EFFECTS OF POPULATION AGEING ON EMPLOYMENT IN ITALY[1]

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Abstract. Over the last 15 years, the Italian labour market has gone through deep changes resulting from both economic dynamics and changes in the composition of the population, which have had a crucial impact on the number of employed persons. In the economic sphere, starting from 2007, we first witnessed the biggest economic crisis since the post-war period, then a slow recovery associated with labour policies and pension reforms, finally a new collapse occurred during the COVID-19 pandemic and the subsequent post-pandemic recovery. Over the same period, the age structure of the Italian population has changed deeply, due to incoming migration flows but more significantly due to the well-known ageing process. Recent structural changes in the population between 15 and 64 years have led to a decrease in the size of the age groups with higher employment rates (35-49 years old) and to a growth of older ones, historically characterized by less involvement in the labour market. Therefore, it is crucial to be able to study employment trends net of the ageing effects. The data deriving from the Labour Force Survey allow analysis of employment with respect to the main socio-economic characteristics of individuals; in particular, the recent reconstructions produced by Istat make available comparable time series of data from 2004 onwards, adjusted for all the changes that occurred in the survey. The aim of this paper is to investigate the evolution of employment over the last 15 years, using techniques to standardise the age structure of the population. In particular, to assess the year-on-year and the five-year variations of employed persons in the main age groups, the effect deriving from the demographic component is analysed separately from that due to the 'employment performance', related to the observed variation in employment rates. The findings demonstrate that for some instances, changes in population demographics concealed the actual job market patterns, as in the case of people aged 35-49, while in other cases, such as for over-50s, demographic dynamics amplified the employment trend related to economic factors alone.

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[1] Andrea Spizzichino wrote paragraphs 1, 4 and 5, Cinzia Graziani paragraph 2, Maurizio Lucarelli paragraph 3.

1. Introduction

The changing demographic dynamic, characterised in Italy by the progressive ageing of the population, is strongly reflected in the evolution of the labour market and, in particular, in the number of employed people.

Over the last fifteen years, there has been an initial increase in the working-age population, followed by a decade of decline, driven exclusively by people under 50.

These population dynamics have often led to opposing trends for some age groups between changes in the number of employed persons and those observed for the employment rate, masking the real evolution of the labour market.

Using population standardisation techniques, it is possible to remove demographic effects from the observed trends by quantifying the part of the variation that is due to "employment performance" alone.

The Labour Force Survey data make it possible to apply these standardisation techniques to comparable data over the long term, allowing a further and deeper examination of what has been observed in the Italian labour market over the last fifteen years.

2. The context

Italy is a country characterised by a strong ageing process and a falling birth rate, which are leading to a shrinking population and a changing age structure (Golini, 1997, Golini *et al.*, 2003).

In particular, as shown in figure 1, between 2007 and 2022, there has been a drop in the population aged between 15 and 49 (-13.9%, or almost 4 million people), due to the departure of the large generation of 49 year-olds (an average of 960 thousand people per year). This decline has not been offset by the inflow of fifteen-year-olds (an average of 570 thousand people per year) or by the positive migration dynamic in this age group. Over the same period, the population of the 50-64 age group grew by 24.5%, or more than 2 million 600 thousand people.

Italy, unlike other European countries, is experiencing an ageing process that affects both men and women, with the gender gap in life expectancy decreasing not because women's conditions are getting worse, but because men's conditions are getting better (Caselli, 2016).

In this context, the projections of the resident population and households recently published by the Italian National Institute of Statistics have officially classified Italy as a country with a *high ageing process*.

Figure 1 − *Year-on-Year variations in the population aged 15-64 by age group, between 2007 and 2022 (data in thousands).*

Source: Istat. Labour Force Survey and Population Census.
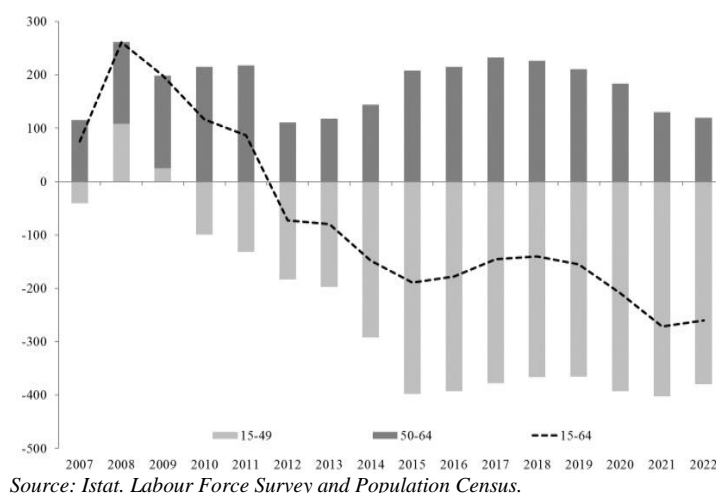
The low fertility rate of the last 40 years, combined with the achievements in terms of increasing life expectancy, has led to a population structure, as of 2021, in which people aged 65 and over represent 23.2% of the total. On the other hand, those aged up to 14 years represent 13%, and those in the 15-64 age bracket 63.8%, while the average age is approaching 46 years. Beyond the various scenarios and assumptions that can be made, the ratio of over-65s to young people seems to be moving towards the 3:1 mark.

According to Istat forecasts, the ageing of the population will have a major impact over the next thirty years on the likely evolution of the working-age population. There will be a sudden change in the population aged 15-64, which will fall from 63.8% to 53.3% according to the median scenario. This evolutionary picture will have repercussions on the labour market, as well as on future economic and social planning.

A partial rebalancing in the population structure, albeit in the long term, may occur as the generations born between 1960 and the first half of the 1970s begin to leave the scene. These generations are now in late adulthood and will be fully shifted to the over-65s within the next twenty years. According to Istat's median scenario, the 15-64 year olds could therefore return to 54.1% by 2070, while the over-65s would fall to 34.3%. Instead, the youth population should remain stable at 11.6% (Istat, 2022).

On the other hand, falling birth rates are eroding the quantitative presence of new generations, leading to the so-called "*dejuvenation*" process (Rosina, 2011).

The demographic trends of the last three decades had a profound impact on the future of the working population[2] aged 15-64, whose projections are based on four factors:

- the demographic balance between those entering and those leaving working age;
- the number of deceased persons of working age;
- the migration balance, i.e. the difference between inward and outward migration;
- the change in labour market participation of people of working age, i.e. people who move from inactivity to employment or active job search (and vice versa).

Over the last 30 years, the first factor has been negative due to the decline in the births and the transition of the largest cohorts born after the 1940s to older age groups. However, this effect was more than compensated by a positive migration balance and by an increase in labour force participation, so that the labour force balance was still positive compared with the early 1990s. In the coming years, however, the picture will tend to worsen, as the gap between outgoing and incoming working-age people will widen with the retirement of the baby-boomer cohorts, while the migration balance - already declining in recent years - may settle at lower levels than in the past (Liaci, 2021).

This demographic process, at least in the short to medium term, will have a significant impact on the welfare, migration and, not least, employment policies (Reynaud and Miccoli, 2016).

In fact, employment dynamics have been affected by demographic changes, which in recent years have shown a progressive ageing of the population. The old-age dependency ratios, which is used to study the level of support provided to older people by the working age population, recorded the highest value among the 24 UE Member States in Italy in 2022, at 37.5%. This means that, for every person aged 65 or over, there are less than three people of working age (Eurostat, 2023).

Considering what has been observed, an analysis of labour market data capable of taking into account the demographic component, is now an unavoidable need: reading rates that have the population as denominator runs the risk of being insufficient or misleading, if not accompanied by a demographic analysis.

In recent years, many studies have focused on the composition of the labour force and, in particular, on changes in employment in order to identify the demographic component. An analysis of the employment recovery after the pandemic has shown that in the 15-34 age group, the employment rate increased

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[2] The active population is the sum of the employed and unemployed and is equal to the total population net of the inactive people.

despite the significant decline in the number of employed persons (Liaci and Galli, 2022). The reason for this apparent contradiction lies precisely in the population decline.

This is also evident from the comparison of employment rates before and after the pandemic, which shows that part of the recovery in employment rates is actually due to the decline in the working-age population (De Sario *et al.*, 2022).

Starting with the monthly release "Employment and Unemployment" for December 2016, Istat also breaks down the trend changes in employment, unemployment and inactivity by age group into two components: the one resulting from the change in the population and the one due purely to the performance of the labour market ("expected" effect) (Istat, 2017). This is just for the aim of highlighting the impact of demographic changes on the estimated trend changes on these labour market aggregates.

The demographic issue has thus forcefully entered the labour market scenario; the purpose of this paper is to analyse its evolution and its impact on employment dynamics over the last 15 years.

3. The methodology

The aim of this work is to provide an assessment of the level of employment cleansed of the effects of demographic dynamics, thanks to techniques for standardising the age composition of the population.

The observed changes in employment levels are decomposed into the sum of two factors: a first component, which measures the effect attributable to population changes, and a second one, which instead represents the "expected" effect on employment levels net of the demographic component.

This second factor, attributable to the observed change in the employment rate, represents a measure of "employment performance".

It is possible to analyse changes in levels over 12 months or for time intervals of different widths, and to disaggregate the elaborations according to the main characteristics of the employed.

In this paper, we focus on total employment, broken down by three age groups: 15-34, 35-49 and 50-64; for simplicity, in the following formulas we refer only to 12-month changes (Trend Changes, T.C.).

The trend change observed at time *t* (i.e., the difference between the level of employment between *t* and *t-1*), for age group *i*, can be decomposed as follows:

$$(T.C.)_t^i = (Employment\ performance)_t^i + (Demographic\ component)_t^i$$

To derive the demographic component, we now determine the employment performance.

As mentioned, the "employment performance" represents the effect on employment levels if demographic changes didn't affect it. To determine it, therefore, we assume that the population between *t* and *t-1* does not change. In this case, the level of "expected employment" at time *t* could be obtained by multiplying the observed employment rate at time *t* by the population of *t-1*.

Thus, for age group *i*:

$$(Exp.\ employment)_t^i = Emp.rate_t^i * Pop_{t-1}^i$$

By comparing this "expected" employment level at time *t*, obtained assuming an invariant population, with the observed employment level (*Obs, employment*) at time *t-1*, we derive the "employment performance" (*Empl. performance*) at time *t*, which can be read as the trend change in the level of employment that would have been observed if the population had remained unchanged:

$$(Empl.performance)_t^i = (Exp.\ employment)_t^i - (Obs.employment)_{t-1}^i$$

By construction, we can now derive the "demographic component" as the difference between the observed trend change in the level of employment over the period from *t-1* to *t* and the "employment performance" at time *t*:

$$(Demographic\ component)_t^i = (T.C.)_t^i - (Empl.performance)_t^i$$

This decomposition allows the effect of the demographic component on the observed change in employment to be isolated and assessed separately.


4. Main results

As already mentioned, the analyses proposed here cover the period between 2007 and 2022. This choice makes it possible to observe what happened in the first six years (2007-2013), which were characterised by a very severe economic crisis, in the second six years (2013-2019), in which the labour market grew steadily, and in the last three years (2019-2022), in which it returned to the levels of 2019 after the pandemic crisis.

Figure 2 shows, between 2007 and 2013, a 4.6% fall in employment among 15-64 year olds (equivalent to -1034 thousand), as a result of a strongly negative "employment performance" and an increase in the working age population.

It should be noted that for all age groups the two components have the same sign, with the demographic component accentuating the trend of the "expected" change; only for those aged 35-49 the increase in the population contributes to limit the fall in employment.

Figure 2 – *Breakdown of employment trend change by age group, years 2007-2013, 2013-2019 e 2019-2022 (percentage values).*
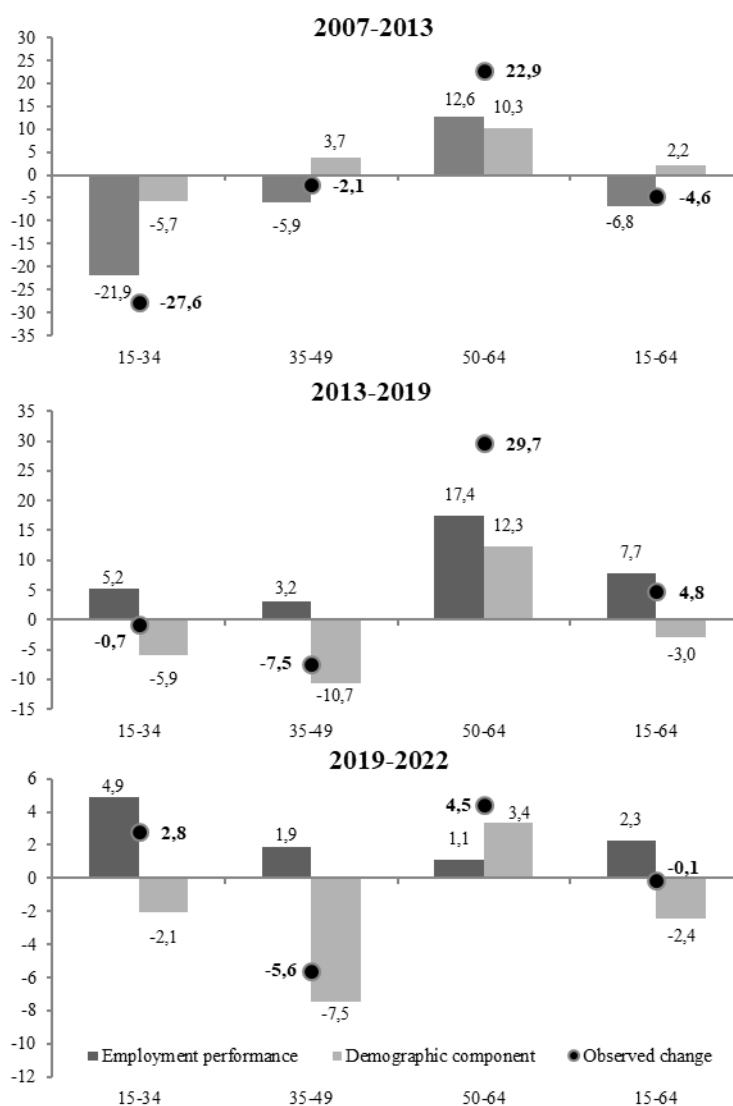
Source: Istat. Labour Force Survey and Population Census.

On the contrary, between 2013 and 2019, the effect of the "employment performance" is positive for all age groups: for those aged 15-34, it is 5.2% (265,000), and the negative change observed for the employed (-0.7%, or -37,000) is entirely determined by the decline in the population of this age group.

Even for the 35-49 age group, the sharp fall in population has a decisive influence on the fall in employment: the change observed is -7.5% (-761 thousand), against a positive "employment performance" effect of 3.2% (322 thousand).

In the 50-64 age group, demographic growth contributes to the increase in the number of persons in employment: from 17.4%, corresponding to 1,068 thousand "expected" employed persons net of demographic effects, to 29.7%, corresponding to 1,821 thousand observed. The overall growth of 4.8% recorded over this period is thus the synthesis of an even more positive "employment performance" (7.7%, or 1,655 thousand more), mitigated by the negative effect of the demographic component.

Over the last three years, compared with the previous period, the effects of the relationship between the demographic component and "employment performance" are confirmed for the over-35s, but they change for younger people. In fact, for the 15-34 age group, the decline in the population is gradually decreasing and is no longer offsetting the positive performance; thus, an employment growth of 2.8%, or 142 thousand units, is determined for this group. The overall effect between 2019 and 2022 is a slight decrease in the number of persons in employment (-0.1% or 30,000), due to the counterbalancing changes in "expected" employment and in the demographic component (+2.3% and -2.4% respectively).

The analysis of the contributions of the two components to the trend changes in employment over the last fifteen years (Figure 3) shows for the total number of employed persons of working age (15-64), the different impact of population trends by age group.

In periods of severe crisis, characterised by negative employment changes, the demographic component had different effects: between 2008 and 2010 it limited the contraction, while in 2012, 2013 and even more so in 2020 it amplified the result of a strongly negative "employment performance".

On the contrary, between 2015 and 2022 (with the exception of 2020, a year characterised by the health emergency), the "expected" change was always more than 200,000, with a maximum of 750,000 in 2022, and was always higher than the actual level of employment.

The difference between the "expected" change and the change actually observed is due to the negative contribution of the demographic dynamic characterised by an ageing population.

Figure 3 − *Decomposition of employment levels trend change among 15-64 years old. Years 2007–2022 (data in thousands).*

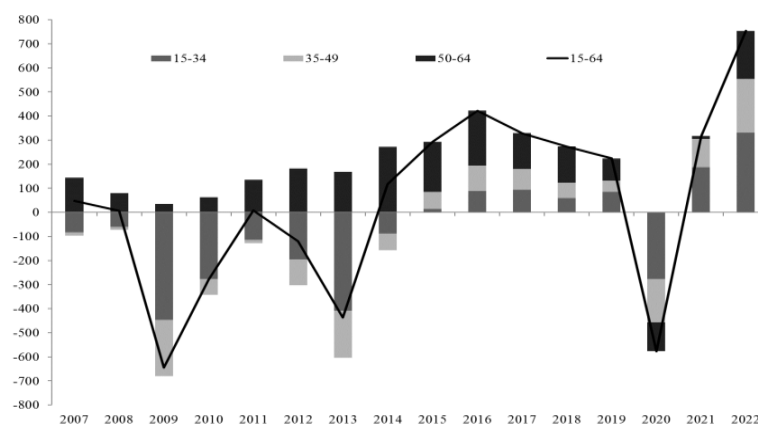*Source: Istat. Labour Force Survey and Population Census.*
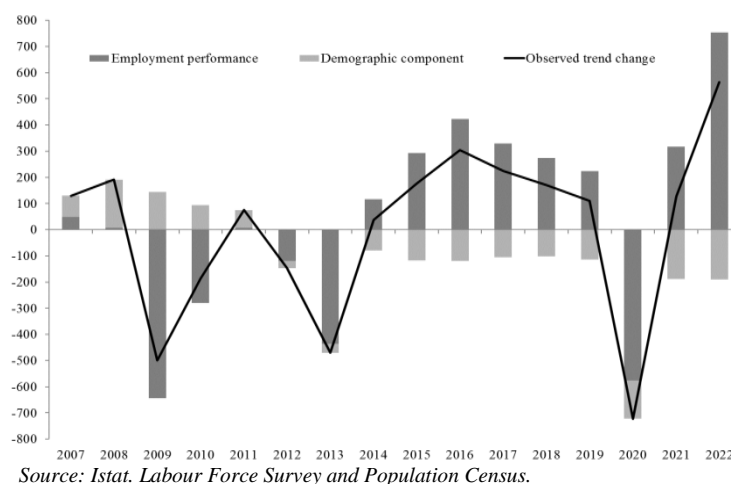
Looking at the changes in the employment of the various age groups net of the demographic component (Figure 4), it can be seen that until 2014, i.e. in the years in which the impact of the economic crisis on the labour market was most marked, only the 50-64 year olds showed a trend increase. On the other hand, the 15-34 and 35-49 age groups experienced strong declines, which led to a negative overall change for the 15-64 age group between 2009 and 2013. Between 2014 and 2019, the years in which the recovery of the labour market supported by employment policies was observed, all age groups show positive "expected" trend changes, although to a lesser extent for the under-50s than for the 50-64s.

The raising of the retirement age is the element that explains the dynamism of the older age groups between 2007 and 2019 and especially in the early years, when all other age groups experienced sharp declines in employment.

Excluding 2020, when due to exceptional events the "expected" change in employment was negative for all age groups, the last two years showed a reversal of the trend of the past. The younger age groups, which were most involved by the process of reintegration into the labour market after the emergency, showed a higher positive employment performance than the over-50s, for whom the effects of the pension reforms are slowly fading.

Figure 4 – *"Expected" trend change in employment levels net of demographic effect, by age group. Years 2007-2022 (in thousands).*

Source: Istat. Labour Force Survey and Population Census.

5. Conclusions

In a context of ongoing demographic change, which in Italy is mainly manifested in a rapid ageing process, it is particularly useful to assess the main socio-economic phenomena net of demographic effects.

This paper has attempted to provide an interpretation of the employment trend over the last fifteen years by showing how the number of people in employment would change in different age groups, net of changes in the age structure of the population.

The results show how, in several cases, demographic dynamics either masked the real employment trends, e.g. by registering negative changes in the 35-49 age group when employment was rising, or amplified the employment performance trends, as in the case of the over-50s, who registered a higher than expected observed change over the whole period.

In this context, it would be particularly interesting to be able to assess future employment prospects in relation to the age structure of the population, given the considerable certainty that the average age of the workforce will continue to rise gradually.

This is confirmed by the fact that while the ageing of the baby-boom cohorts will gradually push them out of the working-age population, the continuing decline in births will not allow their complete replacement by younger age groups. At the

same time, migration dynamics will continue to play an important, albeit only partially predictable, role in the age structure of the working-age population.

The decline in the working-age population is an issue that affects not only Italy but also much of the rest of Europe, although the demographic trends are not the same in all countries.

As also suggested by the European Commission (2023), to encourage more young people and women to enter the labour market could, in the medium term, help to mitigate the negative effects of demographic dynamics on the increase in the average age of the employed.

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