



Population Dynamics and Their Components

Yoann Doignon, Isabelle Blöss-Widmer, Elena Ambrosetti, Sébastien Oliveau

► To cite this version:

Yoann Doignon, Isabelle Blöss-Widmer, Elena Ambrosetti, Sébastien Oliveau. Population Dynamics and Their Components. Population Dynamics in the Mediterranean, Springer International Publishing, pp.131-143, 2023, SpringerBriefs in Population Studies, 978-3-031-37758-7. 10.1007/978-3-031-37759-4_9 . hal-04506374

HAL Id: hal-04506374

<https://amu.hal.science/hal-04506374>

Submitted on 15 Mar 2024

HAL is a multi-disciplinary open access archive for the deposit and dissemination of scientific research documents, whether they are published or not. The documents may come from teaching and research institutions in France or abroad, or from public or private research centers.

L'archive ouverte pluridisciplinaire **HAL**, est destinée au dépôt et à la diffusion de documents scientifiques de niveau recherche, publiés ou non, émanant des établissements d'enseignement et de recherche français ou étrangers, des laboratoires publics ou privés.



Distributed under a Creative Commons Attribution 4.0 International License

Chapter 9

Population Dynamics and Their Components



Abstract The Mediterranean has an average annual population growth rate of around 1%, which is about the same as the world population growth rate. With a few rare exceptions, this growth is not principally fuelled by migration flows. However, it is closely linked to the demographic transition still underway in many Southern and Eastern Mediterranean Countries, i.e. by the excess of births over deaths (natural balance). In these countries, average annual natural change of about 1.6% (higher than the world average and a fortiori that of the Mediterranean as a whole) have been observed. This chapter gives an account of the evolution of the differentiated growth rates of the populations of the Mediterranean region since the 1950s, distinguishing between the development of natural, migration and overall growth rates. This will make it possible to characterise the countries whose growth has been stimulated more by natural than migration growth depending on the period, thus heralding the sustainability of future growth rates. To achieve this, the chapter will propose a ranking of growth rates for different countries over time, as well as the expected developments in terms of projections while discussing the assumptions.

Keywords Natural dynamics · Migration dynamics · Population dynamics · Population growth · Projections · Mediterranean

9.1 Introduction

The Mediterranean has an average annual population growth rate of around 1%, which is about the same as the world population growth rate. With a few rare exceptions, this growth is not principally fuelled by migration flows. However, it is closely linked to the demographic transition still underway in many Southern and Eastern Mediterranean Countries, i.e. by the excess of births over deaths (natural balance). In these countries, average annual natural change of about 1.6% (higher than the world average and a fortiori that of the Mediterranean as a whole) have been observed. This chapter gives an account of the evolution of the differentiated growth rates of the populations of the Mediterranean region since the 1950s, distinguishing between

the development of natural, migration and overall growth rates. This will make it possible to characterise the countries whose growth has been stimulated more by natural than migration growth depending on the period, thus heralding the sustainability of future growth rates. To achieve this, the chapter will propose a ranking of growth rates for different countries over time, as well as the expected developments in terms of projections while discussing the assumptions.

9.2 Evolving Power Relations

The population of the Mediterranean countries amounted to approximately 571 million inhabitants in 2020. It has increased 2.5 times in 70 years. The annual rate of growth was on average very strong until the mid-1980s (exceeding rather continuously 1.4% per year) before beginning to decline (Fig. 9.1). At the start of the twenty-first century, the growth rate of the Mediterranean population was around 0.9% per year, the same rate as that of the world population. While all countries are experiencing a slowdown in their growth, the heterogeneity between major regional clusters is still notable. North Africa and the Near East still have annual population growth above 1.3%, despite a steady decline since the mid-1980s. In 1950, growth was of the order of 2% per year, a significant rate, because it represents a doubling of the population in 35 years. The evolution of population growth in the Near East highlights the impact of cyclical events, such as the insurgency in Syria (1978–1982), the war in Iraq in the 2000s and the reception of refugees in several Near Eastern countries. In contrast, Southern Europe and the Balkans have zero and negative growth respectively (-0.4%). The period when several Southern European countries became receiving countries with a positive net migration (see Chap. 8) can be seen on the graph with a significant increase in population growth in the 2000s, followed by a decrease after the 2007 crisis.

If we focus on countries with more than 10 million inhabitants, we notice that the 3 most populated countries in the Mediterranean in 1950 are all Southern European countries (Italy, France, Spain), ahead of Egypt and Turkey (Table 9.1). There are only 5 countries with more than 10 million inhabitants in the 27 Mediterranean countries. In 1980, two new countries (Morocco and Algeria) joined the group of most populous countries, while the demographic breakthrough of Turkey and Egypt was already visible, with Spain moving up from third to fifth place. In 2020, the order of the shores reversed since Egypt and Turkey were the two most populous countries in the Mediterranean largely ahead of the three Southern European countries, with respectively about 109 and 85 million inhabitants (Blöss-Widmer, 2022). Together, they represent 34% of the Mediterranean population, the same order of magnitude as India and China represent in the world population. 5 new countries exceeded the threshold of 10 million inhabitants in 2021: Syria, Tunisia, Jordan, Greece and Portugal. Seven of the 12 countries with more than 10 million inhabitants are located on the Southern and Eastern shores. This ranking highlights the reversal of the demographic order that prevailed in the 1950s. As a result of the demographic transition

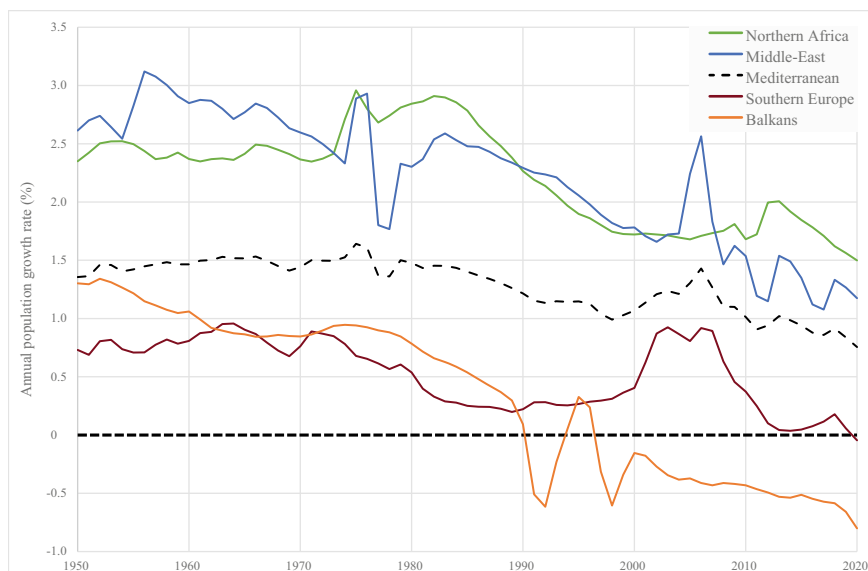


Fig. 9.1 Mediterranean comparative annual growth rate (%) by regional groups (1950–2020) (Source World Population Prospects, 2022. Calculations made by the authors)

(see Chap. 4), the populations of the Southern and Eastern shores have increased sharply and their weight in the Mediterranean population has increased considerably. Indeed, the Northern shore represented 68% of the Mediterranean population in 1950, and the Southern and Eastern shores 32%. These proportions stood at 39% and 61% respectively in 2020. In other words, while the majority of the Mediterranean population was on the Northern shore in 1950, the situation is exactly the opposite at present where 60% of the Mediterranean population is on the Southern and Eastern shores. It should be noted that almost 40% of the Mediterranean population is located in North Africa, 24% in the Near East, 32% in Southern Europe, and only 7% in the Balkans.

Some countries have therefore experienced an impressive increase in their population since 1950 (Fig. 9.2). Egypt and Turkey have experienced growth rates of more than 2% per year for more than 30 years. Their population has multiplied by 5 and 4, respectively. The most spectacular trajectory is that of Jordan, which had less than 500,000 inhabitants in 1950, but more than 11 million in 2021. This increase represents a more than 25-fold increase in the population in 70 years. The countries of the Southern and Eastern shores have seen their population growth by more than 4 times since 1950, compared to 1.5 for the countries of the Northern shore.

This growth is largely a consequence of the various demographic transitions described in Chap. 4. It depends firstly on the level of the natural balance (number of births minus number of deaths), a component that varies according to the stages of the demographic transition. The rate of population change also increases by the size of the net migration (estimate of the difference between arrivals and departures from

Table 9.1 Countries with more than 10 million inhabitants in 1950, 1980 and 2021 (population numbers in millions)

1950		1980		2021	
Italy	46	Italy	56	Egypt	109
France	42	France	54	Turkey	85
Spain	28	Turkey	44	France	65
Egypt	21	Egypt	44	Italy	59
Turkey	21	Spain	37	Spain	47
		Morocco	20	Algeria	44
		Algeria	19	Morocco	37
				Syria	21
				Tunisia	12
				Jordan	11
				Greece	10
				Portugal	10

(Source World Population Prospects, 2022)

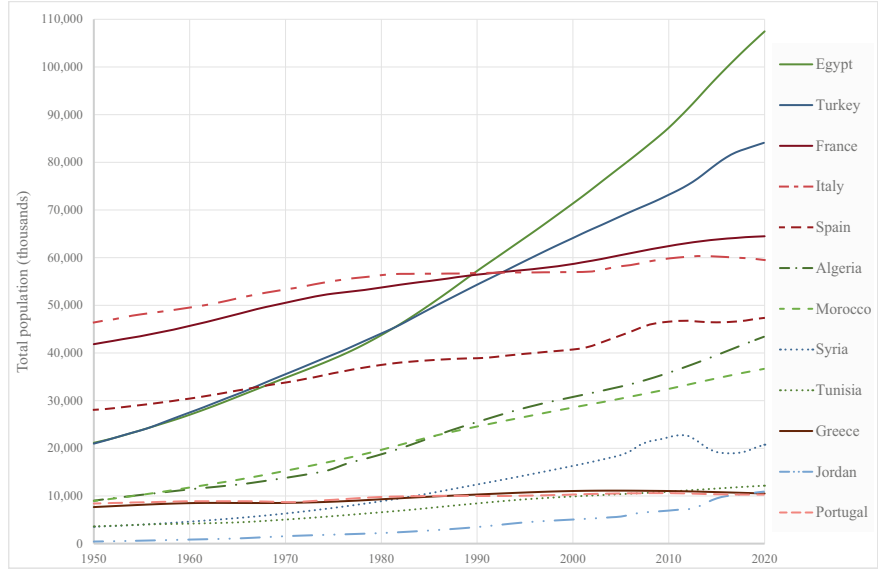


Fig. 9.2 Comparative population evolution in Mediterranean by country (1950–2021) (Source World Population Prospects, 2022)

each country for each period). These two elements, the components of population dynamics, can jointly stimulate growth (positive natural balance and positive net migration), work against each other (positive natural balance/negative net migration or vice versa) or contribute to a general decline (negative natural and net migration).

In order to fully understand the population dynamics of the Mediterranean countries, it is therefore necessary to analyse its two components (natural and migration) in order to derive several profiles of dynamics.

9.3 Natural and Migration Dynamics: Which Combinations Exist in the Mediterranean?

With regard to the natural component, the average annual rates of all countries have fallen considerably since 1950. The demographic transition generates an undeniable phenomenon of convergence of rate of natural change towards lower levels (see Chap. 4). However, there are still marked differences from one shore to the other: several demographic regimes still coexist in the Mediterranean. As for migration dynamics, they cannot be easily summarised for many countries, as they are essentially linked to the economic situation (economic, reception of refugees, etc.) and to specific migration policies (see Chap. 8). It can sometimes be of relative importance for the total population dynamics for certain countries. Figure 9.3 presents the two demographic components of the Mediterranean countries for 3 periods (1950–1954, 1990–1995 and 2015–2019).

9.3.1 *Natural Dynamics: South and East*

The majority of Mediterranean countries have been in constant natural growth since the 1950s. The level of this natural growth averaged over 2% per year until the early 1990s and then halved on average. These countries, stimulated by their natural growth, belong very much to Northern Africa (Morocco, Algeria, Tunisia, Egypt, Libya) and the Near East (Palestine, Turkey, Syria). The majority of these countries are therefore, logically, those whose demographic transition began later, but much more rapidly, than the others (Chap. 4). The gains in life expectancy due to declining mortality in Northern Africa and the Near-East have been concentrated among the youngest and adults, increasing their probability of survival and thus automatically lowering deaths at all ages (see Chap. 7). This phenomenon, which increases the probability of survival for everyone, contributes to a structural increase in births from generations of fertile age newly preserved from death. It is also combined with a fertility decline that occurs on a delayed mortality timing, still generating many births (Chap. 5). The natural growth levels of Northern Africa and Near East countries

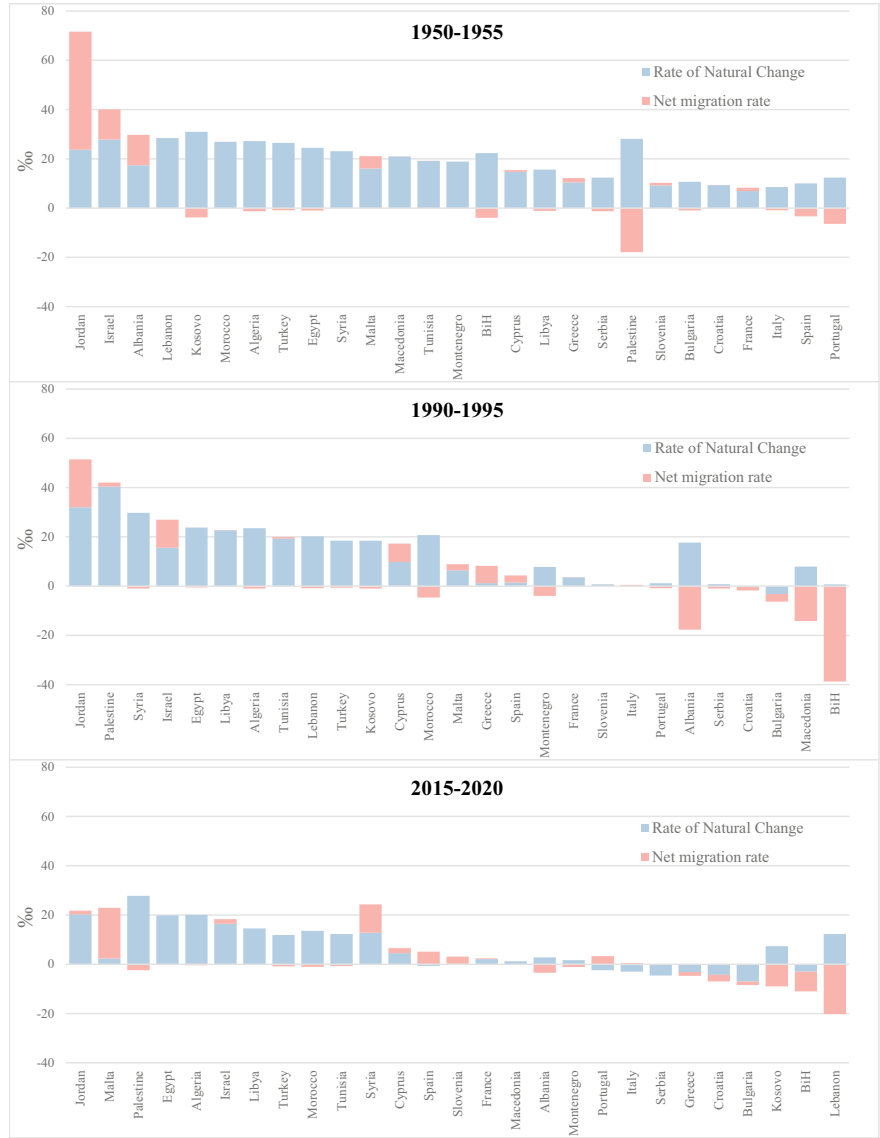


Fig. 9.3 Participation of natural and migration components on total growth for Mediterranean countries at different periods (1950–1955, 1990–1995, 2015–2020) (*Source* World Population Prospects, 2022)

are relatively high and similar, rising over the period from 2.6% per annum to 1.7% per annum.

Some countries have not broken with natural growth, despite the fact that demographic ageing started earlier. France, Cyprus, Malta, Montenegro, Macedonia, Kosovo and Albania have managed to maintain positive natural growth for reasons related to higher fertility by age of women, combined with age structures that are still favourable. However, with rates of no more than 0.5% per year for decades (except for Kosovo), the level of natural growth in these countries is much lower than in the Near-East or Northern Africa.

In contrast to the previous countries, nine Mediterranean countries have experienced a weak and downward natural dynamic since the 1950s, with episodes of natural decline (excess of deaths over births) that have appeared and continued for some for as long as 30 years (Chap. 4). None of these less dynamic countries are located on the Southern and Eastern shores, all are on the Northern shore: Slovenia, Spain, Italy, Bulgaria, Bosnia-Herzegovina, Serbia, Portugal, Greece, and Croatia. Their average annual rate of population dynamics over the period contrasts with previous countries, having increased from about 1.2% on average in the 1950s to -0.3% in 2015–2020. These countries are experiencing a slowdown in their natural dynamics as their populations age and younger generations reduce their fertility. Gap age effects have sometimes accentuated the phenomenon. It is from the years 1990–1995 that negative natural dynamics began to be observed in Italy, Croatia and Bulgaria, rapidly followed by Slovenia and Serbia (1995–2000), Portugal (2005–2010), Greece and Bosnia-Herzegovina (2010–2015) and Spain (2015–2020). Thus, while these 9 countries all had moderate but positive natural growth in the early 1990s, they were all (except Slovenia) in 2020 remarkable for their negative natural dynamics.

9.3.2 *Migration Dynamics: Sending Versus Receiving Countries*

Although the Southern and Eastern Mediterranean countries are known more as sending countries (negative migration balances) and those of Southern Europe as receiving countries (positive migration balances) (Chap. 8), a detailed analysis makes it possible to show this, to measure the temporalities and to reveal exceptions (Fig. 9.3).

Among the countries that have been in continuous natural growth for 70 years, a large part has been, at the same time and over a large part of the period, more senders of migrants than receivers (negative net migration). This includes Palestine, Egypt, Algeria, Turkey, Morocco, Tunisia, Macedonia, Montenegro, Albania, Kosovo and the Syrian. The intensity of negative net migration has been variable since the 1950s, contributing more or less to tempering the pace of total growth. All these countries, which are naturally dynamic but have had largely negative net migration since the

1950s, are therefore in North Africa, the Near East and some in the Balkans. No Southern European country has had a consistently negative net migration for 60 years, this regional grouping being more characterised by periods of migration alternation (receivers or senders in balance depending on the period) (Chap. 8).

Only 3 countries out of 17 with positive natural growth in the three periods also had positive migration growth: Israel, France and Jordan. France is truly an exception, since it is not only one of the three Mediterranean countries whose two components (natural and migration) are positive, but it is the only Southern European country to have this characteristic.

The countries of Southern Europe and the Balkans have experienced a natural downward trend over the past 60 years. Their migration attractiveness is often erratic, and partially (or not at all) compensates for periods of decline. A rather critical demographic dynamic of decline has thus gradually taken hold in Southern Europe and the Balkans. Two countries, for example, combine their natural dynamics (sustained until the 1990s and then much weaker, or even negative) with a migration dynamic that has constantly been negative for 60 years: Bulgaria and Bosnia-Herzegovina. These countries lost more people than they gained through migration over the whole period, which did not help to offset their negative natural dynamics. Other situations with negative net migration combined with depopulation (negative natural balances) have been noted in recent periods, such as in Serbia, Greece, Croatia, followed closely by Portugal, Slovenia, Spain and Italy where one of the components is negative. Depending on the economic situation, these countries are sometimes attractive and sometimes repulsive from a migration point of view. Positive migration balances over a few periods almost never compensate in level for the low number of births in view of the rise in deaths recorded as a result of demographic ageing.

9.4 Growth Outlook to 2060: What Can We Expect?

By 2060, the median scenario of the United Nations projections forecasts a Mediterranean population of nearly 685 million. Less than half of the countries are experiencing this growth, with the other half projected to lose more of its population each year than it gains from low fertility and population ageing. For the latter countries of Southern Europe and the Balkans, which are in decline, even the hypothesis of a net migration attraction forecast for some (Portugal, Italy, Greece, Spain, Slovenia and Malta) would not be enough to compensate for the negative natural balance that has lasted for a long time (Fig. 9.4).

As a result, the weight of the Southern and Eastern shores would continue to increase, since they will represent 72% of the Mediterranean population, compared to 61% at present (Table 9.2). One in two inhabitants of the Mediterranean by 2060 will be in Egypt, Turkey or Algeria. As for Italy, Spain, Portugal and Greece, all four would lose inhabitants, with the last two even falling back below the 10 million mark. Southern Europe would then represent less than 30% of the Mediterranean population, compared with 39% in 2020 and the Balkans less than 5%. According

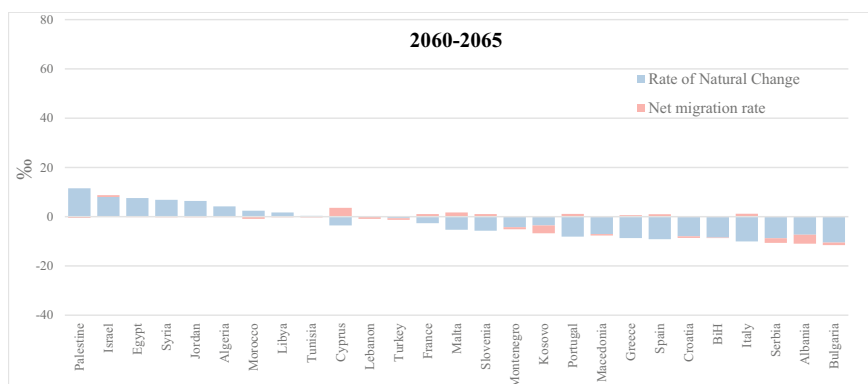


Fig. 9.4 Projection of participation of natural and migration components on the total growth for the Mediterranean countries (2060, median variant) (Source World Population Prospects, 2022)

to the median scenario, many countries would have fewer inhabitants in 2060 than in 2020, the vast majority being on the Northern shore, but Lebanon also falls into this category.

Chapter 5 on fertility trends, however, has shown how much uncertainty still exists when it comes to making projections over somewhat distant horizons. Indeed: “Not only is there no longer a general theory capable of indicating the direction in which fertility should significantly evolve, but the future of mortality, which as we have seen weighs heavily on the projections, is the subject of a lively debate, without mentioning migration” (Vallin & Caselli, 2006). Demographic projections are less subject to uncertainty than economic projections, due to the nature of the projected quantities, the inertia of demographic phenomena, and the heavy trend they represent. However, as noted again recently by Adam (2021) in the article entitled “How far will global population rise? Researchers can’t agree”, it is common for the methods and scenarios used by the different research teams to¹ lead to quite contrasting results.²

¹ We are thinking in particular of the scenarios of the United Nations (World Population Prospects 2022), of those of CEPAM (Joint Research Centre [European Commission], 2018), of Lutz et al. (2014) and of Vollset et al. (2020).

² For example: “World population projections for the twenty-first century as produced by the United Nations Population Division and by the International Institute for Applied Systems Analysis (IIASA) have changed quite a bit over time as a function of different long-term fertility and mortality assumptions, and the incorporation of most recent observed empirical trends and analysis. In their most recent assessments, the UN (2017) projects continuous growth of world population for their medium variant, reaching more than 11 billion people by the end of the century. Whereas IIASA (...) with its medium scenario (SSP2), projected a peak population of 9.4 billion in 2065–2075, followed by a slight decline to 9 billion by the end of the century (...) This difference is mostly due to different methods of deriving long-term fertility assumptions for the different parts of the world, where the UN relies primarily on statistical extrapolation models and IIASA gives more weight to expert arguments and scientific reasoning” (Joint Research Centre [European Commission], 2018, 117).

Table 9.2 Population (in thousands) and share of Mediterranean population (in %) in 2020 and 2060, by countries and regional area

Countries	Population (in thousands)		Share of Mediterranean population (in %)	
	2020	2060	2020	2060
Egypt	107,465	174,311	19	25
Turkey	84,135	96,017	15	14
France	64,480	64,903	11	9
Algeria	43,452	63,554	8	9
Italy	59,501	48,233	11	7
Morocco	36,689	46,214	6	7
Spain	47,364	41,257	8	6
Syria	20,773	41,042	4	6
Jordan	10,929	16,131	2	2
Tunisia	12,162	14,512	2	2
Israel	8,757	14,332	2	2
Palestine	5,019	10,036	1	1
Libya	6,654	8,762	1	1
Portugal	10,298	8,683	2	1
Greece	10,512	8,506	2	1
Serbia	7,358	5,238	1	1
Lebanon	5,663	4,947	1	1
Bulgaria	6,979	4,656	1	1
Croatia	4,097	3,067	1	0
BiH	3,318	2,523	1	0
Albania	2,867	2,218	1	0
Slovenia	2,118	1,920	0	0
Macedonia	2,111	1,784	0	0
Kosovo	1,671	1,575	0	0
Cyprus	1,238	1,404	0	0
Montenegro	629	560	0	0
Malta	515	507	0	0
Northern Africa	206,421	307,354	37	45
Near-East	136,514	183,909	24	27
Balkan countries	39,989	30,471	7	4
Southern Europe	182,158	163,582	32	24
Southern and Eastern Shores	342,935	491,263	61	72
Northern Shore	222,147	194,053	39	28
Mediterranean	565,083	685,317	100	100

(Source World Population Prospects, [2022](#))

Although assumptions are difficult to make and subject to discussion, we have nevertheless identified groups of countries whose fertility does not seem, for the time being at least, to reach low fertility levels (Chap. 5). Consequently, the growth dynamics of the regional clusters of Northern Africa and Near East could be more sustained than what all the recent projections predict. Conversely, the projections of decline for the countries of Southern Europe and the Balkans seem less uncertain, as they are part of an inevitable context of ageing and a preference for small families. And if declining countries were to shift their fertility upwards to counter the rate of growth of the elderly, they would have to reach levels of around 3 children per woman (Blanchet, 2001). However, this does not seem to be consistent with the number of desired children reported by families in international comparative surveys.³

With regard to migration, Chap. 8 showed the importance of the movements to be anticipated towards ageing Southern Europe. However, regardless of the size of net immigration to these countries over the next 40 years (the evolution of which is the most unpredictable of all the components), this solution would not, *a priori* make it possible to halt the expected phenomena of decline, because the ageing of the population leads to the observation of too rapid an increase in the number of deaths. As early as the 2000s, a United Nations report (Population Division et al., 2000) modelled an adjustment of imbalances by migration flows. The main conclusions were that controlling ageing through migration would require migration balances twice as high as those experienced by the most attractive countries in the world such as the United States; and some simulations of migration balances needed to maintain dependency ratios in ageing developed countries are even described as “totally unrealistic”⁴ (Blanchet, 2001, 523), because certainly not acceptable to the populations of these same countries, nor realistic.

In conclusion, in the Mediterranean, the average annual growth rates have continued to decline in all countries since the 1950s with the spread of the demographic transition towards the countries on the Southern and Eastern shores. While growth differentials have narrowed, on average much faster rates are still recorded in the Near East and Northern Africa compared to Southern Europe and especially in the Balkan countries. The population dynamics of the vast majority of countries are mainly due to the natural component (excess of births over deaths). If migration dynamics temper the demographic dynamics of sending countries,⁵ it is expected to sustain, but with difficulty, that of the receiving countries with the lowest fertility

³ We are thinking in particular of the responses given to surveys such as: The European Values Study (EVS), International Social Survey Program (ISSP), World Values Survey (WVS), Generations and Gender Survey (GGS), Afrobarometer and Anna Lindh Foundation.

⁴ This text has been translated into English by the authors. The original text in French is as follows: “totalement irréalistes”.

⁵ “Anyway, according to CEPAM Medium (SSP2) scenario, migration would not be able to affect significantly the MENA population size and structure: (...) It implies that population changes would be mainly driven by fertility and mortality behaviours under this scenario” (Joint Research Centre [European Commission], 2018, 69).

and the highest life expectancies, since most of them are expected to lose inhabitants by 2060.⁶

References

- Adam, D. (2021). How far will global population rise? Researchers can't agree. *Nature*, 597, 462–465. <https://doi.org/10.1038/d41586-021-02522-6>
- Blanchet, D. (2001). L'impact des changements démographiques sur la croissance et le marché du travail: Faits, théories et incertitudes. *Revue D'économie Politique*, 111, 511–564. <https://doi.org/10.3917/redp.114.0511>
- Blöss-Widmer, I. (2022). Make way for numbers: The age race in the Mediterranean. *IEMed Mediterranean yearbook 2022*. European Institute of the Mediterranean (IEMed). <https://www.iemed.org/wp-content/uploads/2022/10/Make-Way-Numbers-Age-Race-Mediterranean-Bloss-Widmer-IEMedYearbook2022.pdf>
- Joint Research Centre (European Commission). (2018). *Demographic and human capital scenarios for the 21st century: 2018 assessment for 201 countries*. Publications Office. <https://data.europa.eu/doi/10.2760/41776>
- Lutz, W., Butz, W. P., & Samir, K. C. (2014). World population and human capital in the twenty-first century. *Oxford University Press*. <https://doi.org/10.1093/acprof:oso/9780198703167.001.0001>
- Population Division, Department of Economic and Social Affairs, and United Nations Secretariat. (2000). *Replacement migration: Is it a solution to declining and ageing populations?* https://www.un.org/development/desa/pd/sites/www.un.org.development.desa.pd/files/unpd-egm_200010_un_2001_replacementmigration.pdf
- Vallin, J., & Caselli, G. (2006). The United Nations' world population projections. In G. Caselli, J. Vallin, & G. J. Wunsch (Eds.), *Demography: Analysis and synthesis* (Vol. III, pp. 197–234). Elsevier.
- Vollset, S. E., Goren, E., Yuan, C.-W., Cao, J., Smith, A. E., Hsiao, T., Bisignano, C. et al. (2020). Fertility, mortality, migration, and population scenarios for 195 countries and territories from 2017 to 2100: A forecasting analysis for the global burden of disease study. *The Lancet* 396. Elsevier: 1285–1306. [https://doi.org/10.1016/S0140-6736\(20\)30677-2](https://doi.org/10.1016/S0140-6736(20)30677-2)
- World population prospects*. (2022). United Nations, Department of Economic and Social Affairs, Population Division. <https://population.un.org/wpp/>

⁶ “If the current demographic trends continue as in the presented scenarios the main driver of change in population size of EU-28 countries would be migration” (Joint Research Centre [European Commission], 2018, 33).

Open Access This chapter is licensed under the terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>), which permits use, sharing, adaptation, distribution and reproduction in any medium or format, as long as you give appropriate credit to the original author(s) and the source, provide a link to the Creative Commons license and indicate if changes were made.

The images or other third party material in this chapter are included in the chapter's Creative Commons license, unless indicated otherwise in a credit line to the material. If material is not included in the chapter's Creative Commons license and your intended use is not permitted by statutory regulation or exceeds the permitted use, you will need to obtain permission directly from the copyright holder.

