European Population Conference

Barcelona, 9-12 July 2008

The impact of different migratory scenarios in the demographic ageing in Portugal, 2009-2060

Draft version

Maria Magalhães, Statistics Portugal
João Peixoto, ISEG, Technical University of Lisbon

Abstract

Since the late 1990s, several studies addressed the future of the European population and the role that international migration can play in offsetting population decline and slowing down ageing. These studies have been produced for several European contexts, including the Southern European one, where the pace of ageing has been faster than the average. In a context of population ageing, the impact of the migratory flows in the Portuguese demographic structure is also a non-negligible element to consider. Despite the difficulties associated with the forecast of the migration component, due to the volatility of the international migratory flows, as well as to the shortcomings of the available databases, the main goal of this study is to evaluate the impact of different migratory scenarios in the expected population structure in Portugal (for the period 2009-2060, based on the cohort component method, with only one scenario for mortality and fertility).

Key Words: Migration, ageing, population projections, Portugal

1. Introduction: the future of the European population and the role of international migration

Studies about the future of the European population and the role of immigration have been growing recently. Part of them has been done as a reaction to the influential document issued by the UN (2000), where immigration was admitted to be a possible substitute of low fertility, thus conducing to "replacement migration". Although it may argued that the UN document didn't exactly propose that kind of replacement, and much less admitted that migration could compensate for ageing, the fact is that a vivid debate was open regarding the effect of immigration in receiving societies, particularly the European ones.

Some of the conclusions reached by those studies point to the following facts:

- currently, there is indeed an increasing role of immigration to explain the European demographic dynamics;
- in the past (after WW2), immigration reinforced the positive total growth and diminished the pace of ageing (Haug et al., 2002);
- in the future (next 50 years), current trends suggest that immigration will increase but will not avoid the structural trend for stabilization / decline of the total population and for ageing (Lutz and Scherbov, 2006; Bijak *et al.*, 2007).

Some of the arguments expressed went even deeper. They suggested that immigration is responsible for the "third demographic transition" – the change in the ethnic profile of European populations. This idea was put forward by Coleman (2006), thus indicating that immigration was not only a possible panacea for the European demographic dilemmas, but that it could revolutionize the entire European demographic profile.

In this paper, the impact of immigration in the demography of Portugal will be examined. In the next section, some data on the increasing importance of foreign inflows to the Portuguese demographic growth will be presented. Next, some simulations on the future of net migration will be carried out, and the effects of different migratory scenarios on the population composition and structure will be measured. It will be argued that a higher or lower net migration will have a significant impact over Portuguese demography, but that it will not conceal the structural trends for stabilization / decline and ageing currently in place.

2. The Portuguese case: the increasing importance of immigration in demographic growth

Recent studies on demography and immigration in Portugal (Rosa, 2001; Peixoto *et al.*, 2002; Rosa *et al.*, 2004; Magalhães and Peixoto, 2006; Peixoto, forthcoming) have examined the increasing importance of immigration in demographic growth. The main arguments expressed are the following:

- the Portuguese demographic situation is similar to the one of many other European countries, including the Southern European ones: stabilization of total population and rapid ageing;

- demographic projections indicate a possible decline at the medium-term and growing ageing;

- immigration, particularly foreign immigrants, have played an increasing role in the Portuguese demographic dynamics: this result from its direct contribution (inflows) and indirect impacts (consequences of its demographic behavior over the overall demography).

The direct contribution of immigration is usually illustrated by the proportion of foreign immigrants living in Portugal. Although numbers vary, according to the use of statistics based on foreign citizenship or on foreign countries of birth, the current figures are next to many European immigration receiving countries. According to recent figures issued from INE (Statistics Portugal), the number of foreign citizens living with a regular status in Portugal amounts to 4.1% in 2006 (www.ine.pt). The number of people born abroad is still higher, given the effect of Portuguese repatriated from the ex-colonies in the mid-1970s. Considering particularly the increase of foreign immigration, the growth has been significant since the late 1970s, but has attained its higher numbers in the late 1990s, beginning of 2000s (Fonseca *et al.*, 2005).

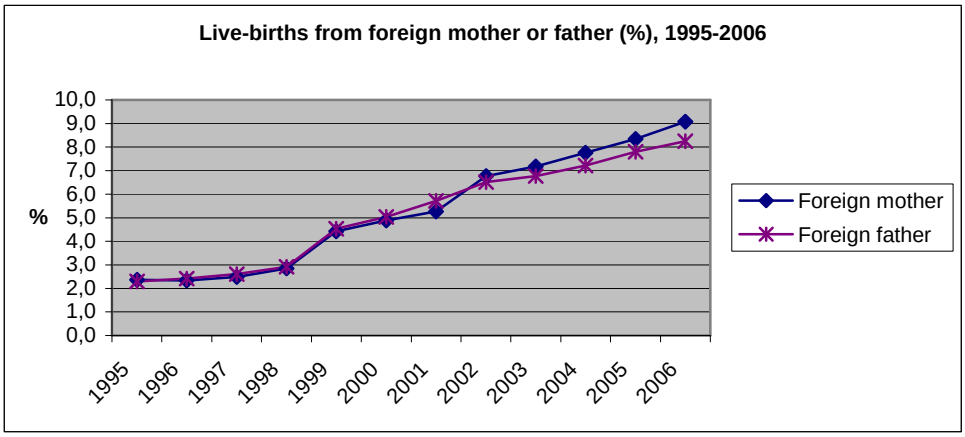
The indirect contribution of foreign immigration to the Portuguese demography is still higher than the above figures suggest. Thus:

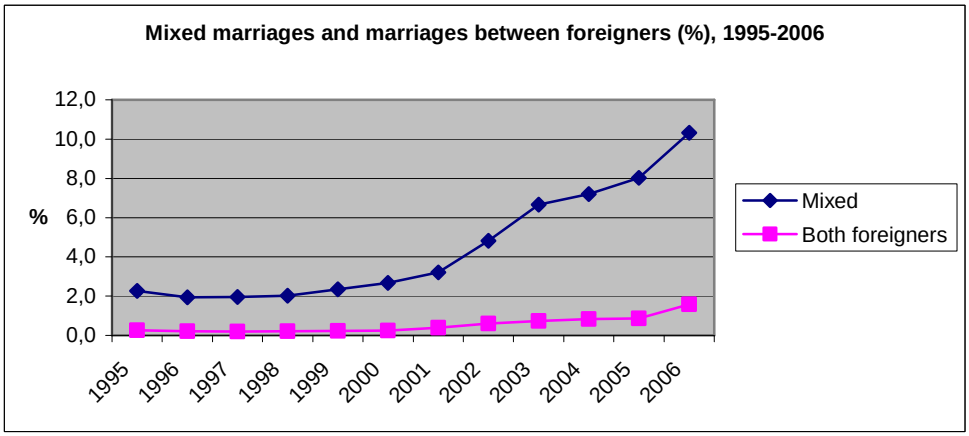
- the proportion of foreign immigrants in live births and marriages is increasing fast: in 2006, births from foreign mothers attained 9.1% of total births; mixed marriages amounted to 10.3% of total marriages; and marriages among foreign citizens amounted to 1.6% of total marriages (see Graphs below);

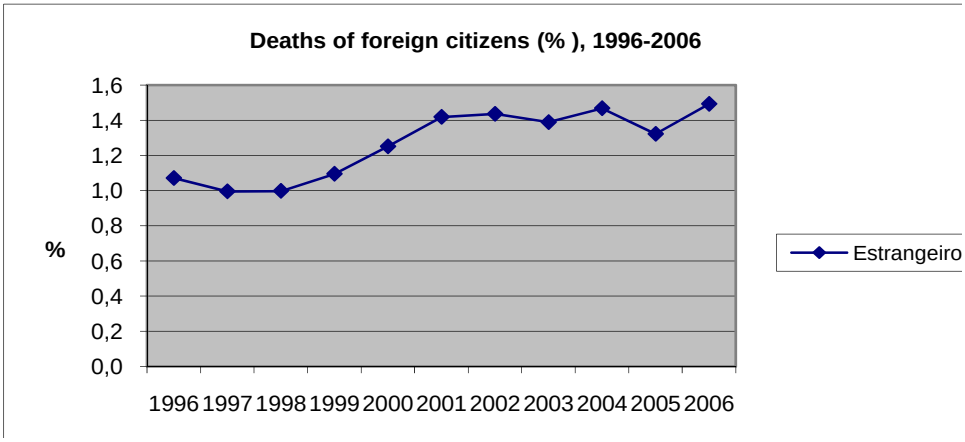
- the proportion of foreign citizens among deaths is much lesser, due to the age selectivity of migration: in 2006, it represented only 1.5% of total deaths (see Graph below).

In short, a large part of natural increase in Portugal has currently explained by the foreign population. It is known that total natural increase has attained a breaking point in 2007. In this year, for the first time in recent demography, deaths have exceeded births, thus leading to a negative increase. Observing the part of natural increase respecting to Portuguese nationals and the one totally or partially related with foreign citizens, it can be found that natural increase among the former was already negative since 2003, and that only the effect of foreign citizens lead to a positive general level (Peixoto, forthcoming).

It is known that one of the main variables explaining the overall Portuguese demographic growth is, since long ago, international migration. In recent years, the main novelty is the turnaround from emigration to immigration. Although the former is far from ceasing completely, the effects of immigration seem now much larger and have the potential to continuously affect and condition the overall growth.


Live-births from foreign mother or father (%), 1995-2006
%
10,0
9,0
8,0
7,0
6,0
5,0
4,0
3,0
2,0
1,0
0,0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Foreign mother
Foreign father


Mixed marriages and marriages between foreigners (%), 1995-2006
%
12,0
10,0
8,0
6,0
4,0
2,0
0,0
1995
1996
1997
1998
1999
2000
2001
2002
2003
2004
2005
2006
Mixed
Both foreigners


Deaths of foreign citizens (%), 1996-2006
%
1,6
1,4
1,2
1,0
0,8
0,6
0,4
0,2
0,0
1996 1997 1998 1999 2000 2001 2002 2003 2004 2005 2006
Estrangeiro

3. Simulations

3.1. Data, methodology and assumptions

In this paper, the interest is focused on the effects of different migratory outcomes, particularly immigration, on the composition and structure of the Portuguese population. Considering this objective, the scenario projections is an extremely valuable tool. In order to pursue our main goal, we have adopted the cohort component methodology, with alternative variants for the migration component.

For fertility and mortality, we have adopted the values of the *convergence scenario* on the framework of EUROPOP2008 (EUROSTAT, 2007). The *convergence scenario* assumes that "the socioeconomic and cultural differences between Member States of the European Union (EU) will fade out in the long run", sustaining also the assumption of a convergence for all the component values and assuming 2150 as the convergence year (see Annex 1).

As regards fertility, an upturn in the recent very low trends of fertility in Portugal can be expected, supporting the increase of the total fertility rate from 1.36 (2008) to a target value of 1.54 (2060).

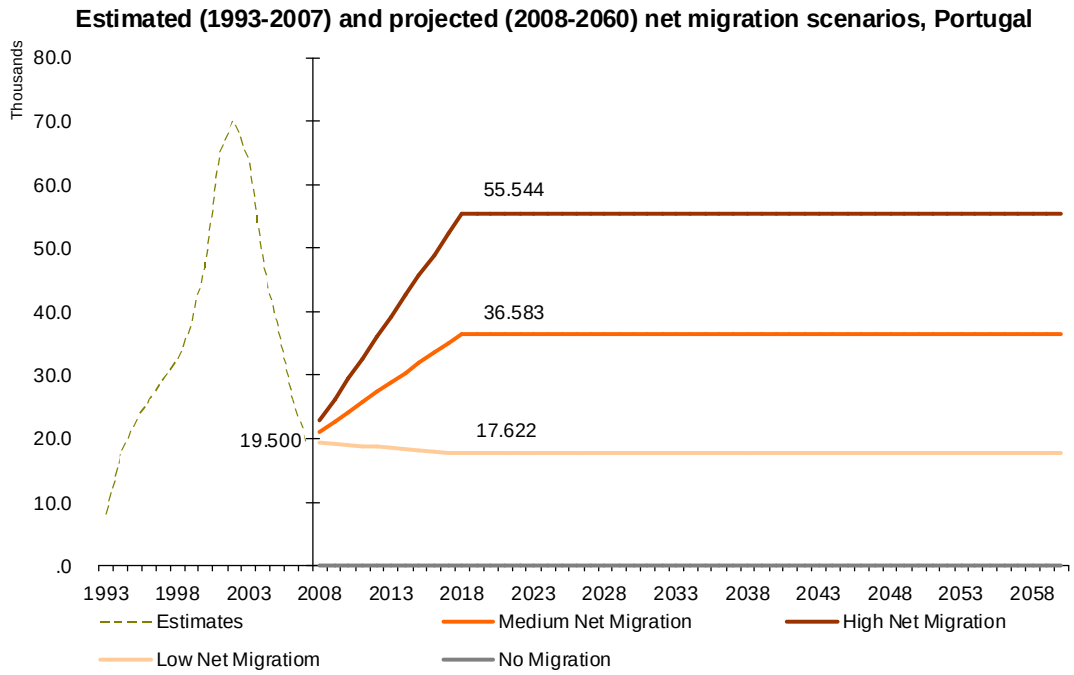
As regards mortality, an improvement of life expectancy in the case of Portugal can be expected, for both sexes. It is assumed 75,8 and 82,4 year as the starting values for life expectancy at birth, for male and female, respectively. These values will reach 84,1 and 88,8 years, for male and female, respectively, as target values in 2060.

The impact of international migration on the population dynamics, as well as on the labour force resources, is not negligible, particularly in countries like Portugal, where migration was the major determinant of demographic change on the last decades, becoming in recent years a country of immigration.

On this paper, we have looked at four migration scenarios, three of them assuming a positive net migration over the projection period (2008-2060), and another a "no migration" scenario, to evaluate the impacts of different levels of net migration.

Despite recent developments on the migration projections, the scarcity of data on migration flows imposes some limitations. In order to overcome these difficulties, we have worked with different data sources on different steps to set up the migration scenarios.

For the total amount of net migration in the recent past, we have looked at the estimates of net migration values, since 1993 to 2007, released by Statistics Portugal. This 15 years period cover part of the inter census as well as the post census estimates, the first ones already adjusted to the 1991 and 2001 census. These values are taken separately for outflows and inflows.



A central scenario, named *medium net migration scenario*, is settled on the average of the estimated net migration values 1993-2007, separately for inflows and outflows.

Based on the medium scenario, we have a low variant (*low net migration scenario*), that corresponds to a possibility of lower “attractiveness”, associated with a reduction of the inflows (-30%) in chorus with an increase of outflows (+30%), and a high variant (*high net migration scenario*), corresponding to a possibility of increasing

“attractiveness”, associated with an increase of the inflows (+30%) simultaneously with a decrease of outflows (-30%) (Annex 2).

We assume initial values close to the last one estimated, in 2007, and a period of 10 years to increase/decrease until the proposed values. The fourth scenario, with no migratory flows, is useful to compare results.

It must be noted that, for inflows, a proportion of return of Portuguese individuals (26.4%) was taken into account, according to Labour Force Survey recent data (73.6% for non-nationals).

After establishing the amounts for immigrants, nationals and non-nationals, and emigrants, the next step was to decide what sex and age structure should we apply. For that purpose, we have assumed different age and sex structures for each flow: data on non-national inflows based on the characteristics measured by the register of legal foreigners; data on Portuguese inflows based on LFS; data on outflows based on a LFS module (see Annex 3).

3.2. Results

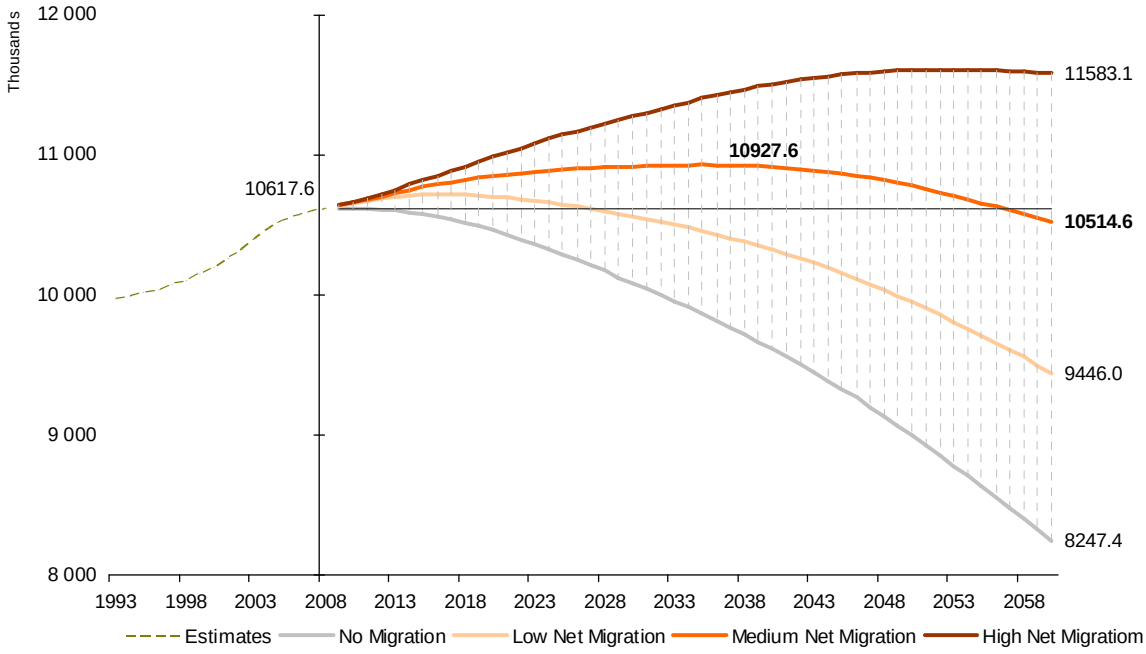
Fertility, mortality and migration are the driver components of demographic change. Taking the population projections results of a set of scenarios where fertility (age fertility rates) and mortality (age mortality rates) are equal in all the variants, and only the migration component assumes different values in different scenarios, we will have a clear idea about the impacts of different migratory flows.

In fact, the results of our exercise point to significant impacts on several indicators. For instance, in Portugal, the resident population growth is already mainly driven by the migration component. Based on the results of the medium migration scenario, the total population continues to increase until a maximum of 10927.6 thousands by 2036, after which it will start to decline until 2060 (10514.6 thousands). This decline starts earlier, by 2018, in the low migration scenario, and later, by 2054, on the high migration scenario, in which the target values in 2060 are still above the initial population.

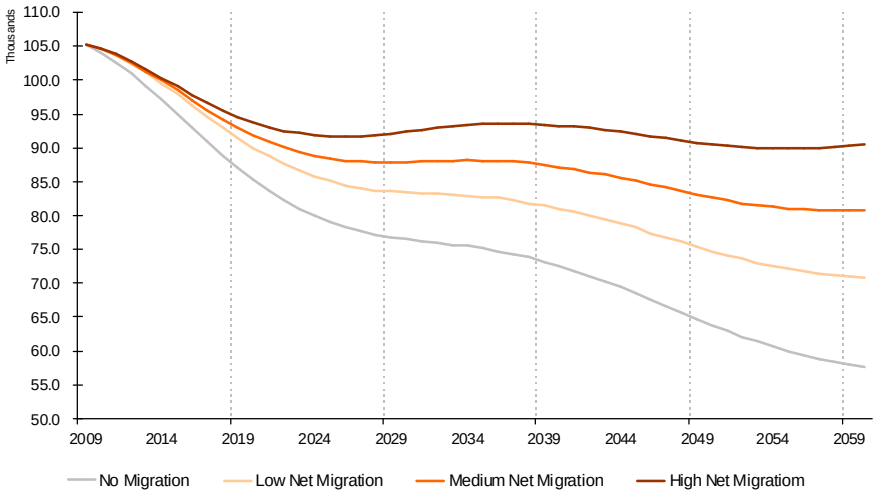
In all cases, natural increase will be negative all over the period, meaning that the population increase is a result of net migration. However, due to the age structure of immigrants, usually younger than the resident population, the impacts on the natural balance will differ also significantly on each scenario. In all of them (except on the absence of migrations scenario), the contribution to the number of live births is higher than to deaths.

For instance, on the interval 2009-2060, 644 thousands more births on a “medium” scenario will occur than in the absence of migrations. On the other hand, the difference on deaths will be 194 thousands.

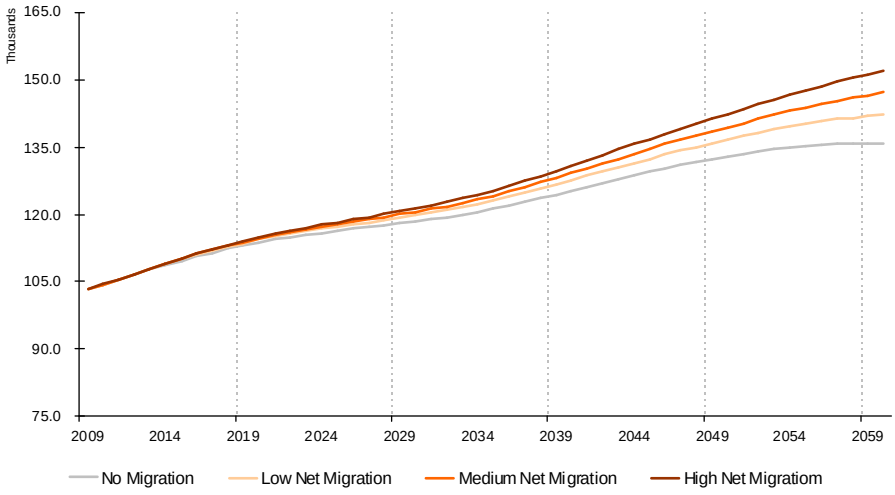
Estimated (1993-2008) and projected (2009-2060) population, Portugal



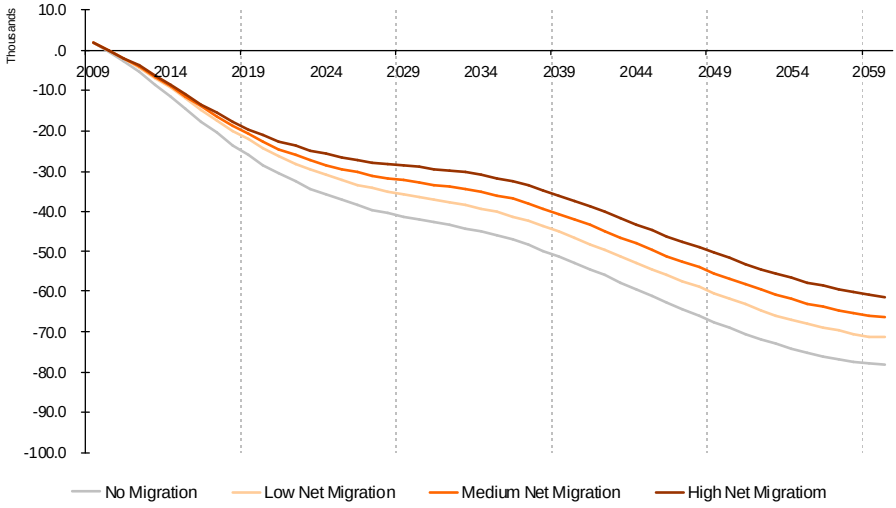
Live births, Portugal, 2009-2060



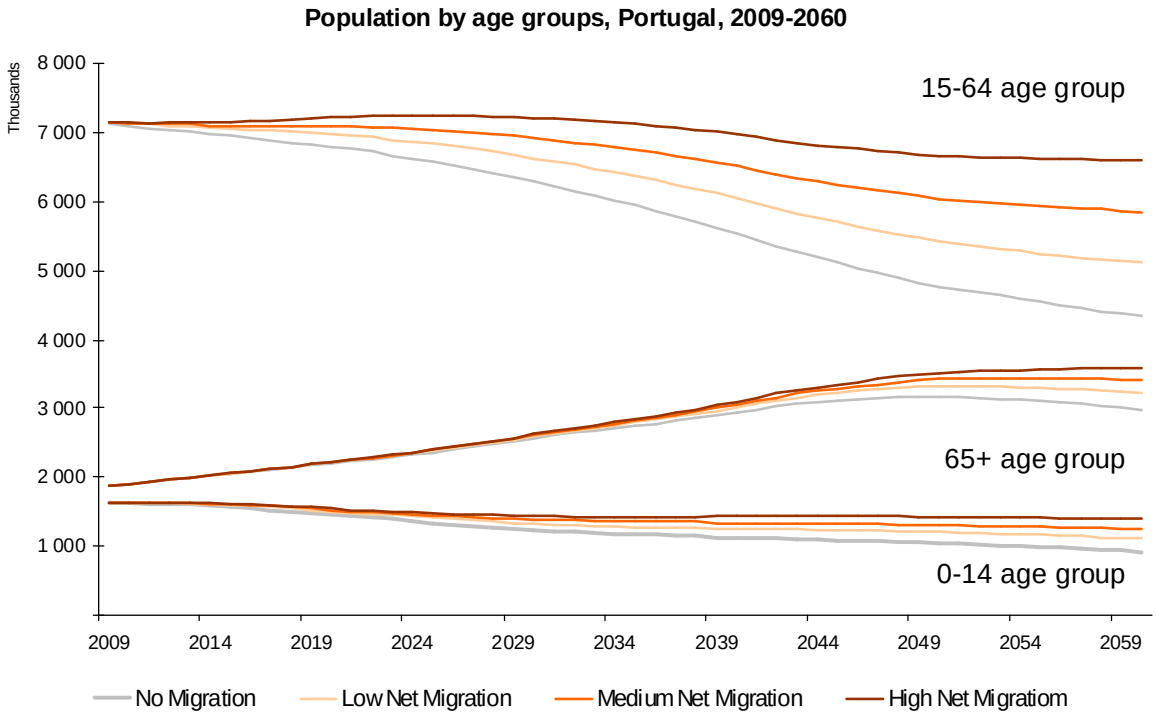
Deaths, Portugal, 2009-2060



Natural increase, Portugal, 2009-2060



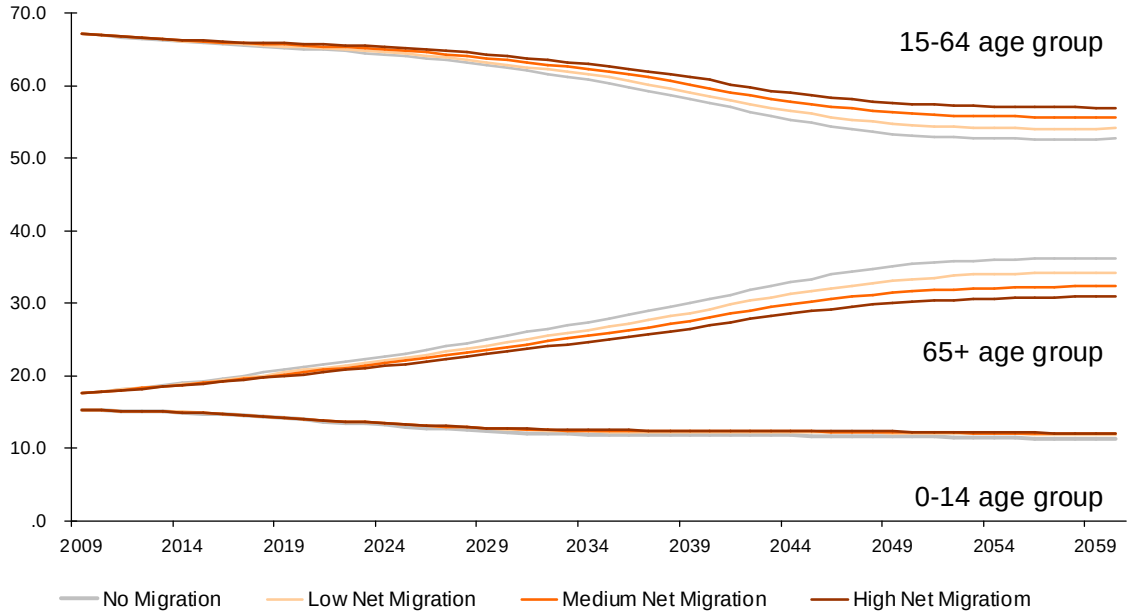
Despite the contribution of a higher net migration for the population growth, namely on the younger age groups (related to its age profile and its contribution for an increase of live births), the population ageing process will not be reversed in any case, even considering high levels of immigration.



The highest difference among the scenarios will occur on the working age group (15-64). However, even in the higher net migration variant, this segment of population will decrease continuously after 2026. In all scenarios the population aged 65 and over will rise and the population of children under 15 will decrease.

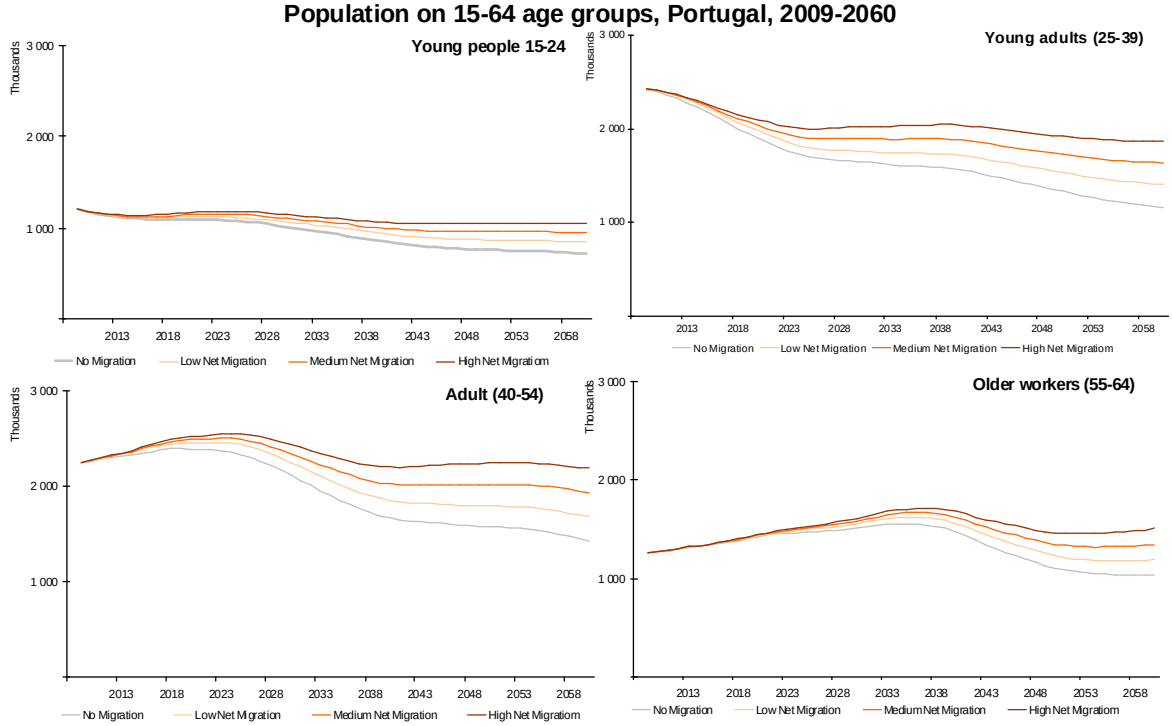
In terms of proportions of each group in the total population, the trend is similar, but the impact in higher age groups is more evident. In 2008, the percentage of children under 15 on the total population is 15.3%; this value will decrease to 12.1% in 2060 in the high migration scenario, versus 11.2% in the no migration scenario. The percentage of persons with working age will decrease from 67.2% (2008) to 56.9% (2060) in the high migration scenario, versus 52.6% in the no migration scenario. The percentage of persons aged 65 and more will increase from 17.4% (2008) to 31.0% (2060) in the high migration scenario, versus 36.1% in the no migration scenario.

Distribution of population by age groups (%), Portugal, 2009-2060

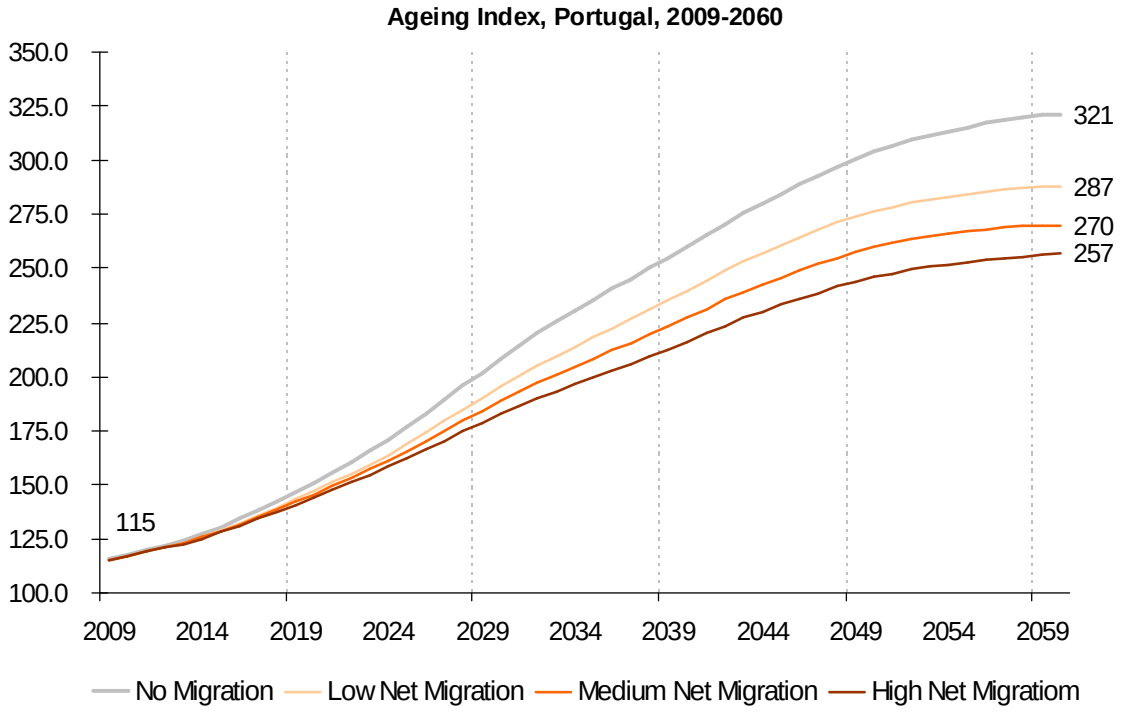


The possible future evolution of different sub groups in the 15-64 age group will suffer dissimilar trajectories. For example, it may be noted that, basically driven by the passage of larger cohorts through the life cycle, besides the impacts of migratory variants (the natural ageing of populations), the sub groups of persons on the 55-64 age group (older workers) will increase in absolute numbers, from 2008 to 2060, in the medium and high net migration scenarios.

Population on 15-64 age groups, Portugal, 2009-2060

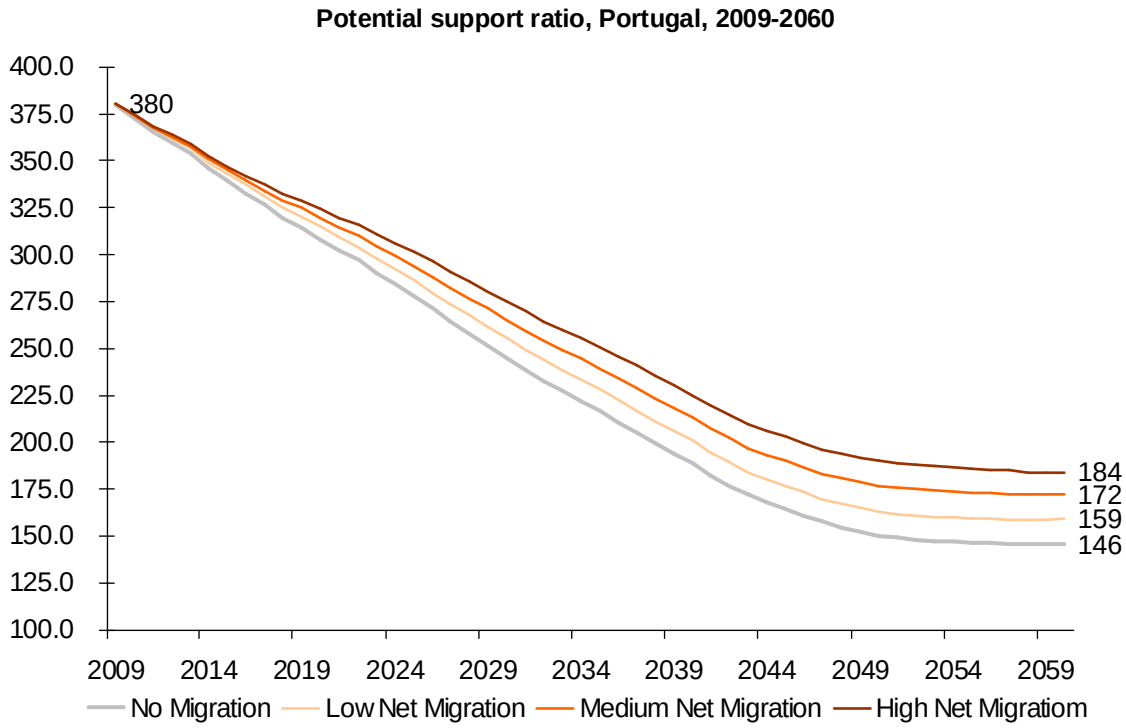


As a result of the combination of the trajectories of the younger (0-14) and older (65+) age groups, the ageing index (number of persons aged 65 and over per 100 persons aged under 15) will increase in all the scenarios.



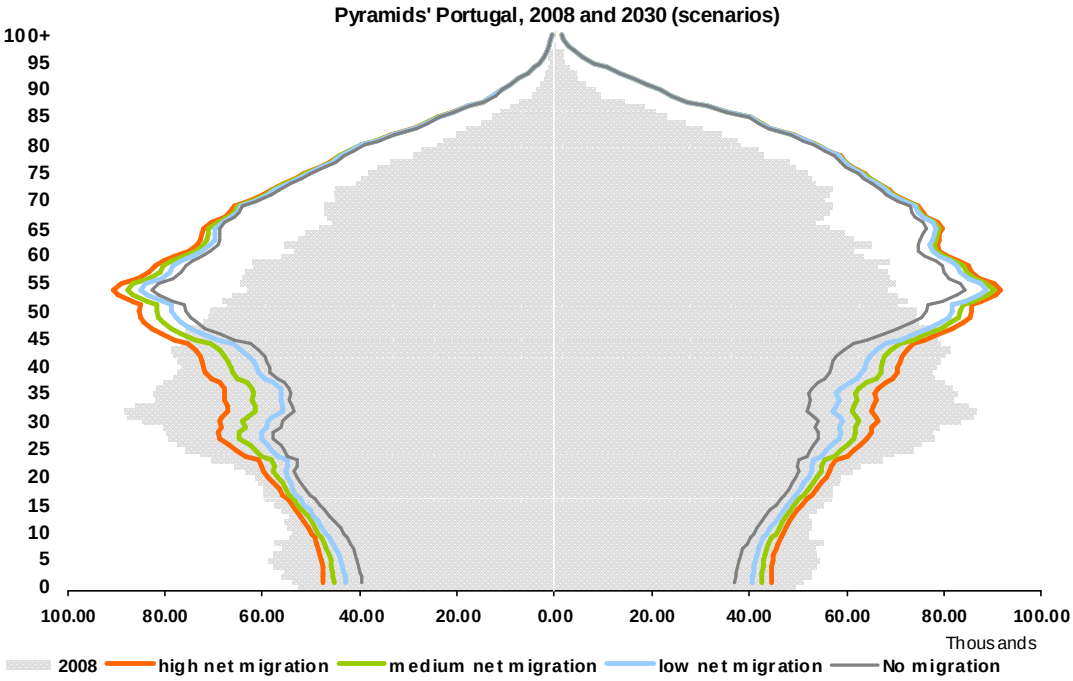
By 2060, in the high net migration scenario, for each 100 children under 15 we will have 257 older persons (aged 65 and over). This ratio in the low migration scenario raises to 287 and, in the no migration scenario, up to 321 elder persons (115 in 2008). The ageing process is irreversible, although it may be minored in a high net migration scenario.

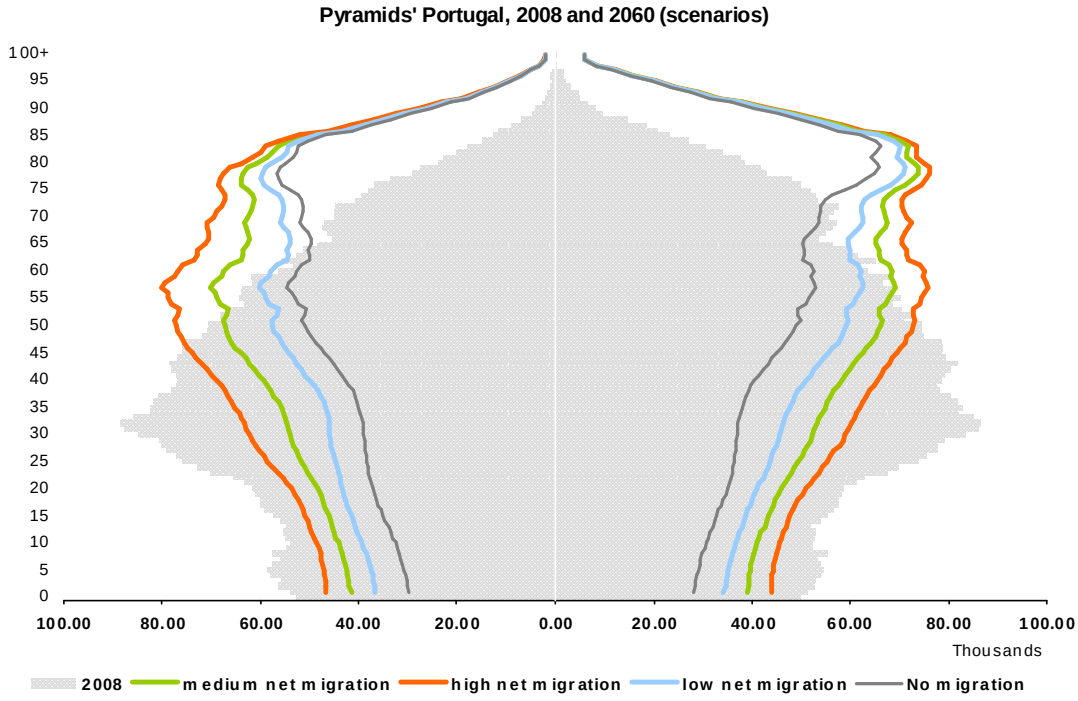
On other hand, the potential support ratio (the number of working age persons per 100 persons aged 65 and over) will fall in all scenarios, although in a lesser extent in a high net migration scenario. In this case, by 2060, for each older person there will almost 2 working age persons (almost 4 in 2008).



In terms of sex and age structures, based on the population pyramids for 2008 and 2030 (all scenarios), the major demographic impacts of net migration in Portugal will be visible mainly on the working age group and children's under 15 years. Some differences could also be pointed out for the older workers (55-64), related to the normal ageing of (immigrant) populations in the period.

By 2060 the impacts of net migration in Portugal will be clearly visible on all ages, even in higher ages. Not only the population volume is different, comparing the no migration scenario and the high net migration scenario, but also the age structure, strongly aged on the no migration scenario. The longer longevity of women is also visible.


Pyramids' Portugal, 2008 and 2030 (scenarios)
100+
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
100.00
80.00
60.00
40.00
20.00
0.00
20.00
40.00
60.00
80.00
100.00
Thousands
2008
high net migration
medium net migration
low net migration
No migration


Pyramids' Portugal, 2008 and 2060 (scenarios)
100+
95
90
85
80
75
70
65
60
55
50
45
40
35
30
25
20
15
10
5
0
100.00
80.00
60.00
40.00
20.00
0.00
20.00
40.00
60.00
80.00
100.00
Thousands
2008
medium net migration
high net migration
low net migration
No migration

4. Main conclusions

Considering the plausibility of improvements on life expectancy, as well as a slight upturn on the fertility level, the positive net migratory dynamics in Portugal, for the period 2006-2060, will:

- have impacts on the expected age structure of the resident population in the coming years;
- not stop the population ageing process, although it will slow down its intensity;
- not stop the ageing of the working age population, or the related ageing of the labour force resources;
- raise new challenges for the job market and for the social protection systems;
- raise demands for national strategies to improve immigrants' integration in Portugal.

Whichever net migration scenario will be adopted (high, medium or low), the main demographic trends – population decline and ageing – will remain remarkably strong. However, some differences will exist. A higher net migration scenario will allow:

- a later start of total population decline;
- a slighter decrease of the potential support ratio;
- an higher proportion of youngsters.

A higher intake of immigrant populations will thus allow a slighter pace of change, and easier processes of economic and social adaptation, as well as a higher level of ethnic diversification of the native population.

References

Bijak, J. *et al.* (2007), "Population and labour force projections for 27 European countries, 2002–2052: impact of international migration on population ageing", *European Journal of Population*, 23, pp. 1-31.

Coleman, D. (2006), "Immigration and ethnic change in low-fertility countries: a third demographic transition", *Population and Development Review*, 32 (3), pp. 401-446.

Eurostat (2007), "EUROPOP2007 Convergence Scenario: Summary note". DOC.STAT/F1/PRO(2007)02/GL, Work document presented at the Joint Working Group on Population Projections and Working Group on Ageing populations and sustainability, Luxembourg, 29-30 November 2007.

Fonseca, M. L., J. M. Malheiros and S. Silva (2005), "Portugal", in J. Niessen, Y. Schibel and C. Thompson (eds), *Current Immigration Debates in Europe: A Publication of the European Migration Dialogue*, Migration Policy Group.

Haug, W., P. Compton and Y. Courbage (eds.) (2002), *The Demographic Characteristics of Immigrant Populations*, Strasbourg, Council of Europe.

Lutz, W. e S. Scherbov (2006), "Future demographic change in Europe: the contribution of migration", in D. G. Papademetriou (ed.), *Europe and Its Immigrants in the 21st Century – A New Deal or a Continuing Dialogue of the Deaf?*, Washington/Lisbon, Migration Policy Institute/FLAD, pp. 207-222.

Magalhães, M. and J. Peixoto (2006), "As projecções demográficas a médio e longo prazo", *Cadernos Sociedade e Trabalho*, 6, MSST/DEPP, pp. 13-24.

Peixoto, J. (forthcoming), "A demografia da população imigrante em Portugal".

Peixoto, J., M. J. Carrilho, R. Branco and R. Carvalho (2002), "The demographic characteristics of populations with an immigrant background in Portugal", in W. Haug, P. Compton e Y. Courbage (eds.), *The Demographic Characteristics of Immigrant Populations*, Strasbourg, Council of Europe, pp.363-418.

Rosa, M. J. Valente (2001), "Notas sobre a população: saldos migratórios compensam o envelhecimento?", *Análise Social*, 36 (158-159), pp. 367-372.

Rosa, M. J. Valente, H. Seabra and T. Santos (2004), *Contributos dos Imigrantes na Demografia Portuguesa. O Papel das Populações de Nacionalidade Estrangeira*, Lisbon, ACIME/Observatório da Imigração.

Wilson, T., and P. Rees (2005), "Recent developments in population projection methodology: a review", *Population, Space and Place*, II, pp. 337-360.

United Nations (2000), *Replacement Migration: Is It a Solution to Declining and Ageing Populations?*, New York, United Nations.

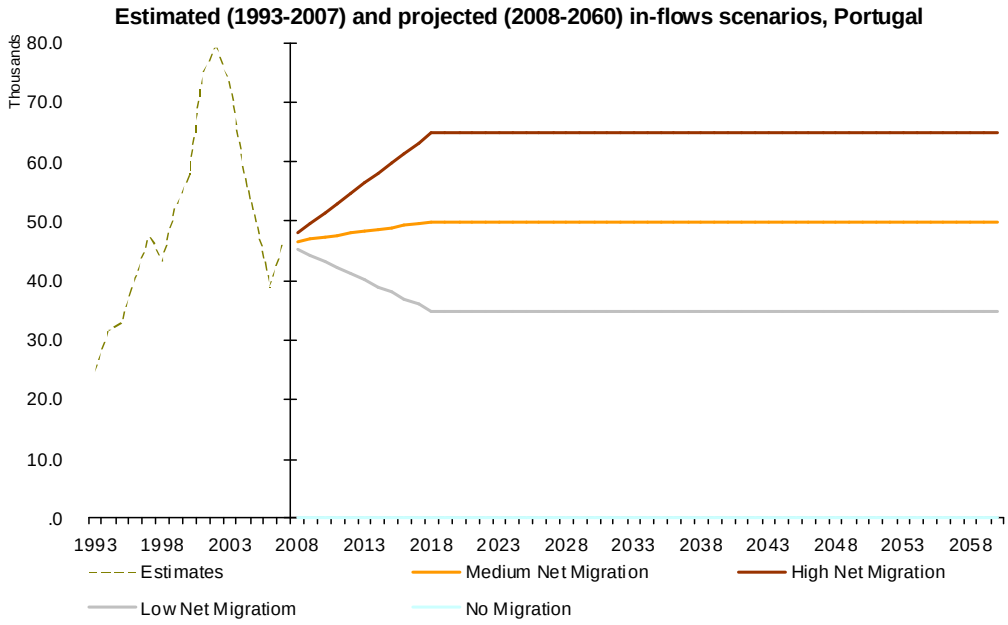
Annexes

Annex 1

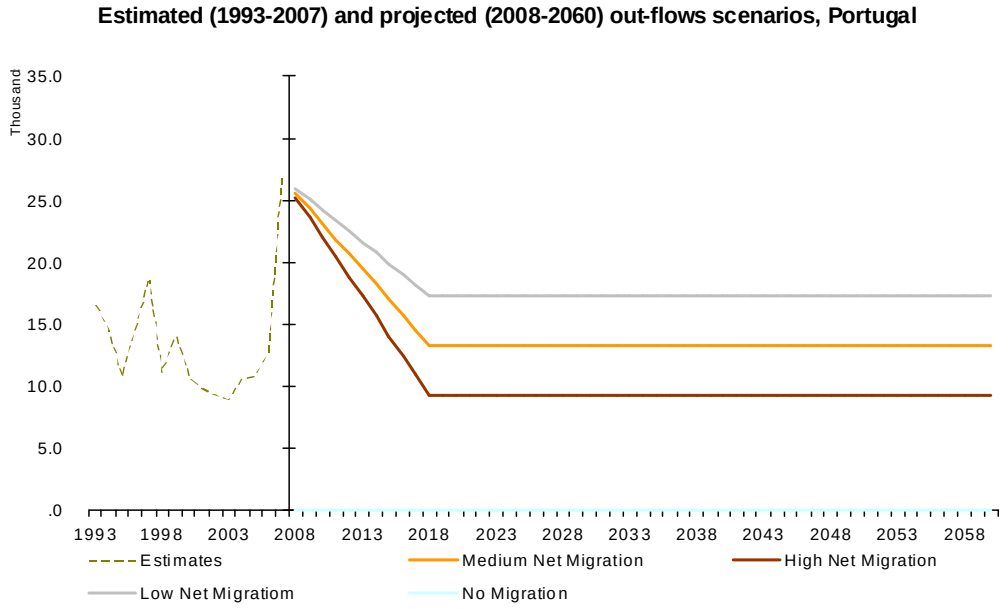
	Total Fertility Rate	Life expectancy at birth	
		Males	Females
2008	1,36	75,8	82,4
2009	1,37	76,0	82,6
2010	1,37	76,2	82,7
2011	1,37	76,4	82,9
2012	1,38	76,6	83,0
2013	1,38	76,7	83,1
2014	1,38	76,9	83,3
2015	1,39	77,1	83,4
2016	1,39	77,3	83,5
2017	1,39	77,5	83,7
2018	1,40	77,6	83,8
2019	1,40	77,8	83,9
2020	1,40	78,0	84,1
2021	1,41	78,2	84,2
2022	1,41	78,3	84,3
2023	1,41	78,5	84,5
2024	1,42	78,7	84,6
2025	1,42	78,8	84,7
2026	1,42	79,0	84,9
2027	1,43	79,2	85,0
2028	1,43	79,3	85,1
2029	1,43	79,5	85,2
2030	1,44	79,7	85,4
2031	1,44	79,8	85,5
2032	1,44	80,0	85,6
2033	1,45	80,1	85,7
2034	1,45	80,3	85,9
2035	1,45	80,5	86,0
2036	1,46	80,6	86,1
2037	1,46	80,8	86,2
2038	1,46	80,9	86,3
2039	1,47	81,1	86,5
2040	1,47	81,2	86,6
2041	1,48	81,4	86,7
2042	1,48	81,5	86,8
2043	1,48	81,7	86,9
2044	1,49	81,8	87,0
2045	1,49	82,0	87,2
2046	1,49	82,1	87,3
2047	1,50	82,3	87,4
2048	1,50	82,4	87,5
2049	1,50	82,6	87,6
2050	1,51	82,7	87,7
2051	1,51	82,9	87,8
2052	1,51	83,0	87,9
2053	1,52	83,1	88,0
2054	1,52	83,3	88,2
2055	1,52	83,4	88,3
2056	1,53	83,6	88,4
2057	1,53	83,7	88,5
2058	1,53	83,8	88,6
2059	1,54	84,0	88,7
2060	1,54	84,1	88,8

Source: Eurostat, EUROPOP2008 population projections, convergence scenario, convergence year 2150

Annex 2



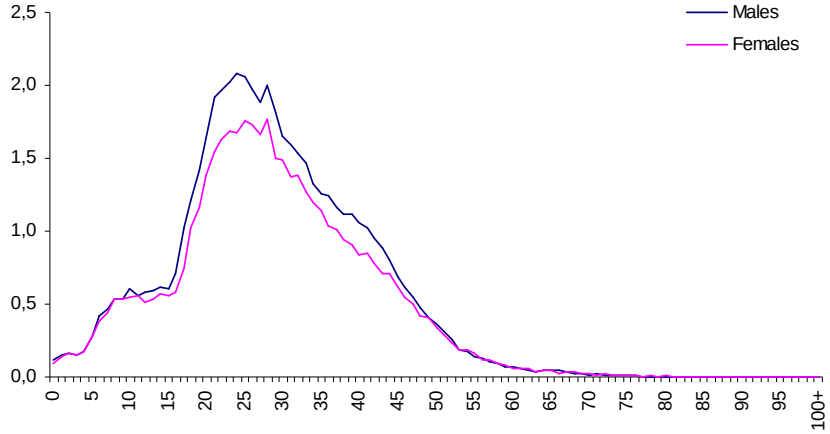
Sources: Statistics Portugal, Author's scenarios



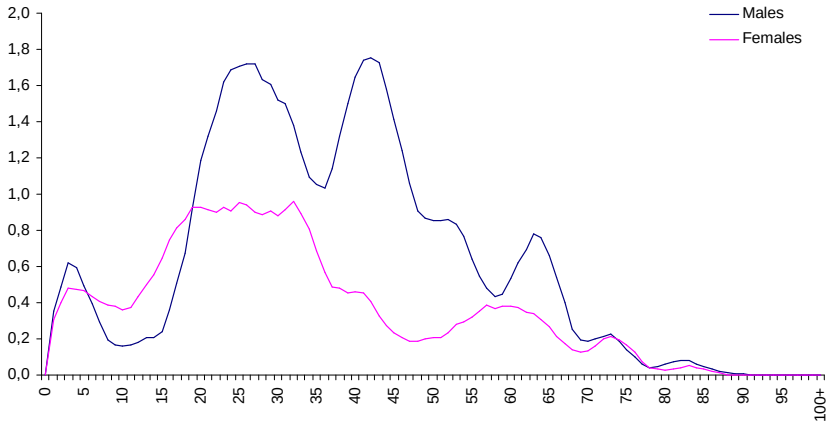
Sources: Statistics Portugal, Author's scenarios

Annex 3

Age and sex structure for immigrants non nationals (percentage of total)



Age and sex structure for immigrants nationals (percentage of total)



Age and sex structure for emigrants (percentage of total)