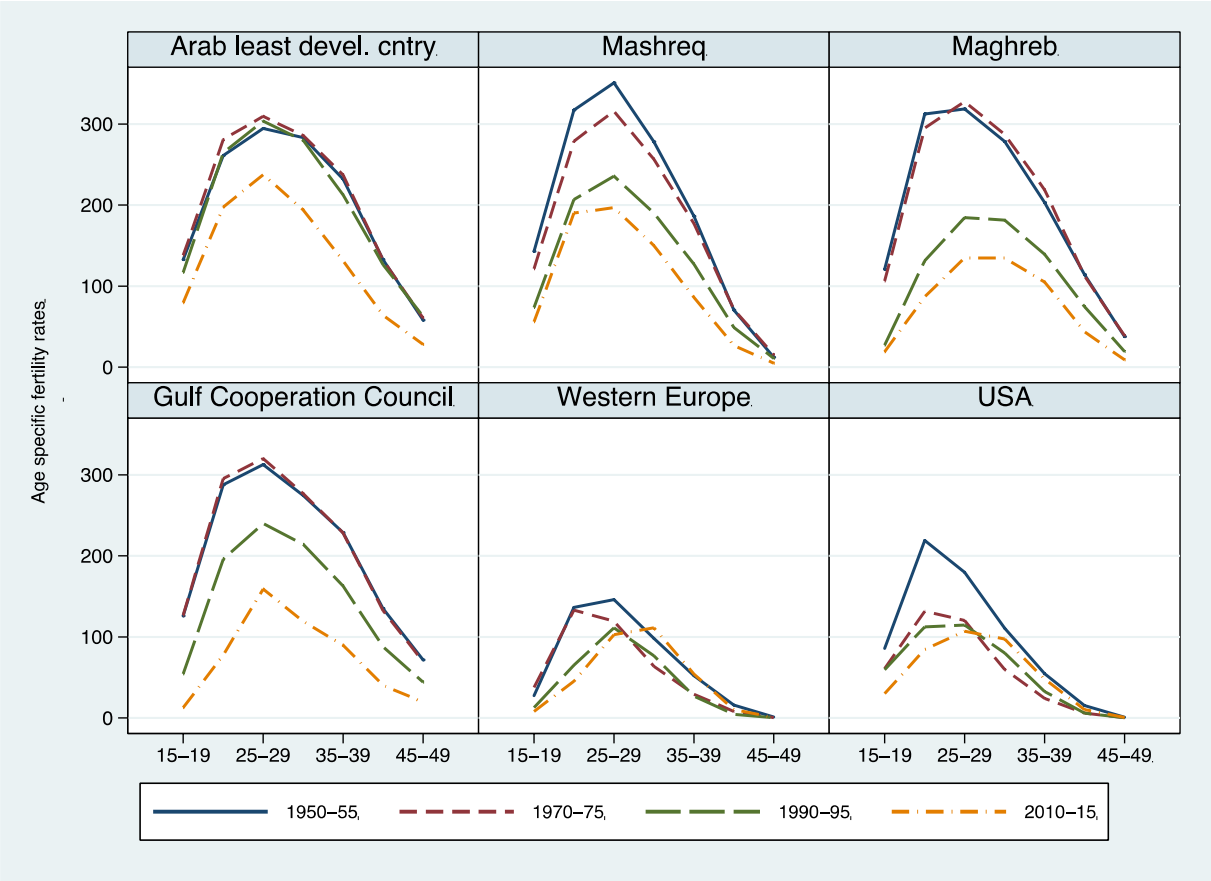
Data: Own calculations based on total population weighted country-specific data (United Nations 2015c)

Figure A6: Total fertility and mean age at birth of the MENA regions, Western Europe and the USA, 1950-55 to 2010-15



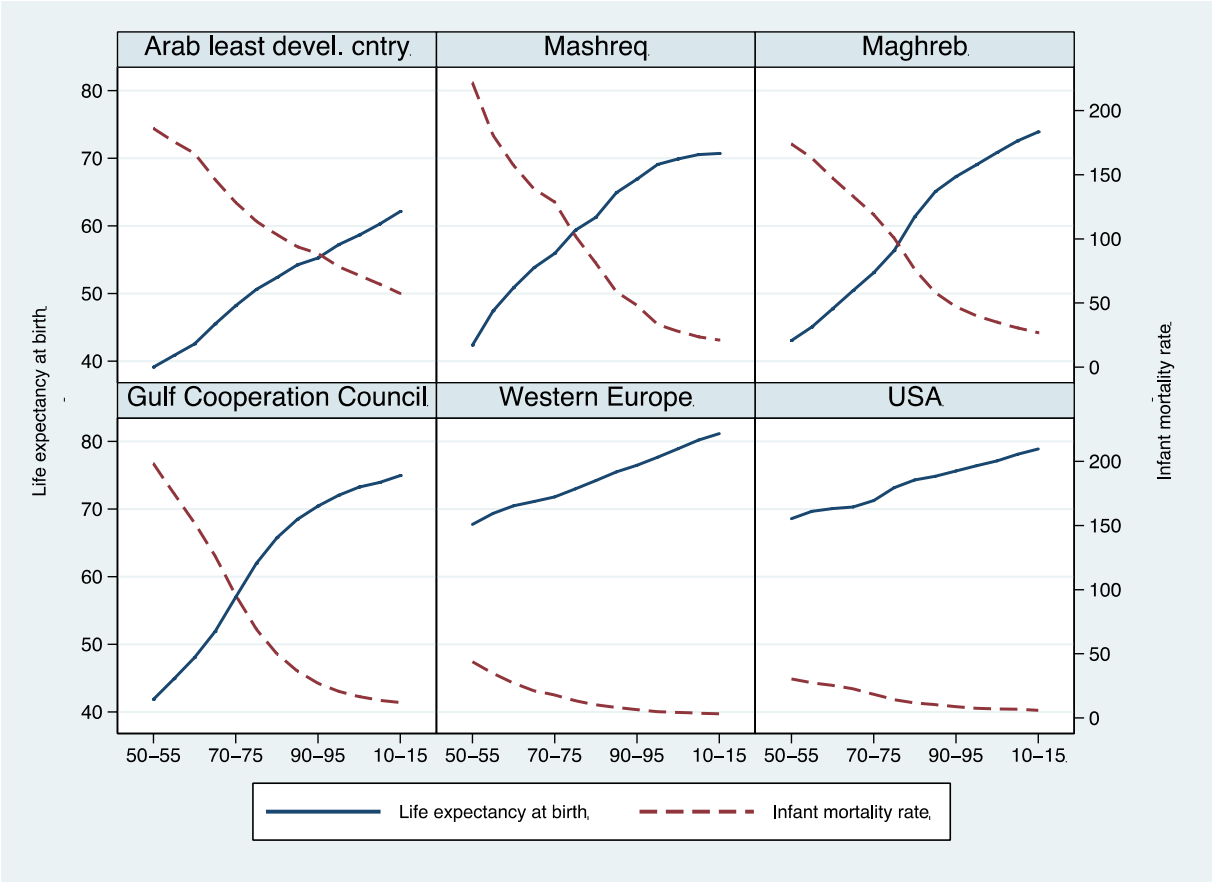
Data: Own calculations based on female population weighted country-specific data (United Nations 2015a)

Figure A7: Age-specific fertility rates (births per 1,000 women) of the MENA regions, Western Europe and the USA, by selected years, 1950-55 to 2010-15



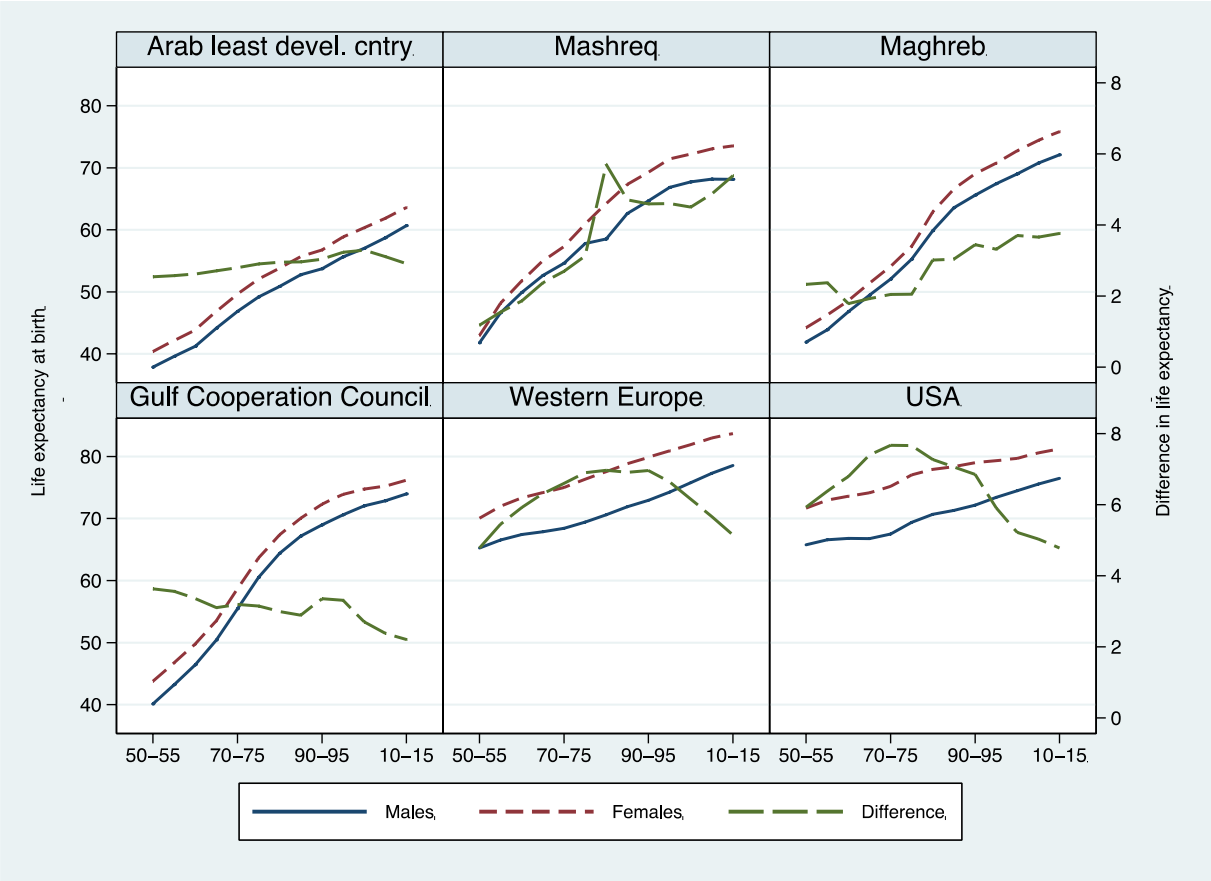
Data: Own calculations based on age-specific female population weighted country-specific data (United Nations 2015a)

Figure A8: Life expectancy at birth and infant mortality rate (both sexes combined per 1,000 live births) of the MENA regions, Western Europe and the USA, 1950-55 to 2010-15



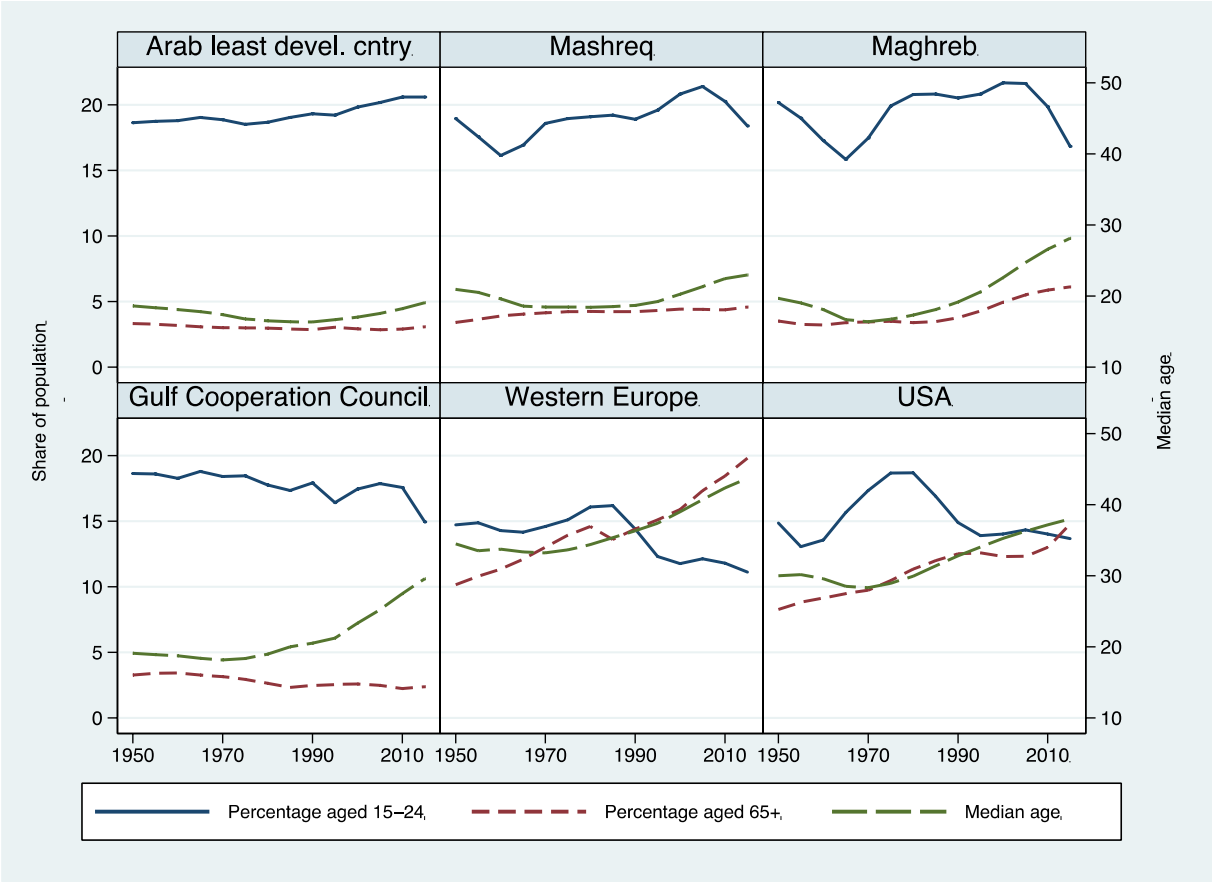
Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)

Figure A9: Male and female life expectancy at birth of the MENA regions, Western Europe and the USA, 1950-55 to 2010-15



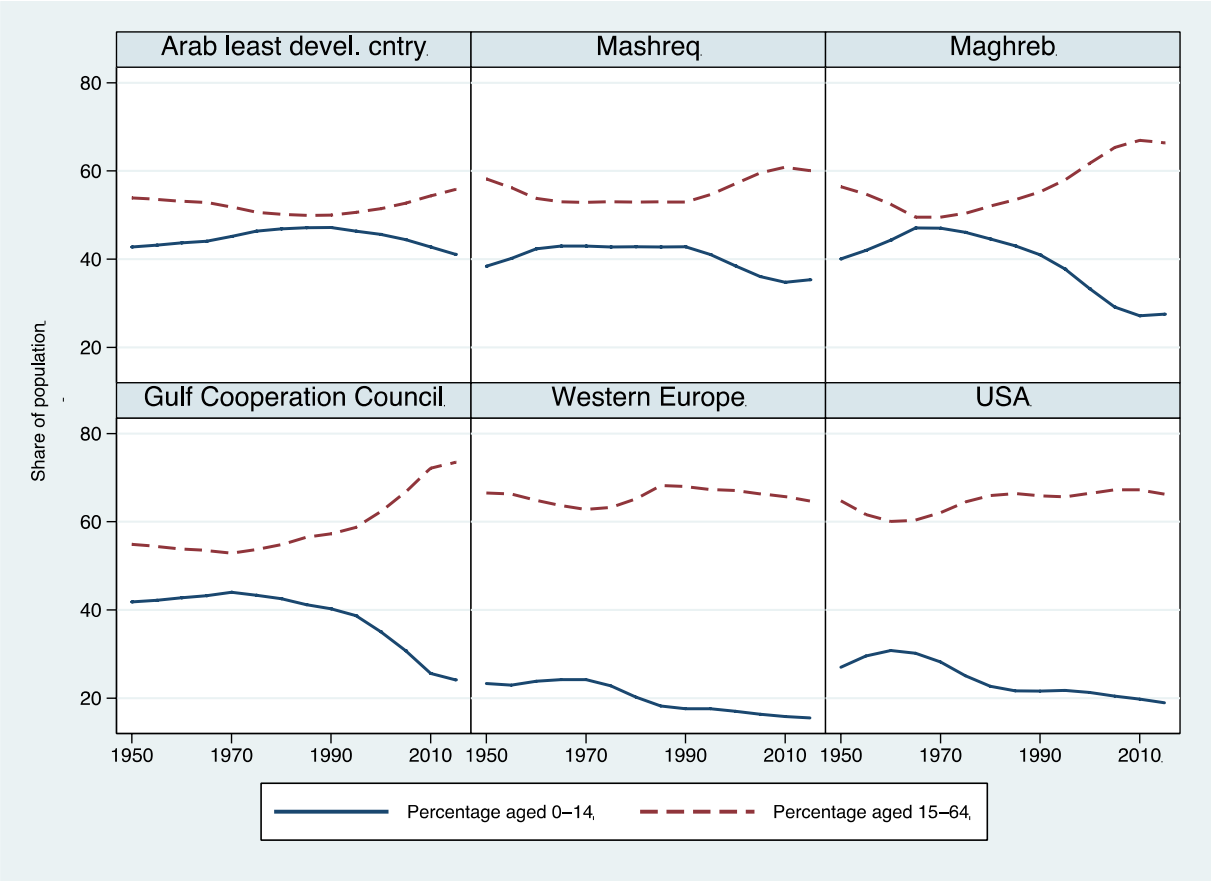
Data: Own calculations based on male and female population weighted country-specific data (United Nations 2015a)

Figure A10: Median age, share of population age 15 to 24 and 65+ of the MENA regions, Western Europe and the USA, 1950 to 2015



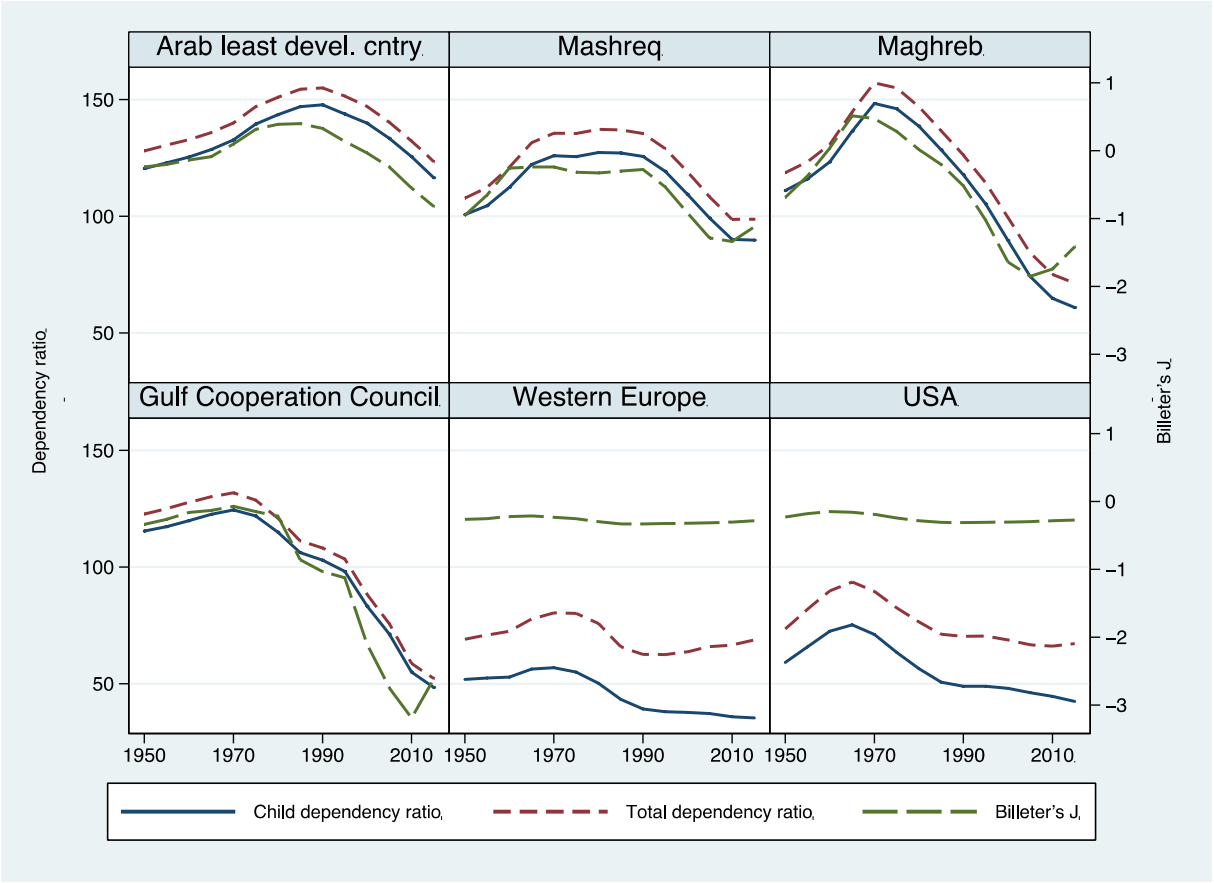
Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)

Figure A11: Share of population under age 15 and 15 to 64 of the MENA regions, Western Europe and the USA, 1950 to 2015



Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)

Figure A12: Child dependency and total dependency ratio and Billeter's J of the MENA regions, Western Europe and the USA, 1950 to 2015



Data: Own calculations based on total population weighted country-specific data (United Nations 2015a)