THE GEOGRAPHY OF AGEING, CAUSES, EFFECTS AND … FREE REFLECTIONS

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Abstract. According to the most recent forecasts, the current 14 million over-65s in Italy could increase by another 5 million in the next twenty years. Even considering further gains in survival, with the possible moving forward of the thresholds for access to old age, the absolute growth in the number of elderly people would persist until mid-century, even if in terms of percentage the hypothetical (and justifiable) change in the definition of "who is elderly" would lead to a strong deflation of the intensity of the so-called "demographic aging".
At the basis of this phenomenon, however it is measured, there are three factors: the first is the rapid and intense birth rate decline, which deprives the country of significant flows of new youth and narrows the age pyramid from the bottom; the second concerns the increased ability to survive until old age and the third refers to an age structure which, powered by the very numerous contingents of births in last decades, presents itself with a strong component of subjects of "mature" age, destined to soon give rise to impressive inflows into the universe of the elderly. As for the effects of demographic aging on the Italian population, the undoubtedly most problematic aspects refer to its impact on two fundamental areas of society and the welfare system: healthcare and pensions.
Finally, it should be highlighted that, as a result of the transformations in terms of size and age structure, in three decades the Italian population is facing a loss of future perspective which will overall be equal to 415 million years of life (on average 13.8 million lost every year) and which will also manifest itself clearly at a per capita level: from the 38.4 years of expected life for each resident in 2023 to the 34.6 that on average will be attributed to those in 2053.

1. Who are the “elders”?

The Italian volume of the Multilingual Demographic Dictionary, with which at the end of the 1950s Bernardo Colombo made an important and useful working tool available to scholars, defined old as " [...] those who have entered senile age, or old age, that coincide, conventionally, with the age of retirement (usually 60 or 65 years old" (Colombo, 1959, p.45). At that time the life expectancy of a sixty-five years old, according to the mortality tables 1960-62 of the National Statistical Institute (ISTAT), was 13.4 years for males and 15.3 for females. Since then, more than sixty

years have passed and the residual expected life at the 65th birthday has risen to 18.9 and 21.9 years, respectively for males and females, but the statistical limit of senile age has not undergone any modification, despite the constant lengthening of what is formally the season of senility.

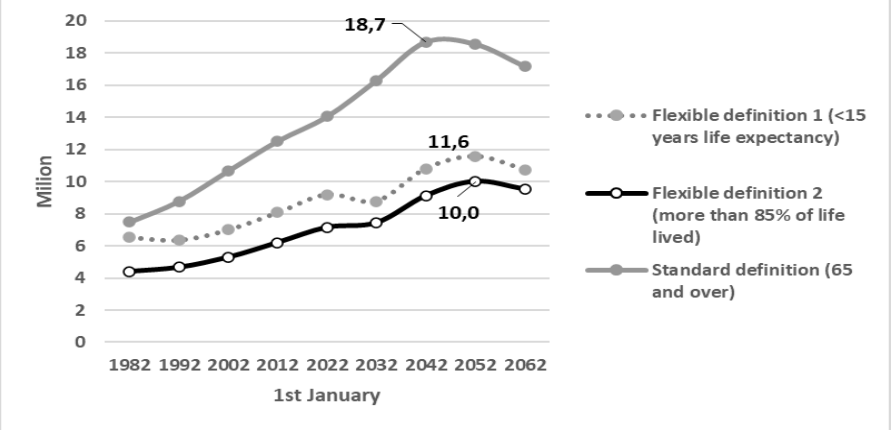
However, it should be remembered that an interesting proposal to make "mobile" the threshold of access to the elderly, to take into account the achievements in terms of lifespan, had been formulated almost half a century ago. The idea consisted of replacing the classic definition of elderly person as "someone who has lived for a certain number of years", with the more elastic one which considers old "someone who still has to live for no more than a certain number of years". (Rayder, 1975; Di Comite, 1977). Today, for example, if fifteen years were adopted as the residual life interval to mark the transition to the elderly, the age limit would be between 71 and 72 years - measured without distinction of gender - and the elderly on 1 January 2023 there would be 9.3 million, 15.7% of the total, instead of the 14.2 million over-65s (24%).

Alternatively, one could also propose that, instead of referring to a predetermined number of years of life expectancy, the age of entry into the universe of the elderly could be defined as that in which a predetermined fraction of the duration of life has been consumed. For example: an elderly person is "someone who already spent at least 85% of their existence between years lived and residual years expected on average". With that definition and according to the survival levels of 2022 - again without distinction of gender - the age threshold of elderly would be between 74 and 75 years and the corresponding number of elderly people in Italy on 1 January 2023 would drop to 7.3 million: 12.3% of the total residents.

Whatever the definitive approach with which to certify the elderly component, it must be remarked that the phenomenon of aging in our country manifests itself with a growing dynamic that comes from afar and which is oriented to continue, with even greater intensity, for at least another 3-4 decades. According to the most recent forecasts (ISTAT, 2023a) the number of over-65s could increase by another 5 million in the next twenty years and even taking different approaches and survival gains into account - which would influence the two "flexible" definitions - the absolute growth in the number of elderly people would persist until mid-century[1].

[1]The hypothetical mortality table for estimating survival expectations after 2022 was appropriately reconstructed on the basis of the life expectancy values adopted in the ISTAT forecasts for 2023 (www.demo.istat.it).

Figure 1 – *Elderly residents according to different definitions. Italy 1982-2062 (absolute values).*

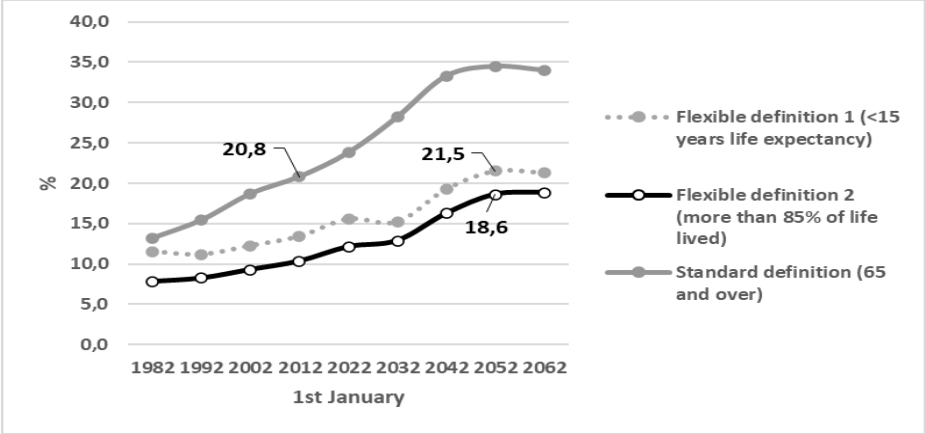


Source: 0wn processing in ISTAT data

The influence of the different definitional approach appears even more evident when the share of elderly people compared to the total residents is considered. While forty years ago the differences were relatively small and this percentage could vary from a minimum of 7.8%, adopting what we proposed as the second flexible definition, to a maximum of 13.2%, applying the "standard" concept of old people aged 65 and over, in 2022 the gap between the extremes has grown to around twelve percentage points (12.1% vs. 23.8%) and in next forty years it could stand at fifteen points.

In fact, if we accept that the phenomenon of demographic aging consists - as written in the manuals - in the growth of the share of the elderly population, we must also take into account that a hypothetical (and justifiable) change of definition in the thresholds of entry into the elderly collective can lead to a significant deflation of the intensity of aging itself. It is no coincidence that the maximum values that would be encountered in the middle of this century when measuring the phenomenon with the "flexible" definitional approach (around 20% of elderly people in both cases of flexibility) propose values which, in the "standard" definition of elderly people as over sixty-five, have already been observed ten years ago (20.8% in 2012).

Figure 2 – *Elderly residents according to different definitions. Italy 1982-2062 (%).*



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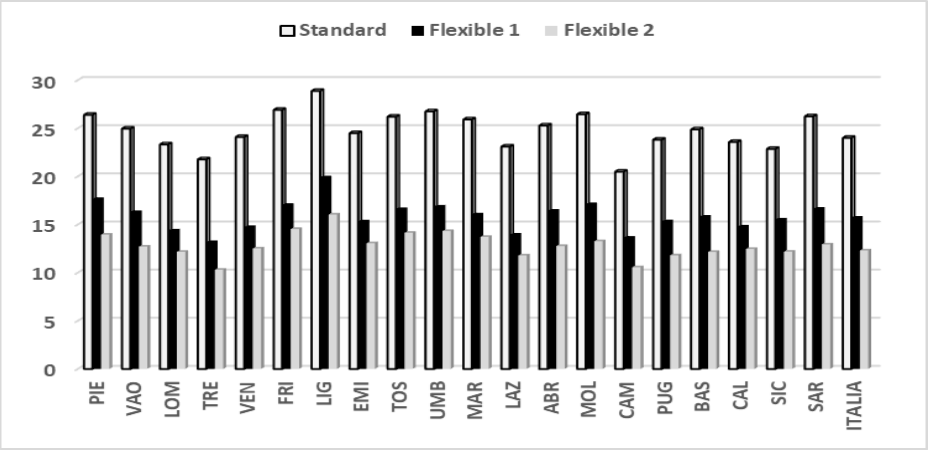
2. Aging in the territories

By reporting the logic of the three different definitional approaches in territorial detail, the geography of aging in the Italian regions offers interesting differential aspects. While the top five regions in terms of share of people aged over sixty-five as of 1 January 2023 (in order: Liguria, Friuli V.G., Umbria, Molise and Piedmont) remain at the top - albeit with some permutations - even with the two "flexible" definitions, the change in thresholds reduces the extent of aging strongly and almost everywhere. Moving from the "standard" definition to the "flexible1", all regions benefit from a reduction in the share of elderly people of around nine percentage points, with the sole exception of Sicily and Campania where the gain is around seven points. The benefit is much greater if the comparison shifts to the "flexible2" definition. Molise and Sardinia gain more than thirteen percentage points, while all the other regions see a reduction in the share in the order of 11-12 points, except for Campania (-9.9 points).

In relative terms, in the transition from the "standard" to the "flexible1" definition, advance in the regional aging ranking - drawn up in decreasing order: from highest to least intense - Sicily (which rises by 6 positions) and Piedmont (+ 3), while the most evident decline is attributed to Veneto (-3 positions). If, however, the transition is pushed to "flexible2", it is still Sicily, with Emilia Romagna, that rise in the ranking (both by 4 positions), while Basilicata drops significantly (-5).

Figure 3 – *Percentage of elderly people in the Italia Regions according to different definitions at 1 January 2023.*

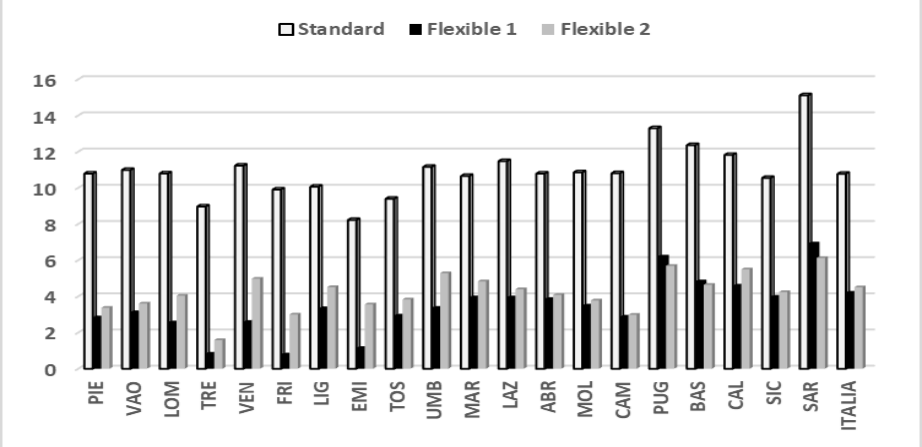


Source: Own processing in ISTAT data

Even over time, the aging process of the territories is affected in a differentiated way by the definitional variations. Between 1982 and 2023, according to the standard definition almost everywhere we arrive at a double-digit level of growth in aging, but the presence of people over sixty-five ranges between a maximum increase of 15.1 percentage points in Sardinia and a minimum that falls below ten points o in four regions: Friuli V.G. (+9.9), Tuscany (+9.4), Trentino A.A (+9) and Emilia Romagna (+8.2).

However, if the temporal comparison is carried out by adopting the two flexible definitions, the intensity of growth appears strongly attenuated almost everywhere. Sardinia is still the region that marks the highest increase in the share of elderly people, but with the "flexible1" definition this increase is 6.9 percentage points and drops to 6.1 with the "flexible2" definition. In general, the increases are in the order of 4-5 percentage points for almost all regions in correspondence with both definitional approaches, with the most moderate values in Trentino A.A., Friuli V.G. and Emilia Romagna.

Figure 4 – *Change in the share of elderly people in the Italian Regions according to different definitions between 1 January 1982 and 1 January 2023 (percentage points of change).*



Source: Own processing in ISTAT data

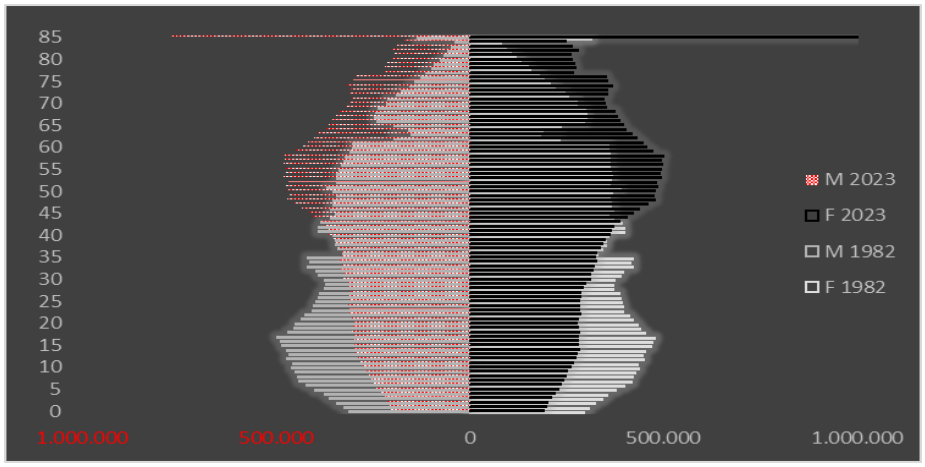
3. Causes and effects

Anyhow the demographic aging is measured, three determining factors are at the basis of what we have experienced until today and we will experience in the next 3-4 decades. The first is the rapid and intense birth rate decline which, by depriving the country of significant inflows of new youth, narrows the age pyramid from the bottom. The second and third can be said to be two factors that interact and must be read in combination. One refers to the growing ability to survive until old age - a meritorious result of the victory over early mortality - which contributes and will favor even more in the future the transition into the senile groups located at the top of the pyramid. The other factor is an age structure which, powered by the very numerous contingents of births in last decades, today it presents itself with a strong component of subjects of "mature" age, highly destined to survive and give rise to impressive flows entering the universe of the elderly.

With these premises, the fact that over the years the age pyramid of the Italian population has progressively lost its natural triangle shape to increasingly transform into a sort of mushroom can be quickly explained recalling a few simple data. The 40 generations that fed the lower part of the age pyramid on 1 January 1982 came from 35.6 million born between 1942 and 1981, while the corresponding contingent registered on 1 January 2023 can only count on the 21.2 million born between 1983 and 2022: almost 15 million births less (-40%). Let’s then keep in mind how the

survival conditions that lead to senile age have changed over time. For example in 1982 - according to the mortality tables of the time - the probability of reaching the age of 70 for a male was 63%, while in 2022 it reached 84%; and for females we went even higher (91%). It is therefore not surprising to expect that, even in perspective, the wave due to the baby-boom generations of the 1960s - now roughly in their sixties - will manifest itself with a certain vehemence in the immediate future. The corresponding peak just above the middle in the age pyramid of 2023 will progressively rise to the higher levels, so that in less than a couple of decades the most frequent age group in the Italian population will be centered on 75 years.

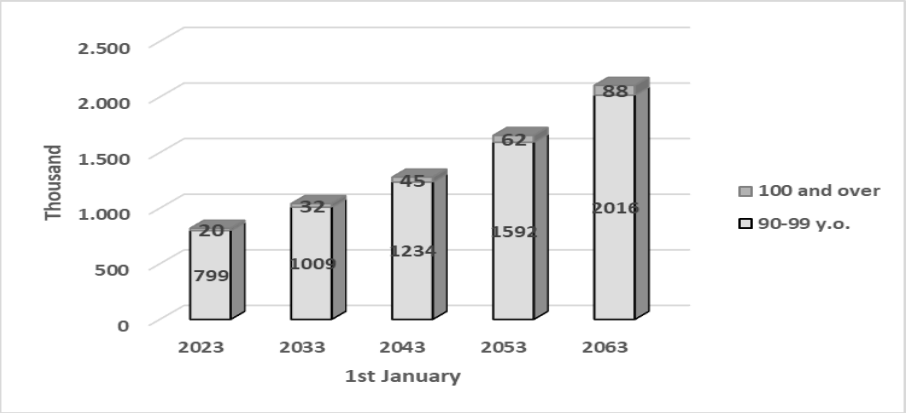
Figure 5 – *Age pyramid of the Italian population at 1 January 1982 and 2023 (absolute values).*



Source: 0wn processing in ISTAT data

Moving from the causes to the effects of demographic aging in the Italian population, the most evident and problematic aspects refer to its impact on two fundamental areas of society and the welfare system: healthcare and social security. On the first point, little data is enough to outline scenarios that suggest potentially serious critical issues. The just over 800 thousand over ninety years old population registered on 1 January 2023, of which around 20 thousand over centenarians, are destined to increase by 56% over the space of twenty years, to reach over two million in forty years (+157 %). The strong challenge for the health system will be, precisely, that of being able to guarantee to a population exposed to the fragility of old age which increases exponentially all the necessary and dutiful conditions of assistance and care, to ensure that none must suffer dangerous declines in the quality of life.

Figure 6 – *Population aged over ninety. Italy 1 January 2023-2063 (values in thousands).*



Source: Own processing in ISTAT data

Regarding the issue of social security and the sustainability of the pension system, forecasts for the next decades indicate a persistent growth in the ratio between the number of people of retirement age and that of potential workers, the so called "elderly dependency ratio (EDR)"

Assuming the limits of active age as the 20th and 67th birthdays, the indicator

$$EDR = 100\ Population_{67+}/Population_{20\text{-}66}$$

would grow from the current over one pensioner for every three workers (35.2% in 2023) to around six every ten over thirty years (60.6% in 2053).

This is not at all indifferent to the balance of the pension account, since it must be taken into consideration that the fraction of gross domestic product (GDP) absorbed by pension spending can be expressed with a quotient which has three factors in the numerator that increase it:

[(Average amount of pensions) x (% Pensioners aged 67+) x (EDR)];

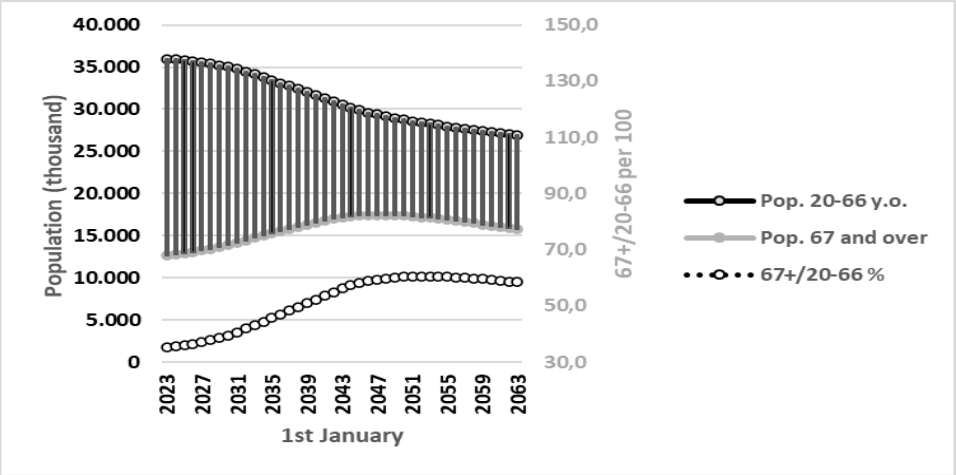
and two factors in the denominator that reduce it:

(Average productivity per employee) x (% of employed people aged 20-66).

Among the factors in the numerator (that create growth) an important place is assigned to the elderly dependency ratio (EDR), and it is easy to realize that its increase of 72% in thirty years (from 35.2% to 60, 6%) is naturally destined to

produce, under conditions unchanged by the other factors, an increase in the pension burden of the same magnitude.

Figure 7 – *Population of working age (20-66 years) and of retirement age (67e+) and Elderly Dependency Ratio (per 100).*



Source: 0wn processing in ISTAT data

A further element to consider when evaluating the critical levels of the social security system in perspective concerns the effect of what we could define as "imported ageing", i.e. the flow of entries into the universe of pensioners by individuals born abroad who have become elderly in Italy after immigration. It should be noted in this regard that currently the structure of the population of retirement age (67 years and over) can still be seen quite compatible with the number of corresponding generations born in Italy from 1922 to 1955. For example, the 723 thousand 67-year-olds resident on 1 January 2023 are the result - albeit modified by mortality and migratory movements - of the 879 thousand born during 1955, just as the 682 thousand 74-year-olds are the result of the million and 11 thousand born in 1948, or the 182 thousand ninety-year-olds derive from the 982 thousand born in 1932, and so on.

The effect of the survival and mobility processes currently still seem to respect the principle according to which those who are still present in Italy at retirement age "with x years of age" have mostly had a life path originating in Italy "x years before" and, therefore, have probably developed a corresponding career of work and contributions for pension purposes.

The problem that will arise soon concerns the high frequency of access to retirement age by residents who were born in other countries and who subsequently

immigrated to Italy, often in late working age. This situation, which is statistically confirmed by the overtaking of residents of age "x" on the corresponding number of births in our country "x years earlier" observable, for example, for the population of 67-74 year olds on 1 January 2053, could generate a non-marginal number of pensioners with a short contribution history and, therefore, with the need to receive forms of pension integration which will inevitably come from the general taxation.

Figure 8 - *Comparison between the population resident in Italy aged x on 1 January 2023 and the corresponding number of births registered in Italy x years before (x = 67, 68, ..., 100e+).*

Source: 0wn processing in ISTAT data

Figure 9 – *Comparison between the population resident in Italy aged x on 1 January 2053 and the corresponding number of births registered in Italy x years before (x = 67, 68, ..., 100+).*

Source: 0wn processing in ISTAT data

4. Looking at the future

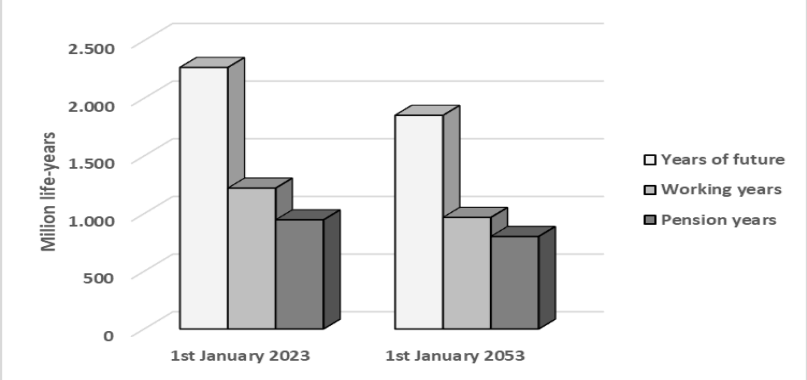
The progressive aging of the Italian population, and the way it is developing, foster some reflection on the future. In particular, the question is how much future belongs to the current 59 million residents overall, to the conditions of survival of our time, and how this "demographic asset" (the global wealth of the entire population in terms of years of future life) could change because of changes in their age structure.

According to the structure by sex and age as of 1 January 2023 and considering the survival expectations deriving from the most recent mortality tables relating to the year 2022 (ISTAT, 2023b), the "demographic asset" for all residents in Italy as of 1 January 2023 is 2 billion and 267 million life-years. If we then introduce the 20th and 67th birthdays as limits of active age, we can also distinguish within this asset one billion and 221 million life-years to be spent in working age and 946 million life-years to be spent in retirement. In perspective, 77 years as pensioners for every 100 years as workers.

If moving forward thirty years, the same calculation - conducted on the structure by sex and age as of 1 January 2053 with unchanged 2022 survival levels - leads to estimating a demographic asset of one billion and 852 million life-years for that date. Of which 967 million are referred to working age and 802 million to retirement age. The corresponding ratio between future years of retirement and those at work would thus rise by 5 points (from 77 to 82 per 100). Therefore, following the transformations in terms of size and age structure, over the space of three decades the Italian population seems to be headed towards a loss of future which will overall be equal to 415 million years of life (on average 13.8 million each year) and which will also manifest itself clearly at a per capita level: from the 38.4 life-years per resident in 2023 to the 34.6 on average in 2053.

The per capita evaluation of the demographic asset also suggests some considerations on how demographic aging has changed, and will further change, for the Italian population the relationship between the average years lived (substantially the average age) and the average years to live (the per capita expectation). The latter – as mentioned - is destined to reduce by approximately four years between now and 2053, but it should be noted that it has already been reduced to almost the same extent compared to the post-World War II values: from 41.4 life-years of 1951 to the current 38.4.

Figure 10 – *Years of future expected in total, by pensioners (aged 67 and over) and by workers (aged 20-66) in the population resident in Italy on 1 January 2023 and 2053.*



Source: 0wn processing in ISTAT data

The sex and age structure of the Italian population at the time of the "economic miracle" (the 1950s) corresponded to an average lifespan - evaluated under the survival conditions of the time - of 74 years of which 32.5 already lived (average age) and 41.5 still to live, i.e. nine years more. The similar structure in the post-Covid era (2023) reflects a lifespan that has extended by over ten years (from 74 to 84.8) but with an average lived component (46.4 years of average age) which is eight years higher than the corresponding average expectation (38.4 years). Therefore, if we must welcome, with justified satisfaction, the progress on the length of life (lived and expected), we must however also acknowledge that the gap between the path taken and the path to be taken has reversed.

In fact, can we realistically believe that a people already more than halfway through life's journey (even if on average) has kept the incentives to invest and innovate intact?

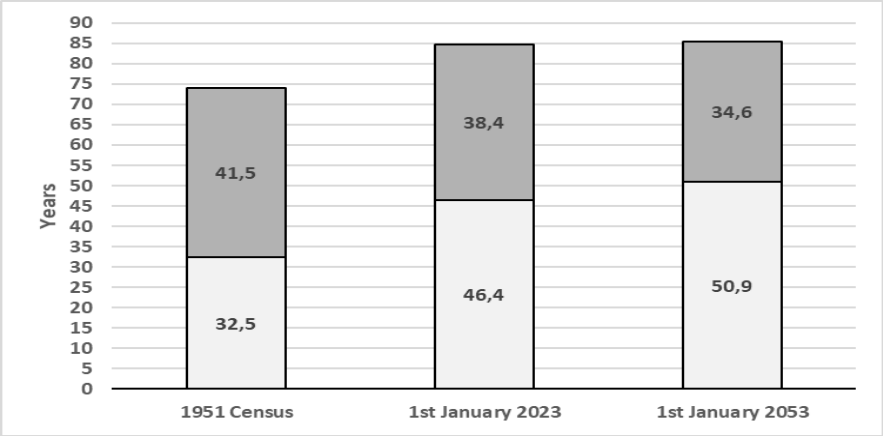
Is it reasonable to guess that we are still oriented/willing to look to the future and to sacrifice, where necessary, the consumption and well-being of the present?

The Italian "investor" after the Second World War, ready to deploy energy and resources to build a future (moreover by rebuilding a country) for himself and his family, is perhaps more and more tempted to dedicate himself to the comfortable activity of simply “maintenance”?

The question is important, and it is even more so if the gaze shifts from the comparison with the past to the vision of the future. The evaluations of the structure by sex and age of the residents as of 1 January 2053 raise the average lifespan to 85.5 years but, above all, accentuate the gap between the path traveled (50.9 years of average age) and the one to be completed (34 .6 years per capita of expected life).

Being aware of what is happening appears fundamental to prepare the necessary structural, technological, social and cultural conditions to ensure that the growing age of Italians don't become an alibi for losing desire to grow and induce to live in the present. But rather to push people to ensure that the broadest life experience, connected to the increase of average age, suggests actions and innovations capable of giving full value to the road still to be taken, even if (on average) shorter.

Figure 11 – *Relationship between past and future (on average) for Italians in the years of the "economic miracle" (1950s), today (2023) and in thirty years (2053).*



Source: Own processing in ISTAT data

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