

# How internal and international migrations have shaped the age structure of the Italian regions, 1955-2008

*Come le migrazioni interne e l'immigrazione straniera hanno influenzato la struttura per età delle regioni italiane*

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**Abstract:** Italy is one of the oldest countries in the world: the percentage of population over 65 years of age (20.4%) is topped only by Germany (20.5%) and Japan (22.6%). Italy displays also remarkable regional differences in the ageing process: the percentage of population aged 65 and over varies between 26.7% (in one of the North-western regions, Liguria) and 16.2 (in Campania, one of the regions of southern Italy). The aim of our paper is to investigate the reasons for that variation. We use regional population register data from 1955 to 2008 to show that both national and international population movements affected regional ageing in different ways. Differently from other researches already done, we explicitly take into account not only the number of (Italian and international interregional) migrants, but also the effect of their fertility on the population structure. Empirically, we compare the observed population structure with those of populations projected according to different hypothesis about migrations. To illustrate the case, we use initially two regions: Liguria, the oldest region in Italy, and Campania, the youngest one. For both regions, it is evident that the ageing of the population is greatly influenced by the dynamics of Italians' migration movements until 2005 - obviously in different directions - and less by foreigners'. From 2005 on in Liguria, differently than in Campania, foreigners' migrations have started to influence population ageing.

**Keywords:** Internal mobility; ageing population; region analysis

## 1 Background and research question

This paper contributes to the on-going debate about the influence of migrations on population ageing. Our contribution differs from others because we consider both internal and international population movements and focus at the regional level.

Since the 1950s internal mobility has been very marked in Italy. The rate of interregional mobility in the 1960s rose up to 13 per thousand. The levels reached in this period show an extraordinary phase of internal mobility, that has never been registered before or after (Golini, Reynaud 2010). Before, migration from the southern regions had been directed abroad, but when the industrial development in the North began to offer a valid alternative, migration had destinations within the country too. The

North-West attracted very significant migratory flows. These years seem to show an extremely dynamic picture with mobility as one of the fundamental and growing components, to the point that it substantially modified the distribution of the population across the country, defining and consolidating the growing North-South dichotomy and tracing the fundamental lines of the models of settlement that exist up to this day/up until now. So at the 2001 census a very large number of Italians are found in a region different from their birth region.

On the other hand, from the 1970s Italy became a destination country for young people coming from Africa and Eastern Europe (mainly looking for a job) and then from many countries in the world, so foreigner population spread on the Italian territory. Foreign population is different in absolute and percentage values in the Italian regions. At the beginning, the foreign population was prevalently found in the south of Italy, above all in Sicily and in Apulia, then Rome, Milan and the big cities in the north of the country became the main attractive areas.

These very dynamic flows, both nowadays and in the past, have changed the structure of the population in the Italian regions (Gesano, Strozza, 2011). As it happens also for other demographic characteristics, Italy displays remarkable regional differences in the ageing process: the percentage of population aged 65 and over varies between 26.7% (in one of the North-western regions, Liguria) and 16.2% (in Campania, one of the regions of southern Italy). Our research goal is to identify the impact of immigration as a whole, first, and then to quantify the weight of foreign immigration in respect to the interregional migration of Italians on the ageing process of the Italian regions.

## **2 Data and methods**

We use data stemming from the population register (anagrafe), both for the regional resident population by single age and sex, and for the population movements at regional level (internal and international, by nationality) by 5-years-age groups and sex. As far as the interregional and international population movements by nationality sex and age are concerned, we have access to the detailed data by Istat, for the period 1980-2008.

Fertility data by age of the mother, region and year (1955-2008) are provided by Istat, as well. Concerning survival probability, for the period 1974 to 2008 we use the annual regional period life tables by sex and single age, Istat; for the period from 1955 to 1973 we use the abridged regional period life tables.

We follow the method proposed by Philipov and Schuster (method 2, 2010) with the aim to compare the age structure of the observed regional resident population for each sex separately and for each year, with that of fictitious populations, each of them computed under different assumptions. We compare the observed population with a 1) projected native population closed to all forms of population movements, and a 2) projected population where only the movements of Italians are allowed (both international and interregional). The model is applied for each Italian region, separately by sex and by age, starting from 1955 until year 2008.

The projected native population (1) is the result of the projection of the resident population on 1.1.1955 until the year 2008 using observed probability of surviving and “native” fertility rates and keeping it close to in and out migration, both of Italians and foreigners. In detail:

$$P_{i(x+1)(t+1)}=P_{i(x)(t)}p_{(x/x+1)}; P_{i(0)(t+1)}=N_{i(t)}p_{(N/0)}$$

where  $P$  is the population,  $N$  is the births,  $i$  is the region,  $x$  is the age,  $t$  is the year,  $p_{(x/x+1)}$  is the survival probability between age  $x$  and age  $x+1$  and  $p_{(N/0)}$  is the survival probability at age 1.

The projected population with Italian flows (2), is the projected natives population as in (1) modified by adding, for each year, net migration by age of Italians:

$$P_{i(x+1)(t+1)}=P_{i(x)(t)}p_{(x/x+1)}+ NMITAx_{(t)}; P_{i(0)(t+1)}=N_{i(t)}p_{(N/0)}+NMITA_{0(t)}$$

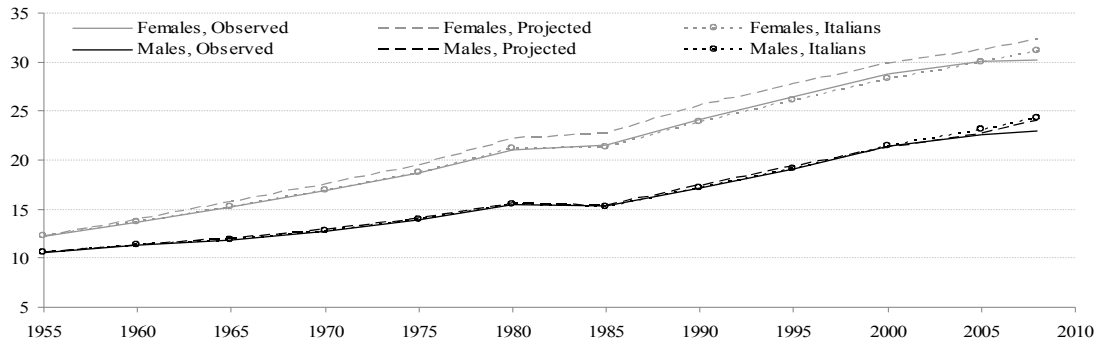
Where  $NMITAx_{(t)}$  is the net migration of Italian nationals of the given region. Each year, the in-migrants contribute to the natural movement of the regional population. We assume that in-migrants assume immediately at their arrival the fertility and mortality schedule of the region of arrival.

In this paper we use the traditional ageing indicator that compares the share of people 65+ with the total population. We will consider the use of different indicators or of the promising “population replacement” approach (Billari and Dalla Zuanna, 2011) for further applications.

### 3 Results

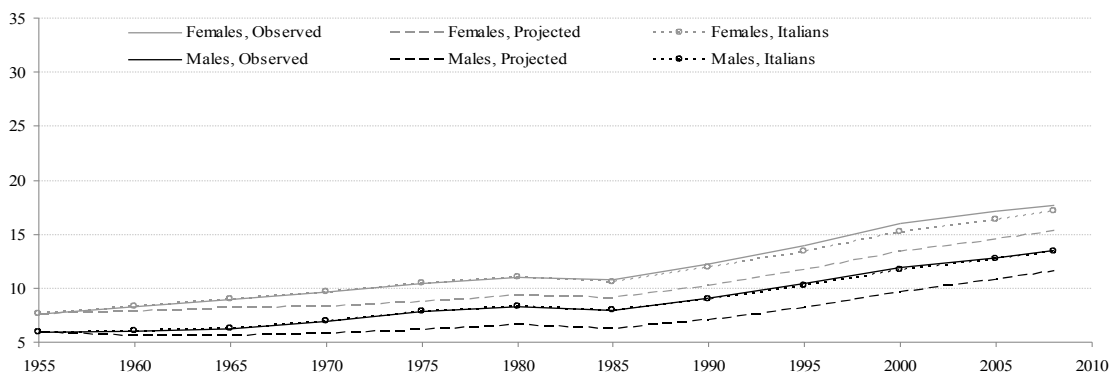
We underline that the projected populations include not only, for each year, the net number of migrants, but also their following natural dynamics. Therefore, for each year we observe the “cumulated” effect of internal and international migrations on ageing. For each region we compare the projected populations with the observed population: if the projected population is older than the observed one this means that there was a tendency to attract (young) migrants; if the opposite is true the region had a tendency to lose (young) migrants, in both cases irrespective of the nationality (Italian or foreigner). In all the regions and for both sexes the proportion of population aged 65+ increases remarkably since 1955, with women being constantly more aged than men, as expected. In 2008 Liguria and Campania are at the two opposite places of the ageing scale in Italy: the maximum observed proportion of over 65 is already 30.2% and 23.0% (Liguria, respectively women and men) and the minimum is 17.7% and 13.5% (Campania, respectively women and men). In this section, we focus our comments on the results concerning these two regions. In Liguria, differently from Campania, the ageing dynamics is different for males and females. For females, it is clear that the ageing of the population could be more pronounced if there were no movements at all (the continuous line is continuously lower than the dashed line). From 2005 the flux of young foreigner female migrants is strong enough to produce a younger population structure (difference between the continuous line and the balloon dashed line). For males no effect of migrations is visible on the ageing of the population until 2005, and as for women there is an effect of the international migration only from 2005 (fig. 1). The results point to the fact that for some Northern regions migrations have influenced to a certain extent the population structure by age: migrations are not solving the issue of aging but they are helping to manage its consequences. Other authors have underlined that in Veneto, for example, immigration has “perfectly” replaced missing births. (Billari, Dalla Zuanna, 2011).

**Figure 1: Proportion aged 65+ by sex and populations, Liguria, 1955-2008**



On the opposite side of the peninsula, Campania presents a similar effect of migrations on ageing both for female and male populations. In both cases, the observed population (continuous line) is always more aged than the population where no movements outside the region are allowed (dashed line), due to the fact that the region lost continuously young Italians, even since 1955. The rejuvenating effect of international migrations is negligible for males (the continuous line and the balloon dashed line overlap) and is very small for females. In other words, in Campania, as in other South regions, the out-migration of young Italians was not compensated by a flow of incoming foreigner immigrants (fig. 2).

**Figure 2: Proportion aged 65+ by sex and populations, Campania, 1955-2008**



The data confirm the usefulness of the methodology used to study the effect on ageing of migration movements and underline the value of the regional level approach.

## 4 References

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